APPENDIX A

Author Qualifications and Experience

Education

Master's of Applied Science Environmental Engineering, Carleton University, Ottawa, Ontario, 2006

Bachelor Environmental Engineering, Carleton University, Ottawa, Ontario, 2003

Bachelor of Arts Psychology, University of Guelph, Guelph, Ontario, 1996

Certifications

Registered Professional Engineer, Professional Engineers of Ontario, March 2009

WSP Canada Inc. – Ottawa, Ontario

Career Summary

Brian Henderson, P.Eng., is an Environmental Engineer with WSP Canada Inc. (previously Golder Associates), in Ottawa. He holds B.Eng. and M.A.Sc. degrees, both from the department of Civil and Environmental Engineering at Carleton University. He manages a wide variety of hydrogeological and environmental projects including borehole drilling, groundwater and surface water analysis and groundwater monitoring well installation. He has experience with the construction of numerical groundwater flow models used to assess the potential hydrogeological impacts of quarry and construction de-watering and larger scale models for regional studies.

Employment History

WSP Canada Inc.(previously Golder Associates Ltd.) – Ottawa, Ontario

Environmental Engineer (2006 to Present)

Brian is responsible for project management, technical analysis, data management and reporting for a variety of hydrogeological and environmental projects. In this role he leads the planning, management and execution of permitting applications, groundwater resource protection studies and other environmental/hydrogeological projects. Brian carries out groundwater sampling, field investigations (including soil and groundwater investigations and monitoring); residential groundwater sampling; data management, analysis and interpretation. In addition, he monitors and reports on the compliance of quarry sites and landfills in accordance with their Certificates of Approval and Permits to Take Water. Brian performs groundwater modelling for wellhead protection studies, construction-related groundwater control and quarry hydrogeological studies.

Carleton University – Ottawa, Ontario

Teaching Assistant (2003 to 2005)

Conducted problem analysis sessions for several environmental engineering courses; prepared and coordinated seminars; and helped students one on one. Courses included third year contaminant transport, third year water resources engineering and a fourth year risk assessment course.

City of Ottawa – Ottawa, Ontario

Engineering Assistant (2003)

Working under supervision of City of Ottawa standards engineer, helped to write the City of Ottawa's Sewer Use Guidelines, attended meetings from other departments about the guidelines, researched current acceptable products to determine if they would meet future standards and reviewed new products to establish if they meet with the City's standards.

Carleton University – Ottawa, Ontario
Research Assistant – NSERC Undergraduate Research Award (2002)

Conducted research on the separation of cellulose from sugarcane bagasse plant residue; applied laboratory procedures and analytical techniques to investigate the effectiveness of the separation for a series of individual experimental trials; and designed a bench-scale model for the continuous separation of cellulose based on the experimental trials.

City of Ottawa – Ottawa, Ontario
Laboratory Assistant (2001 to 2002)

Laboratory tested asphalt, aggregates and concrete used in road construction. Laboratory tests included particle size distribution and proctor values for aggregates, the compressive strength of concrete, and particle distribution, volume of voids, percent asphalt cement, and marshal properties for asphalt. In the field, core samples were taken and densities of asphalt were measured using a nuclear density gauge.

PROJECT EXPERIENCE – HYDROGEOLOGY

Rehabilitation of the West Block
Ottawa, Ontario

Undertook the hydrogeological components associated with the rehabilitation of the West Block prior to occupation by the House of Commons. Brian prepared a Category 3 Permit to Take Water (PTTW) application and supporting documentation for water taking for construction dewatering from the proposed excavations inside and outside of the building.

Retrofit, Historical Restoration and Seismic Upgrade of the Wellington Building
Ottawa, Ontario

Undertook the hydrogeological components associated with the assessment, and development of a treatment system for contaminated groundwater which was encountered under the floor slab. Brian undertook the modelling required to estimate potential groundwater inflow to the treatment system.

Major Rehabilitation of the Government Conference Centre
Ottawa, Ontario

Undertook the hydrogeological components associated with the rehabilitation of the Government Conference Center prior to occupation by the Senate of Canada. Brian designed the field testing components of the hydrogeological program and prepared a Category 3 Permit to Take Water (PTTW) application and supporting documentation for water taking for construction dewatering from the proposed excavations inside and outside of the building.

Integrated Road, Sewer and Watermain Replacement/ Rehabilitation
Ontario

Conducted background review, technical hydrogeological analysis and reporting related to infrastructure installation/replacement throughout the City of Ottawa. Analysis included predictions of the rate of groundwater inflow, water quality testing and the identification of hydrogeological risks.

Permit to Take Water Applications/ Environmental Activity and Sector Registry Documentation
Ontario

Conducted background review, technical hydrogeological analysis and reporting related to Category 1, 2 and 3 Permit to Take Water (PTTW) applications as well as dewatering and discharge plans to support Environmental Activity and Sector Registry (EASR) registrations for construction dewatering projects, quarry dewatering and pumping tests.

Groundwater Numerical Modelling
Ontario

Conducted hydrogeological investigations for proposed and existing quarry sites and construction dewatering projects. Developed detailed conceptual and numerical models for groundwater flow, and demonstrated impacts to local environment.

Groundwater and Surface Water Monitoring Programs
Ontario

Managed groundwater and surface water monitoring programs; conducted data checks, technical review and analysis; and, prepared a comprehensive annual report for various landfill and quarry sites.

Potable Water and Wastewater Expansion
Village of Limoges, Ontario

In response to a hydraulic review of the potable water and wastewater systems for the Village of Limoges, Golder completed the necessary studies to inform a Master Plan for the two systems in accordance with the requirements of a Municipal Class Environmental Assessment. The Master Plan addressed the growth potential and the capacity constraints to develop a long-term outlook for the community. Brian served as Project Manager and Hydrogeologist for this project. As Project Manager he was responsible for budget/schedule maintenance and control, QA/QC of deliverables, development of a health & safety plan, communication with client and stakeholders, contractor guidance and supervision as well as team organization and communication. Brian also carried out data analysis, report preparation, field program design and water level/sample collection to complete a hydrogeological study to evaluate possible well locations.

Hydrogeological and Hydrological Assessments for Quarry Licensing
Ottawa (Goulbourn Twp.), Ontario

Golder carried out the necessary hydrogeological, hydrological and ecological studies to support applications under the Aggregate Resource Act and the Planning Act for a site plan license for a new quarry. Brian developed detailed conceptual and numerical models of groundwater flow, demonstrated potential impacts to local environment and proposed mitigative measures.

Hydrogeological Assessment for Quarry Licensing
Ottawa (Gloucester Twp.), Ontario

Golder carried out a hydrogeological studies to support an application under the Aggregate Resource Act and the Planning Act for a site plan license for a new quarry. Brian developed detailed conceptual and numerical models of groundwater flow, demonstrated potential impacts to local environment and proposed mitigative measures. He carried out on-site hydraulic conductivity testing and groundwater/surface water interaction studies. He was responsible for designing the field program and health & safety plan and preparing the report.

Hydrogeological Assessment for Quarry Licensing
Canaan Quarry Expansion, Ottawa, Ontario

Golder carried out a hydrogeological study to support an application under the Aggregate Resource Act and the Planning Act for a site plan license for a quarry expansion. Brian developed detailed conceptual and numerical models of groundwater flow, demonstrated potential impacts to local environment and proposed mitigative measures. He carried analysis of on-site hydraulic conductivity testing data. He was responsible for designing the field program and health & safety plan and preparing the report.

Conceptual Design for the Remediation of a Closed Landfill
County of Northumberland, Ontario

Golder presented a number of remediation alternatives to the County to address surface water compliance issues arising from leachate derived impacts identified in a nearby creek caused by a closed landfill. After a review and analysis of existing data, Brian developed the conceptual groundwater flow model, carried out numerical modelling of the remediation options, and prepared reports.

Options Evaluation and Preliminary Design for Tailings Management Option
Nunavut

Golder completed a tailings and waste rock management options evaluation and preliminary design of selected tailings management options at a mine site in Nunavut. Brian completed monitoring well development and sampling for groundwater quality of a deep monitoring well below permafrost using the WestbayTM monitoring well system.

Groundwater Vulnerability Study
Kingston, Ontario

Golder completed a Groundwater Vulnerability Study for the municipal water supply well servicing a subdivision in the northeast part of Kingston, Ontario. The groundwater vulnerability study included the delineation of the wellhead protection area (WHPA) around the well and the determination of vulnerability scores for the different zones within the WHPA. Brian was responsible for field program design, compilation, interpretation and analysis of data and report preparation. He also carried out the QA/QC of deliverables, conceptual model development and numerical modelling.

Phase III ESA at the Ottawa International Airport
Ottawa, Ontario

Golder completed a Phase III Environmental Site Assessment at the MacDonald-Cartier Ottawa International Airport which attempted to define the extent of groundwater and soil impacts based on the data gap analysis and the water quality results from the available monitoring wells installed during previous investigations. Brian was responsible for the collection of soil and groundwater samples, field program development, data analysis and report preparation. He also carried out compilation and interpretation of data, conceptual model development and contractor guidance and supervision.

Wellhead Protection Study
Deloro, Ontario

Golder carried out a Wellhead Protection Study for the Village of Deloro municipal well. The study included a groundwater vulnerability analysis, a threats inventory and a water quality risk assessment. Brian carried out groundwater flow modelling for the delineation of wellhead protection areas for the municipal well in Deloro. He conducted groundwater vulnerability mapping using ISI methods within the delineated areas.

PROJECT EXPERIENCE – HYDROGEOLOGY - INFRASTRUCTURE

Combined Sewage Storage Tunnel
Ottawa, Ontario

Golder carried out geotechnical and hydrogeological investigations for a new 6 km combined sewer storage tunnel system in Ottawa. A field investigation and reporting program was completed through the downtown core to support the preliminary and detail design team. Brian assisted with the design and implementation of the hydrogeological field program, carried out the packer test data analysis, compiled and interpreted data and completed pumping tests which were challenging due to the location on the streets of downtown Ottawa. Results of the hydrogeological assessment were included in a report used as a supporting document for a Permit to Take Water application for construction dewatering for the project. Brian also provided technical review and guidance to the team and the guidance and supervision of contractors.

South Nepean Collector Sewer Phase Two
Ottawa, Ontario

Undertook hydrogeological investigation for 2.5 kilometers of new deep trunk sewer in Barrhaven just north of the Jock River through sensitive clays, bouldery glacial till with permeable sand seams, and limestone bedrock. Providing hydrogeological input to design, tender documents and construction, including a PTTW application with supporting documentation. Key issues included assessment of the potential for basal heave, basal instability and general excavation conditions for the 6 to 10 metre deep excavations.

Ottawa Light Rail Transit Preliminary Design
Ottawa, Ontario

From 2010 to 2012, Golder carried out geotechnical, environmental and hydrogeological investigations for a new 12.5 km light rail transit system in Ottawa. A field investigation and reporting program was completed through the downtown core to support the preliminary design team. Brian assisted with the design and implementation of the hydrogeological field program, carried out the packer test data analysis, compiled and interpreted data and completed pumping tests which were challenging due to the location on the streets of downtown Ottawa. Brian also provided technical review and guidance to the team and the guidance and supervision of contractors.

West Transitway Extension (Bayshore Station to Moodie Drive)
Ottawa, Ontario

Undertook the hydrogeological components of the functional and detailed design for the West Transitway extension from Bayshore Station to Moodie drive. Subsurface conditions were determined using pre-existing information and a limited number of new test pits and boreholes/monitoring wells. A pumping test was carried out in the vicinity of Moodie Drive, due to the high hydraulic conductivity of the shallow bedrock, and numerical modelling analyses were undertaken to evaluate the issues related to construction dewatering. Golder obtained draft PTTW's for construction dewatering associated with construction of Phases 1 and 2.

Manotick Watermain Link
Ottawa, Ontario

Undertook hydrogeological investigations for detailed design of a watermain through the Village of Manotick, including two crossings under the Rideau River. Completed a Permit to Take Water application with supporting documentation.

Spencer Avenue Integrated Road, Sewer and Watermain Construction
Ottawa, Ontario

Undertook the, hydrogeological investigation for the integrated replacement of the roadway, watermain and sewer along Spencer Avenue from Western Avenue to Holland Avenue. Providing hydrogeological input to design and construction, and a Permit to Take Water application with supporting documentation.

Gilmour Trunk Sewer Reconstruction
Ottawa, Ontario

Undertook the hydrogeological investigation for the integrated replacement of the roadway, watermain and a deep trunk sewer along Gilmour Street, Waverley Street, Cartier Street and Elgin Street, with deep shaft connection to the Rideau Canal Interceptor trunk sewer. Providing hydrogeological input to design, tender documents and construction, including a Permit to Take Water application with supporting documentation.

Lavergne Street Integrated Road Sewer and Watermain Reconstruction
Ottawa, Ontario

undertook the hydrogeological component of the design and construction for the integrated replacement of the roadway, watermain and sewer along Lavergne Street, Jolliet Avenue, Ste Monique Street, et al. in Vanier. Project included deep excavations in peats, highly permeability sands below the water table, and shallow shale bedrock. Non-standard construction measures were considered and assessed as a means of limiting the potential for impacts to adjacent structures resulting from compression of the underlying peat soils due to groundwater level lowering. A Permit to Take Water application with supporting documentation was prepared.

Holland Avenue Watermain Replacement
Ottawa, Ontario

Geotechnical, hydrogeological and environmental subsurface investigations in support of design and tender of watermain replacement. Mr. Henderson undertook the hydrogeological components of the project, completed a Permit to Take Water application for the City of Ottawa, and assisted in developing construction specifications for soil and groundwater management.

Jockvale Road Jock River Bridge Replacement
Ottawa, Ontario

Undertook the hydrogeological components associated with the detailed design of the Jock River bridge replacement and the widening and reconstruction of Jockvale Road and associated subsurface utilities in Barrhaven. Golder obtained a Category 3 Permit to Take Water (PTTW) for water taking from the excavation for the Jockvale roadway/sewer service trenches, the bridge caissons and the North and South shafts for the construction of the horizontal utility bore below the Jock River. Analytical and numerical modelling was carried out to evaluate rates of water taking and impacts to the sensitive clay deposit and two dozen private water supply wells located within 500 metres of the site. Golder developed a monitoring program to support the water taking activities.

Education

M.Sc. Geology, University of Windsor, Windsor, Ontario, 1988

B.Sc. Geology, Honours, University of Windsor, Windsor, Ontario, 1986

Certifications

Registered Professional Geoscientist, 2002

Languages

English – Fluent

WSP Canada Inc. – Ottawa, Ontario

Employment History

Career Summary

Principal/Senior Hydrogeologist (1997 to Present)

Mr. Kris A. Marentette, M.Sc., P.Geo., is a Principal and Senior Hydrogeologist in the Ottawa office of WSP Canada Inc. (previously Golder Associates), and has 20 years of broad experience in the fields of water supply development, physical hydrogeological characterization studies, regional scale groundwater studies, waste management, contaminated sites assessment /remediation, aggregate resource evaluations and the licensing and permitting of quarry development and expansion projects. Kris is responsible for business development, project management, and senior technical review of hydrogeology, quarry and sand and gravel pit development and expansion, golf course irrigation, site assessment and remediation projects, and waste facility siting, design, operation and environmental compliance monitoring assignments from the Ottawa office.

From 1997 to 2001, Mr. Marentette was Project Manager for Golder Associates' component of one of the largest Environmental Site Assessment (ESA) contracts in Canada which involved the assessment of over 780 sites which were being transferred from Transport Canada to NAV CANADA. Golder Associates completed Phase I ESA of approximately 400 sites of which about 130 sites required Phase II ESA activities. The sites ranged from small antennas towers to large, complex international airports. Project involved considerable logistic planning to mobilize personnel across the country, familiarity with federal and provincial soil and groundwater remediation criteria, development of site-specific remediation options (including permafrost sites), and ongoing interaction with consultant team and Transport Canada/NAV CANADA.

Kris has also been involved as principal consultant or senior reviewer for over 100 Phase I ESAs and over 50 Phase II ESAs completed by the Ottawa office. These projects included industrial, commercial, and residential properties ranging from former coal gasification plants to microcircuit manufacturers. Projects have included an evaluation of permitting requirements related to waste water discharges and air emissions as well as designated substances surveys. Kris has also conducted subsurface investigations at numerous bulk storage, fuel dispensing and pipeline sites; development of groundwater and soil vapour monitoring programs; design and permitting of remedial measures including product recovery and excavation of contaminated soil; supervision and verification of site remediation.

Kris has provided environmental consultation services to many wood product manufacturers in Renfrew County and Lanark County in the context of assessing environmental impacts of wood waste storage and lumber yard and sawmill operations on the natural environment. While working for the wood product manufacturers, Kris established a consistent approach to site investigations and set a focused list of leachate indicator parameters for groundwater and surface water assessments which has met with Ontario Ministry of Environment (MOE) approval.

Kris has been the Golder Associates Project Manager on a number of Ministry of Natural Resources quarry and pit licensing projects for both new operations and expansions to existing operations and has extensive experience in managing these complex, multi-disciplinary projects. Participated in comprehensive aggregate resource evaluations of Paleozoic sedimentary sequences (limestone) and Precambrian marble deposits at quarries in eastern Ottawa for the purpose of developing preferred site development plans to maximize the production of high quality aggregate products. The aggregate resource evaluations have typically included borehole coring, geological core logging, geophysical evaluations and comprehensive laboratory testing programs. Participated in other quarry-related projects associated with the Ministry of Environment Permit to Take Water Program and the issuance of Certificates of Approval (Industrial Sewage Works) under Section 53 of the Ontario Water Resources Act as well as studies undertaken for the purpose of complying with requirements under the Aggregate Resources Act. In the case of the Permit to Take Water approvals and industrial sewage works applications under Sections 34 and 53 of the Ontario Water Resources Act, Kris has consulted with, and interacted extensively, with MOE personnel in both the local District and Regional offices and with key personnel within the Environmental Assessment and Approvals Branch of the MOE in Toronto. Kris was the Project Manager assigned to assist the City of Ottawa in a comprehensive project focused on assisting City staff in understanding the intricate details of the MOE's Permit to Take Water Program. Kris is also well known to the local conservation authorities (Rideau Valley Conservation Authority, Mississippi Valley Conservation Authority and South Nation Conservation) as a result of involvement in water supply and quarry-related projects in the Ottawa area and has interacted with the Ontario Stone, Sand & Gravel Association on various issues related to the aggregate industry (e.g., addressing the MOE concern associated with the potential presence of dinitrotoluene in quarry discharge water, source water protection, etc.). Kris has appeared as an expert witness before the Ontario Municipal Board on quarry-related applications.

Golder Associates Ltd. – Ottawa, Ontario
Hydrogeologist/Senior Hydrogeologist (1988 to 1997)

Responsible for business development and the initiation, implementation and direction of hydrogeological investigations from the Ottawa office. Projects have included test well drilling programs for private services developments; subsurface investigations as related to the installation of subsurface sewage disposal systems; communal water supply investigations; and, regional hydrogeological studies to assist in establishing planning policies for future private services developments and to develop standards for water well construction.

Project manager for numerous hydrogeological studies of existing/proposed landfill sites including the assessment of impacts on water resources and developing and implementing monitoring programs and contingency and remedial action plans. Participated in hydrogeological aspects of waste management studies, preparation and submission of documentation to obtain Emergency Certificates of Approval and Site Interim Expansions of landfill sites under both the Environmental Assessment Act and Environmental Protection Act. Projects have included preparation of landfill site development and operations plans including evaluations of landfill final cover design options. Expert testimony at hearings before the Environmental Assessment Board.

Also responsible for investigation, design and implementation of soil and groundwater remediation programs at hydrocarbons, metals, solvents, and PAH contaminated sites including the risk assessment approach to site management. Projects have included third party peer review of site remediation programs.

Conducted hydrogeological assessments of quarry developments/expansions and pre-acquisition environmental site audits.

PROJECT EXPERIENCE – WATER RESOURCES MANAGEMENT

Village of Winchester Water Supply Project
Ontario, Canada

Project Hydrogeologist for the Village of Winchester Water Supply Expansion Project. This project included the preliminary evaluation of potential target aquifers followed by a comprehensive test well investigation and aquifer characterization program. Participated in the development of a comprehensive Water Resources Protection Strategy.

Rural Subdivision Development
Ontario, Canada

Supervised test well drilling programs for numerous residential, industrial and commercial private services subdivision developments including evaluation and selection of target aquifers, development of site specific well construction requirements, analysis and interpretation of physical hydrogeological data and groundwater chemical data and preparation and submission of detailed hydrogeological reports. Responsible for conducting many subsurface investigations as related to the installation of small and large subsurface septic sewage disposal systems for private services developments including projects subject to the Ontario Ministry of the Environment Reasonable Use Guideline B-7.

Communal / Commercial Water Supply Evaluation
Ontario, Canada

Project Manager for communal water supply investigations for non-profit housing developments in Elgin and Clayton, Ontario and time share condominium development in Cobden, Ontario; responsible for groundwater resource evaluation with respect to project specific water supply requirements. Conducted hydrogeological assessment of the Evergreen Spring Water Site in the Township of Sebastopol, Ontario for Cott Beverages Ltd.; assessment included characterization of geological setting, quantity, quality and age of spring water and evaluation of potential sources of contamination in the vicinity of the spring.

Township of Kingston Planning Study
Ontario

Conducted hydrogeological study and general terrain analysis of rural Kingston Township to characterize the present status of the Township's groundwater resources to assist in establishing planning policies for locating new developments on private services and to provide standards for water well construction within the Municipality.

Land Development Evaluation
Ontario

Conducted a preliminary hydrogeological and terrain evaluation of a 400 acre parcel of land south of the Ottawa International Airport with respect to the feasibility of developing the site as a rural residential subdivision on private services.

PROJECT EXPERIENCE – WASTE MANAGEMENT

Township of Clarence Landfill Buchanan Landfill
Bourget, Ontario/Chalk River, Ontario, Canada

Preparation and submission of documentation to the Ontario Ministry of the Environment to obtain an exemption from the Environmental Assessment Act and approval under the Environmental Protection Act for interim expansions of the Township of Clarence Landfill and Buchanan Landfill. Project involved detailed hydrogeological and geophysical site characterization studies, development of mitigation measures to address existing off-site impacts on groundwater and surface water resources and participation in the preparation of the site development and operations reports, trigger mechanisms, and contingency measures, site closure plans, public participation/presentations, document preparation and representation to regulatory agencies. Expert testimony at the Environmental Assessment Board hearings resulting in successful applications.

Dodge Landfill
Espanola, Ontario, Canada

Project Hydrogeologist responsible for hydrogeological studies of existing landfill in support of an application to the Ontario Ministry of Environment for a long-term site expansion.

Lanark County Waste Management Master Plan City/Township of Kingston Waste Management Master Plan
Ontario, Canada

Hydrogeological consultant on the master plan study teams involving technical aspects and document preparation, Environmental Assessment process, EA level field investigations and evaluation of site-specific engineered containment system requirements at the preferred sites and presentations to the steering committees and the public.

Armbro Mine Landfill Development
Marmora, Ontario, Canada

Project Hydrogeologist as part of the Metro Toronto area landfill site search, for hydrogeological assessment, conceptual design and technical feasibility evaluation of constructing a municipal landfill in the 250 metre deep former open pit iron ore mine.

Township of Clarence Waste Management Planning Study
Ontario, Canada

As part of a multi-disciplinary team, responsible for the hydrogeological aspects of a long term waste management planning study under the Environmental Assessment Act and Environmental Protection Act, including development and evaluation of alternative waste management components and systems, a systematic landfill site selection process and interaction with the Public Liaison Committee, municipal council and the public.

Municipal Waste Management Planning Studies
Ontario, Canada

Participated in hydrogeological aspects of waste management planning studies to identify potentially suitable areas for landfill development to satisfy the long term waste disposal requirements for the Township of Grattan, Township of Pittsburgh and the Townships of Palmerston, North and South Canonto.

Various Landfill Sites
Eastern and Northern Ontario, Canada

Responsible for undertaking and/or managing hydrogeological and waste management studies at in excess of 50 municipal landfill sites. The typical objectives of these studies have been to define the physical and contaminant hydrogeology including use of geophysical methods; undertake site-specific impact assessments on groundwater and surface water resources and gas migration; complete site performance evaluations in terms of current regulatory requirements; develop site-specific remedial action plans; design and implement annual hydrogeological monitoring programs; assist in the preparation of site development, operations and contingency and remedial action plans; and, to assemble the necessary documentation required to apply to the Ontario Ministry of Environment for Certificate of Approval revisions to permit continued disposal. Conducted evaluations of final cover design options using the Hydrologic Evaluation of Landfill Performance (HELP) computer model for the purpose of selecting the most appropriate final cover design for numerous landfills based on hydrogeological considerations, economics and availability of construction materials in the vicinity of the sites.

PROJECT EXPERIENCE – CONTAMINATED SITES INVESTIGATION AND REMEDIATION

Nation-Wide Environmental Site Assessments
Canada

Project Manager for Golder Associates' component of one of the largest environmental site assessment contracts in Canada which involved the assessment of over 780 sites which were being transferred from Transport Canada to NAV CANADA. Golder Associates completed Phase I ESAs of approximately 400 sites of which about 130 sites required Phase II ESA activities. The sites ranged from small antenna towers to large, complex international airports. Project involved considerable logistic planning to mobilize personnel across the country, familiarity with federal and provincial soil and groundwater remediation criteria, development of site-specific remediation options (including permafrost sites), and ongoing interaction with consultant team and Transport Canada/NAV CANADA.

Assessment of Rockcliffe Airbase Lands
Ottawa, Ontario, Canada

Project Manager to participate as part of a multi-disciplinary team assembled to conduct an existing conditions assessment related to potential redevelopment of the Rockcliffe site for residential land use. Completed a review of subsurface environmental investigation reports in terms of identifying potential development constraints associated with soil and groundwater conditions at the site. Presented recommended actions for evaluating issues of potential environmental concern including development of cost estimates to address these concerns.

Environmental Site Assessments
Eastern Ontario, Canada

Senior Reviewer for over 100 Phase I ESAs and over 50 Phase II ESAs completed by the Ottawa office. These projects included industrial, commercial and residential properties ranging from former coal gasification plants to microcircuit manufacturers. Projects have included an evaluation of permitting requirements related to waste-water discharges and air emissions as well as designated substances surveys.

Assessment of Diesel Fuel Release
Smiths Falls, Ontario, Canada

Project Manager for an environmental impact study which focused on a diesel fuel leak at a large industrial site and included the delineation of the areal extent of contamination, assessment with respect to current soil and groundwater remediation criteria and participation in the development and implementation of a site specific monitoring program and evaluation of remedial options.

Petroleum Hydrocarbon Releases
Eastern Ontario, Canada

Conducted subsurface investigations at numerous bulk storage, fuel dispensing and pipeline sites; development of groundwater and soil vapour monitoring programs; design and permitting of remedial measures including product recovery and excavation of contaminated soil; supervision and verification of site remediation.

Investigation of Salt Storage Facilities
Eastern Ontario, Canada

Project Manager for hydrogeological investigation relating to an assessment of poor groundwater quality adjacent to a salt dome near Almonte, Ontario. Project involved an evaluation of existing water quality data, development and implementation of a replacement well drilling program and long term groundwater quality monitoring program; project involved extensive consultation with municipal officials, affected homeowners and representatives from the Ontario Ministry of the Environment. Responsible for hydrogeological impact assessments relating to salt storage facilities near Eganville and Deep River, Ontario. Investigations included reconnaissance level geophysical surveys to characterize general dimension of the contaminant plumes followed by confirmation drilling, monitoring well installation and groundwater sampling programs to delineate the nature and extent of the contaminant plumes originating from the salt storage facilities and to differentiate between groundwater impacts from the salt storage facilities and that from nearby landfill sites.

PROJECT EXPERIENCE – AGGREGATE INDUSTRY

Stittsville Quarry
Township of Goulbourn (Ottawa), Ontario, Canada

Project Manager and Project Hydrogeologist retained by R.W. Tomlinson Limited to provide geoscience and engineering services and to co-ordinate a multi-disciplinary study team in the preparation of the supporting documents, for a submission to the Ontario Ministry of Natural Resources, in support of an application for a Category 2, Class “A” license for a 44 million tonne quarry which intends to extract limestone from below the established groundwater table. Assignment also included preparation and submission of applications to the Ontario Ministry of Environment for approval under Section 34 (Permit to Take Water) and Section 53 (Industrial Sewage Works) of the Ontario Water Resources Act. All required approvals were obtained and the quarry became operational in September 2002. Kris continues to be involved as Project Director on all environmental compliance monitoring requirements associated with the Ministry of Natural Resources aggregate license and the Ministry of Environment approvals under Section 34 and 53 on the Ontario Water Resources Act.

Rideau Road Quarries
City of Gloucester (Ottawa), Ontario, Canada

In 2003, Golder Associates was retained by R.W. Tomlinson Limited to provide geoscience and engineering services and to co-ordinate a multi-disciplinary study team in the preparation of the supporting documents, for a submission to the Ontario Ministry of Natural Resources, in support of an application for a Category 2, Class “A” license for a 40 hectare parcel of land adjacent to Tomlinson’s existing quarry operations. The quarry was designed to extract limestone from below the established groundwater table for the production of high quality aggregate suitable for all types of asphalt pavements. Kris was Project Director and Project Hydrogeologist for this assignment and Golder Associates’ primary responsibilities included preparation of Level 1 and Level 2 Hydrogeological studies and Natural Environment evaluations of the property. Of particular significant for this project was the innovative approach develop by Golder Associates (in consultation with the Ministry of Natural Resources) for the purpose of addressing the presence of the American ginseng plant species and butternut trees on the property. The aggregate license was issued by the Ministry of Natural Resources in 2006.

Tatlock Quarry
Township of Lanark Highlands, Ontario, Canada

Project Director and Project Hydrogeologist retained in 2002 by Omya Canada Inc. to conduct Level 1 and Level 2 hydrogeological studies in support of an application to the Ministry of Natural Resources for a Category 2, Class “A” license for the extraction of calcitic marble (crystalline limestone) at the Omya Tatlock Quarry located northwest of Perth, Ontario. Golder Associates was also responsible for the preparation of an application for an industrial sewage works approval under Section 53 of the Ontario Water Resources Act. The quarry license application was issued by the Ministry of Natural Resources in April 2006 and the industrial sewage works approval was issued by the Ministry of Environment in March 2006. Kris continues to advise Omya Canada Inc. on matters related to environmental compliance monitoring and other issues pertaining to Ministry of Natural Resources aggregate license and the Ministry of Environment approvals under Section 34 and 53 on the Ontario Water Resources Act.

Dunvegan Quarry
Township of North Glengarry, Ontario, Canada

Project Hydrogeologist retained by the Township of North Glengarry to conducted a peer review of the hydrogeological aspects of the Cornwall Gravel Company Ltd. Dunvegan Quarry license application. The peer review focused on developing an opinion as to whether the Hydrogeological Assessment Report addressed the various components specified as part of a Hydrogeological Level 1 study and Hydrogeological Level 2 study in the context of a Category 2, Class “A” Quarry Below Water.

Klock Quarry
Aylmer, Quebec, Canada

Golder Associates was retained by Lafarge Canada Inc. to conduct the hydrogeological and natural environment assessments associated with obtaining approval for the extraction of limestone from a property situated adjacent to the existing Klock Quarry. Kris is responsible for overall project co-ordination and direction of a multi-disciplinary team.

Brechin Quarry
City of Kawartha Lakes,
Ontario, Canada

Project Manager and Project Hydrogeologist retained by R.W. Tomlinson Limited to complete the necessary hydrogeological, hydrological and ecological studies to support an application under the Aggregate Resources Act. The proposed Brechin Quarry is located in the former Township of Carden within the City of Kawartha Lakes, Ontario. The property covers an area of approximately 206 hectares and involves an aggregate resource of 70 million tonnes with an expected operational timeframe of over 70 years. The assignment involves a comprehensive assessment of the potential effects of quarry development on private water supply wells and an adjacent Provincially Significant Wetland and other natural environment (biological) features as well as consideration of the potential cumulative impacts associated with multiple quarry developments in the area of the proposed Tomlinson Brechin Quarry. This project involves extensive municipal and public consultation as well as interaction with representatives of the Ontario Ministry of Natural Resources and Ontario Ministry of Environment. The aggregate license was issued by the Ministry of Natural Resources in 2009.

TRAINING

Ministry of Environment Approvals Reform and Air Emission Summary and Dispersion Modelling Report Workshop
Ministry of the Environment, 1998

Site Specific Risk Assessment Seminar
Ottawa, 1998

Contaminated and Hazardous Waste Site Management
1997

Occupational Health and Safety Course
1989, 1995

Groundwater Protection in Ontario Conference
Toronto, 1991

Short Course in Dense, Immiscible Phase Liquid Contaminants (DNAPLs) in Porous and Fractured Media
Waterloo Centre for Groundwater Research, 1990

PROFESSIONAL AFFILIATIONS

Associate Member, Ontario Stone Sand and Gravel Association (OSSGA)

Member, Association of Groundwater Scientists and Engineers (N.G.W.A.)

Member, International Association of Hydrogeologists

Member, Ottawa Geotechnical Group, The Canadian Geotechnical Society

Member, Ontario Water Well Association

PROJECT EXPERIENCE – HYDROLOGY/HYDRAULICS

Moira River Flood Mitigation Alternatives Assessment
Foxboro, Ontario

Reviewed and updated floodplain mapping for the Foxboro area, identified several alternative flood mitigation alternatives ranging from floodways and hydraulic controls to lot level flood proofing. Alternatives were assessed and compared based on triple bottom line scores. Triple bottom line analysis considered detailed economic analysis using regions specific flood damage curves developed by Golder's project partner.

Atlantic Gold Hydraulic and Geomorphic Channel Assessments
Central Nova Scotia

Senior reviewer and technical advisor for hydraulic and fluvial geomorphic characterization and baseline studies for a mine development northeast of Halifax, Nova Scotia. Tributaries of 15 Mile Stream were inventoried and used as analogues to design channel diversions around proposed open pit mine excavations.

Low Impact Development Treatment Train Tool (LID-TTT)
GTA, Ontario

Team lead and hydrology advisor for development of a software tool for modelling and evaluating water balance and nutrient budgets for development sites. Worked with three large conservation authorities in the GTA, through several phases implementation of the LID-TTT, to progressively add model capability for assessing the benefits of various LIDs to support planning and early stage engineering of urban development sites.

Garson Mine Water Management and Inundation Study
Sudbury, Ontario

Senior review and technical advice for flood inundation study downstream of the Vale Garson Mine near Sudbury Ontario. The study included an options assessment, development of improved water management operating practices and conceptual design of reservoir retrofits.

International Falls Dam Rule Curve Cultural Study
Rainy River, Ontario

The effects of a recently updated operating rule curve at the International Falls Dam on water levels in Rainy River and the potential for changed water levels to affect locations of cultural significance are being investigated on behalf of the International Joint Commission on the Great Lakes.

Credit River Floodline Mapping
Mississauga, Ontario

Golder completed the most recent comprehensive update of the flood risk investigation and floodline mapping for the Credit River between Old Derry Road and Lake Ontario. This reach alternately flows through an entrenched bedrock valley and remnant beach plains adjacent to Lake Ontario in the most urbanised part of Mississauga. Mr. MacKenzie served as project staff on this project.

Water Quality Forecasting and Infrastructure
Annapolis Basin, Nova Scotia

Golder was part of a project team working with the Atlantic Innovation Fund / Applied Geomatics Research Group to develop a complex water quality forecasting tool for use by the shell fishing industry in the Digby Gut area. Real time weather forecasts were used to drive real time hydrology and database scenario models of runoff, water quality (bacteriological) and Bay of Fundy tidal fluctuations and their effects on contaminant movement in the Digby Gut. Hydrodynamic modelling was used to estimate contaminant movement and exposure of shell fishing areas to contamination. This information was packaged for use by shell fishers in order to minimize harvests of contaminated shellfish, thereby protecting the resource and minimizing post-harvest dupurification costs. Mr. MacKenzie was the hydrology and hydrometry technical lead for Golder on this project.

Brookfield Homes – Channel Rehabilitation
Brantford, Ontario

Assisted a channel rehabilitation/stabilization assessment and associated 'field fit' design for Brookfield at a tributary of Fairchild Creek to address debris removal and channel instability - responsible for field investigations and construction supervision/inspections.

River Diversion Design
Northern Ontario

Technical advisor for baseline channel hydraulics and fluvial geomorphic studies in support of a major mine development project in Northern Ontario to characterize baseline conditions at several stream channels, as well as to advance a conceptual design for a proposed diversion channel.

Borer's Creek Modelling and Restoration Design
Dundas, Ontario

HEC-RAS modelling and assessment of a failing reach of Borer's Creek that threatened to expose a high-pressure natural gas pipeline. Design of remedial measures for failing banks and restoration of the affected reach. Coordinated regulatory approvals. The project was successfully implemented before the spring freshet and significantly reduced the risk of damage to the pipeline.

Voisey's Bay Nickel Mine
Voisey's Bay, Labrador

A theoretical tailings dam breach was investigated using DAMBREAK to quantify potential impacts on an environmentally sensitive creek. Flood passage downstream of the breach was complicated by several small ponds and alternating sub and supercritical river reaches. Proposed mining operations at the Voisey's Bay nickel deposit require extensive management of surface waters. Five small dams were considered to safely convey clean water around the proposed tailings facility and to contain and treat tailings water. Modelling and design of the reservoirs and outflow structures was completed using GAWSER.

Plains Midstream – Dechlorination and Approval
Sarnia, Ontario

Technical advisor for the design and permitting of a dechlorination system for the Plains Midstream fractionation plant in Sarnia, Ontario. The system is being designed to reduce the free chlorine concentration in the wastewater discharge. Golder is also preparing the ECA (Industrial Sewage Works) amendment package for the facility, to include additional Limited Operational Flexibility (LOF) for the facility for the additional of the dechlorination system, and future sewage work modifications. LOF for the facility will grant future modifications to the works through the appropriate MOE reporting progress, if a professional engineer can demonstrate the modifications will not alter the process discharge quantity and quality limits established for the facility.

Channel Restoration Design
Algonquin Park, Ontario

Technical advisor for the hydraulic design of a stream re-alignment with associated grade controls at an historic train derailment site. Contaminated materials will be removed from the stream bed and banks and adjacent railway embankment. Removal of the contaminated materials will result in a net loss of stream substrate and a change to the fluvial geomorphology of the reach. Grade and stream bank controls were designed to minimize the risks of mobilizing residual contaminants and of significant channel migration.

Omya – Stormwater Management Design and Approvals
Perth, Ontario

A review of existing stormwater management infrastructure was completed for an industrial mineral processing site near Perth Ontario. As a result of incremental development of the site, parts of the stormwater management infrastructure were found to be inadequate. Additional stormwater management works were conceptualized and submitted to MOE for approval. Following approval, Golder provided liaison with the local Conservation Authority, completed basic design drawings suitable for design-build and applied for permitting under the Conservation Authorities Act.

OSSGA Carden Plain Cumulative Impact Assessment
Carden, Ontario

Due to the increased level of aggregate extraction activity in the Carden Plain area, the Ontario Ministry of the Environment (MOE) requested a multidisciplinary study and impact assessment to evaluate the potential cumulative impacts of quarry dewatering at multiple sites on groundwater, surface water and ecological receptors. Golder was retained by the Ontario Stone, Sand & Gravel Association to complete the required study. The project included extensive interaction with the MOE and the Ministry of Natural Resources (MNR). The objectives of the study were to screen out areas where cumulative impacts are unlikely, identify areas where cumulative impacts are likely, and to provide a preliminary assessment of the potential magnitude of predicted cumulative impacts. For the purpose of this study, a cumulative impact was defined as the additive effect of multiple quarry dewatering operations on groundwater, surface water and/or natural environment features. Golder was responsible for all aspects of this project including the development of the final field programs in consultation with personnel from the MOE. Mr. MacKenzie was the surface water lead for the project and participated in the public consultation aspects of the project.

Technical Reviewer Contaminated Site Channel Design
Mississauga, Ontario

Golder was retained to review an options analysis and remedial channel design for a PCB contaminated channel in Mississauga. The remedial design included removal of the most contaminated material and design of a hardened channel lining to secure residual contaminants in-situ. Mr. MacKenzie reviewed the hydraulic channel analysis and design and provided a technical review report for consideration by the municipality and the channel designer.

Contaminated Site Channel Stability Analysis
Welland, Ontario

Golder recently completed Phase IV of an assessment of 12 sites in the Niagara River Area of Concern that were identified in the RAP Stage 1 Update as requiring further assessment. The Phase IV study is a detailed assessment of remedial alternatives for the site including passive and intervention options. In support of the passive treatment options, Golder completed a detailed investigation of the complicated stream and wetland hydraulics of one of the sites on Lyon's Creek. In the intervening years since the historic contamination, the site had developed into a wetland, which provided habitat for threatened plant and animal species. The hydraulic conditions were evaluated using one- and two-dimensional hydraulic models (HEC-RAS and RIVER-2D) to identify areas that are at risk for re-suspension of contaminated sediments and areas that are likely to accumulate new un-contaminated sediment with time. The results supported the passive treatment alternative. Mr. MacKenzie led the hydraulic investigation component of the Lyon's Creek study.

Confidential Mine Site Closure
Eastern Ontario

Technical advisor for comprehensive surface water investigations in support of a risk assessment at two former uranium mines near Bancroft, Ontario. The studies included meteorology and flow monitoring, water column profiling with a particular focus on lake stratification and turnover, and water quality sampling.

Confidential Mine Site Closure
Northern Ontario

Technical advisor for surface water investigations, including streamflow studies, lake column profiling and water quality sampling, at a former nickel mine near Kenora, Ontario.

OPG Atikokan – Environmental Compliance Approval
Northern Ontario

Technical advisor for the Environmental Compliance Approval ('ECA') Sewage (including Stormwater) amendment application for the Atikokan GS Biomass Conversion project. The study included a review of existing sewage works and associated ECA and MISA conditions. Implications from the proposed site changes to the sewage works, consisting of process streams (Furnace Ash Treatment Plant, Condenser Cooling Water), sanitary sewage system/lagoons and the coal pile runoff pond, along with their associated ECA conditions.

Confidential Manufacturing Client
Norval, Ontario

Baseline characterisation and impact assessment modelling of a proposed shale quarry in order to quantify and where necessary mitigate potential flow, water quality and thermal effects of the quarry on nearby watercourse and wetlands. Included conceptual design of mitigation measures and preparation of application materials for re-zoning and license under the Ontario Aggregate Resources Act.

Big Bay Point Water Balance
Barrie, Ontario

Monthly and annual water budgets were prepared using the Thornthwaite Water Budget method. This water budget assessment was performed to determine the rate of marina water pumping required from the proposed development area at Big Bay Point, to the golf course and Environmental Protection Area in support of detailed design of stormwater management facilities to meet post-development peak flow targets. Mr. MacKenzie provided technical advice and senior review for this project.

Baseline Hydrology Study for Proposed Mine
Ring of Fire, Northern Ontario

Technical advisor for baseline hydrology studies and effects evaluations in support of a major mine development project in Northern Ontario. Assessments were prepared as part of a multi-disciplinary Environmental Impact Statement (EIS) and Environmental Assessment (EA) under the Canadian Environmental Assessment Act (CEAA).

Quarry License Expansion
Flamborough, Ontario

A level II hydrogeology study was completed in support of a rock quarry license expansion application. The surface water component of the study included establishment of eight continuous stream flow gauges and associated baseflow separation analysis. The baseflow separations were used to estimate mean annual recharge to groundwater. This information was provided to Golder hydrogeologists for use in estimating boundary conditions for the FEFLOW groundwater model. In addition, monthly and annual surface water balances were modelled using the Thornthwaite Water Budget method coupled to a GIS procedure. The fraction of surplus water that infiltrates was estimated using GIS and the method outlined in MOE 2003. The infiltration estimates were initially assumed to equal recharge. The resulting modelled groundwater levels were reviewed to identify areas of upward gradient or minimal downward gradient. This information was used in subsequent iterations to adjust the recharge estimates.

Quarry License Expansion
Northern Ontario

A level II hydrogeology study is underway in support of a rock quarry license expansion application. Surface water features in the area are characterized by shallow intermittent streams flowing on top of bedrock above a small escarpment running through the site. Below the escarpment, there is a line of small watercourses connecting a series of small lakes. The surface water study includes monitoring of several of the small intermittent watercourses and the outlet of two of the small lakes. Surface hydrological. The results of this analysis will form input to the groundwater modelling discipline. Recharge will initially be assumed to equal infiltration in the groundwater model; however, we expect this will cause mounding in parts of the model. Further iterations will be used to calibrate the recharge estimates subject to a mass balance at the surface.

Aggregate Site Water Use Study
Southern Ontario

Participated in a “typical water use” study for the aggregate industry. The study was initiated by the Aggregate Producers Association of Ontario (now the Ontario Stone Sand and Gravel Association) in preparation for planned changes, by the MOE, to the Permit to Take Water application process. Changes to the process were anticipated to include charges for water taking or use. The MOE was simultaneously working on new Source Water Protection legislation. As a result, the APAO felt it would be prudent to quantify actual water use versus maximum permitted water taking rate and to illustrate typical water use at aggregate sites.

Aggregate Site Permitting and Approvals
Southern Ontario

Application packages including MNRF and MECP applications and supporting studies and reports have been prepared for numerous aggregate sites across Southern Ontario. Applications have been completed for aggregate pit and quarry licenses under the Aggregate Resources Act, Permits to Take Water (PTTW) to allow quarry dewatering and for Environmental Compliance Approvals (ECA) under Section 53 of the Ontario Water Resources Act to allow offsite discharge of quarry and storm water.

Simcoe County Groundwater Studies
Simcoe County, Ontario

A base flow survey was conducted to quantify groundwater discharge in a series of watershed in Simcoe County. The project was conducted in two phases, one for North Simcoe and one for South Simcoe. Water budget and average annual infiltration calculations were completed in support of groundwater modelling. Surface-groundwater interactions were estimated throughout the region to provide a water balance.

Hydrology Studies for Quarry Developments
Ottawa Region, Ontario

A series of water resources investigations were completed for aggregate producing clients in the Ottawa area. The studies were completed in support of Certificate of Approval applications made under Section 53 of the Water Resources Act. Each study included a water balance analysis for the quarry and an estimate of future quarry discharge rates. These data were used to estimate the effects of quarry development on downstream water resources.

Water Supply Studies
Sudbury, Ontario

Two municipal water supplies were investigated as Groundwater Under Direct Influence of surface water (GUDI). Surficial water resources were investigated, and a water balance was prepared in support of groundwater modelling studies.

Hydrological Effects Assessment
Hagersville, Ontario

A long-term field monitoring programme was designed and implemented to track changes in flow regime resulting from closure of an underground Gypsum mine. Part of the mine was closed and allowed to flood. Three flow monitoring stations were established in Boston Creek, which flows over the mine. The stations were selected to represent background conditions upstream of the mines influence, conditions above the mine and downstream of the mine influence. Data loggers and transducers were installed to continuously (hourly) record water levels and flows in the creek.

GORO Nickel Mine
New Caledonia

The GORO Nickel mine is located in an area of extreme precipitation. Hydrological and preliminary erosion assessments were completed in support of mine development planning and design. These data were used, by the multi-disciplinary project team, to design tailing basin capacities, diversion ditches and dams.

Round Lake Water Level Control Study
Engelhart, Ontario

Flow exiting Round Lake flows down several kilometres of a very mild sloped reach of the Blanche River before cascading down a set of rapids at a rock outcrop. The rock outcrop was historically blasted to facilitate log driving practices. This modification has caused large fluctuations in water levels in Round Lake and the Blanche River. A hydrological and hydraulic study of the river and lake were completed and a fish-friendly rock-fill weir was designed to stabilise water levels.

Bruce Nuclear Generating Station
Bruce County, Ontario

Participated in background water quality assessments in the surrounding environment. This work included water quality sampling in Baie du D'Or and Lake Huron. The data were used to assess potential effects of the generating station on the quality of surrounding water resources.

Pickering-A Nuclear Generating Station
Pickering, Ontario

A multi-disciplinary environmental assessment was completed for the re-start of four CANDU reactors at the Pickering A generating station. A comprehensive review of existing water quantity and quality data was completed. Potential effects, of operating the station, on surrounding water resources were identified and evaluated.

Falconbridge Smelter Area Closure
Falconbridge, Ontario

Performing a detailed analysis of water quantity and quality to address potential long-term impacts of the closure on the watersheds of Coniston and Emery Creeks. A daily water budget and reservoir routing model was implemented on a spreadsheet to investigate the efficiency of a variety of different closure scenarios. Also involved in hydrometry, automated water level monitoring, water quality sampling, hydrologic modelling.

Fire Water Intake
Blind River, Ontario

Alternative designs for a fire water intake structure modification were assessed to minimise maintenance and sediment deposition and increase safety. Two-dimensional finite element flow modelling of the intake environment and one dimensional, coupled, unsteady, sediment and hydraulic modelling of the river reach was completed. Modelling results indicated that relocating the intake structure would reduce the risk of failure resulting from sediment accumulation.

Asacha Gold Mine
Russia

The Asacha gold mine lies close to the divide between a pristine watershed and a partially developed watershed. Hydrologically modelled areas potentially affected by mining operations to aid in developing a safe and detailed water management plan.

PROJECT EXPERIENCE – LINEAR INFRASTRUCTURE

Trans Canada Pipelines Vaughan Mainline Expansion
Vaughan, Ontario

Senior technical advisor for baseline hydrology studies, effects assessments and permitting, in support of the environmental and socio-economic assessment (ESA) under the National Energy Board (NEB) filing process and construction planning and design for a ~12 km pipeline expansion in the Greater Toronto Area.

Trans Canada Pipelines Eastern Mainline Expansion
Vaughan, Ontario

Senior technical advisor for baseline hydrology studies, effects assessments and permitting in support of the environmental and socio-economic assessment (ESA) under the National Energy Board (NEB) filing for the Eastern Mainline Expansion in Ontario (~260 km long gas pipeline through central and eastern Ontario).

Trans Canada Pipelines Parkway West Connection
Vaughan, Ontario

Senior technical advisor for baseline hydrology studies, effects assessments and permitting, in support of the environmental and socio-economic assessment (ESA) under the National Energy Board (NEB) filing process for a local service connection in the Greater Toronto Area.

Trans Canada Pipelines Kings North Connection
Ontario

Surface water discipline lead for the Kings North Connection Project, including baseline hydrology studies and effects assessments in support of the environmental and socio-economic assessment (ESA) under the National Energy Board (NEB) process. Scour assessments, sag-bend setback recommendations and permitting were also completed to support construction activities.

Pipeline Corridor Investigations
Timmins, Ontario

A pipeline was proposed to slurry tailing from the Kidd Metallurgical Site to the Kidd Mine, approximately 35 km away. The tailings are to be used for paste back-filling of depleted areas of the underground mine. An environmental review of water resources along the proposed pipeline corridor was completed. Larger watercourse crossings were mapped, and directional drilling was proposed to mitigate environmental effects.

Trans Canada Pipelines Borer’s Creek Modelling and Restoration Design
Dundas, Ontario

HEC-RAS modelling and assessment of a failing reach of Borer’s Creek that threatened to expose a high pressure natural gas pipeline. Design of remedial measures for failing banks and restoration of the affected reach. Coordinated regulatory approvals. The project was successfully implemented before the spring freshet and significantly reduced the risk of damage to the pipeline.

PROJECT EXPERIENCE – CLIMATE CHANGE

Goldcorp Sudbury Integrated Nickel Operations – East End Water Management
Sudbury, Ontario

Senior review and technical advisor for an assessment of potential climate change effects and vulnerabilities on a multi-site water management system including eight reservoirs, flooded underground mine works, an active smelter complex, a water treatment plant and associated dams and infrastructure. A Goldsim model of the water management system was constructed and validated. Ensemble Global Circulation Model (GCM) results, from approximately ninety model runs, were obtained for the 2050 horizon. Monte Carlo simulations were used to simulate daily weather patterns constrained by the GCM results and the same daily weather patterns were used to model a potential future range of water management scenarios using the Goldsim water management model.

Goldcorp Sudbury Integrated Nickel Operations – East End Infrastructure Assessment
Sudbury, Ontario

Evaluated climate change risks to several small flow conveyance structures including culverts, pipes and flow measurement structures. Peak flows from small sub-catchments are typically sensitive to short duration intense precipitation events. A trend analysis and curve fitting exercise was completed on observed maximum annual events, over recent site history, for a range of event durations ranging up to 24 hours. The trend analysis was used to estimate potential changes to Intensity-Duration-Frequency statistics at the 2050 horizon. This information was used to assess the capacity of existing flow conveyance infrastructure in small sub-catchments.

Meteorological Service of Canada – Environment Canada
Ottawa and across Canada

Participated on a national research team studying the effects of climate change on hydrological variables. Contribution to the study was to complete a regionalization study based on measured hydrologic variables from the Reference Hydrometric Basin Network (RHBN) including mean annual flow, lowest annual daily flow and peak annual daily flow. The data series were grouped according to their similarity using a cluster analysis routine. The homogeneous hydrologic regions identified by this method were compared to hydrologic regions identified in previous studies using meteorological and physiographic variables. Cluster analysis results consistently identified three homogeneous regions in the British Columbia mountains as well as several regions in Ontario, the Maritimes and along the St. Lawrence. The study demonstrated a significant lack of RHBN coverage in the northern part of the Prairie Provinces and the North West Territories, such that homogenous regions, if they exist in these areas, could not be identified by cluster analysis.

Infrastructure Ontario (Ontario Realty Corp.) – Infrastructure Climate Risk Assessment
Ontario

Completed the water resources and drainage components of a climate risk assessment on three typical buildings owned by Infrastructure Ontario. Risk was assessed using guidance provided in Engineers Canada's PIEVC protocol. Co-led focus group workshops with building operators and subject matter experts to assess potential future risk.

Iqaluit Water Supply
Nunavut

Senior technical reviewer for a climate risk investigation of the Town of Iqaluit's water supply. A Goldsim model was developed for the lake-based water supply. Various scenarios were investigated to assess the vulnerability of the supply to climate change.

BHP Billiton
Elliot Lake, Ontario

Technical advisor for applying climate change projections to extreme precipitation events used to assess potential climate change implications for tailings storage facilities and water management ponds. This work was completed as a part of the Dam Safety Surveillance and Management program at BHP Billiton's closed Canadian and U.S. sites.

PROJECT EXPERIENCE – SOURCE WATER PROTECTION

Ontario Clean Water Agency
Lake Ontario, Canada

Hydrology and river boundary conditions lead for the Ontario Clean Water Agency (OCWA) Lake Ontario Decision Support System (DSS). OCWA, in partnership with GTA municipalities, is developing a DSS for managing Lake Ontario based drinking water intakes. Golder teamed with DHI to develop a hydrodynamic, thermodynamic and water quality model to integrate into a web-based forecasting platform for Lake Ontario. The system is expected to go live in 2021 to provide municipalities with the advance information to anticipate and mitigate the effects of accidental spills on water supply infrastructure.

Source Water Protection: Midland and Penetanguishene Tier 3
Midland, Ontario

Surface water lead for the Midland and Penetanguishene Tier 3 water budget and water quantity risk level assessment. This study involved implementation of a combined surface and groundwater model using MIKE-SHE. The modelled recharge distribution was applied to a groundwater model developed by Golder using FEFLOW in order to further refine drawdown effects in close proximity to wells and surface water features. The study area included the whole of the Midland Peninsula and areas of provincially significant wetlands in close proximity to municipal wells with GUDI designation. Groundwater and surface water interactions, both recharge and discharge areas were significant in spatial scale and an important part of this project.

Source Water Protection: Peer Reviewer York Region Tier 3
York Region, Ontario

Peer reviewer for the surface water components of the ongoing York Region Tier 3 water budget and water quantity risk level assessment for the area between and surrounding Aurora and Stouffville. The project team is proposing to use GSFLOW to model both the surface and groundwater systems. GSFLOW is an integrated surface and groundwater hydrology model developed by the US Geological Survey, based on MODFLOW and PRMS components. The study area is complex as it includes the southern flank of the Oak Ridges Moraine and straddles the divide between Lake Ontario and Lake Simcoe. Stouffville is in the headwaters of the Rouge River watershed.

Source Water Protection: Peer Reviewer Halton Hills Tier 3
Halton, Ontario

Peer reviewer for the surface water components of the ongoing Halton Region Tier 3 water budget and water quantity risk level assessment for the Georgetown and Acton areas. The project team used MIKE-SHE to model surface and groundwater hydrology and applied the modelled recharge distribution to FEFLOW to provide further discretization around key areas of interest including wells and surface water features. The study area is complex as it includes the Niagara Escarpment, the Acton re-entrant valley and several buried bedrock valleys which are believed to play and important role in delivering groundwater to the area. The study area also straddles the divide between the Grand River and Credit River watersheds.

Source Water Protection: Peer Reviewer Orangeville Tier 3
Orangeville, Ontario

Peer reviewer for the surface water components of the ongoing Orangeville, Mono and Amaranth Pilot Tier 3 water budget and water quantity risk level assessment. The project team is using HSPF and MODFLOW to model surface and groundwater hydrology respectively. The study area is complex as it includes the Niagara Escarpment and the Oak Ridges Moraine. The study area also straddles the divides between the Grand River, Credit River and Nottawasaga River watersheds.

Source Water Protection: Peer Reviewer CTC Tier 1 and Tier 2
Southern Ontario

Peer reviewer for the surface water components of the Tier 1 and Tier 2 water quantity stress assessments for the CTC Source Protection Region, which includes the Credit River (CVC), Toronto Region (TRCA) and Central Lake Ontario (CLOCA) watersheds. Data availability and modelling approaches used by the different conservation authorities and their consultants varied across the CTC region.

Source Water Protection: Lower Speed River (Guelph) Tier 3
Guelph, Ontario

Golder Associates teamed with AquaResource to complete a Tier 3 water budget and water quantity risk level assessment for the Lower Speed River watershed. The study area includes the City of Guelph, part of Cambridge and contributing drainage and recharge areas located north and east of Guelph. An extensive baseflow survey was conducted across the study. Baseflow was measured at thirty-two locations during the spring, summer and autumn of 2008. This information was used to estimate varying groundwater discharge and recharge rates to support definition of boundary conditions for the groundwater model.

Source Water Protection: Nickel District CA Valley East Tier 3
Sudbury, Ontario

Senior technical advisor for the Valley East Tier 2 and Tier 3 water quantity stress assessment. The City of Sudbury draws drinking water from several wells located in the Valley East area. Worked with project team to identify a modelling approach that would make the best use of, sometimes limited, existing data. The Tier 2 results led to the initiation of the Tier 3 Local Area Water Budget for the groundwater supply in Valley East.

Source Water Protection: Ramsay Lake Tier 1 and Tier 2
Sudbury, Ontario

Senior technical advisor for the Ramsay Lake Tier 3 water budget and water quantity risk level assessment. The City of Sudbury draws water directly from Ramsay Lake for part of its drinking water supply. Ramsay Lake and its contributing drainage areas are being modelled using HEC-HMS (Hydraulic Engineering Corps - Hydrological Modelling System). Based on existing information, it appears that the hydrology of Ramsay Lake is dominated by surface water inputs and as such, there is no plan to include groundwater modelling at this time. HEC-HMS will be used to complete the risk level assessments. Additional field data collection has been initiated to fill existing data gaps regarding key inflows to the lake and the outflow adjacent to Science North.

Source Water Protection: Bronte Creek
Halton, Ontario

Golder Associates were commissioned to undertake a Threats Assessment of a potential intake at Bronte Creek. Mr. MacKenzie directed the project for Golder. The intake, intended to deliver surface water to a small water treatment plant, was identified as one potential alternative for providing a drinking water supply to nearby residential properties possibly affected through the construction of an adjacent quarry. The Threats Assessment identified eleven water quality issues at the potential intake location, attributing causes to a number of likely contaminant sources throughout the watershed. In accordance with MOE Draft Guidance Modules, the work undertaken as part of this assessment included stakeholder liaison, hydraulic modelling, IPZ delineation, vulnerability analysis, the compilation of issues and threats inventories and a description of data knowledge gaps. Should surface water abstraction from Bronte Creek be identified as the preferred alternative for providing long-term drinking water supply, this Threats Assessment report will provide the basis for the Tier 2 assessment.

Source Water Protection: Timmins IPZ Study
Timmins, Ontario

An Intake Protection Zone (IPZ) and the vulnerability scores for the City of Timmins drinking water treatment plant on the Mattagami River were assessed. The delineation of the IPZ included the consideration of river flow conditions, influences of dam operation, location of significant potential upstream sources of contamination, local transportation routes, storm sewer drainage patterns and the behaviour of spills in the river. The project also included the collection of site-specific data through a field program. The field program used non-conventional methods to measure travel time due to restrictions on the use of dye tracers in the river because of the presence of private drinking water intakes. The field program collected detailed velocity data that was used to estimate dispersion and to calibrate a HEC-RAS model that was used to predict the travel time under various flow conditions.

PROJECT EXPERIENCE – WASTE MANAGEMENT

Barrie Landfill Reclamation
Barrie, Ontario

Technical advisor for stormwater management modelling and conceptual stormwater infrastructure design. The project included a significant removal and replacement of historic municipal waste. Daily and permanent cover design required new stormwater management strategies and facility design. Interacted with groundwater modellers to develop representative and conservative boundary conditions for modelling.

Nexcycle
Southern Ontario

Technical advisor in support of the ECA (Sewage) application package for a glass recycling facility. The project included conceptual design of Best Management Practices and source controls to improve stormwater quality.

Eagleson Landfill Brookside Creek Channel Design
Northumberland, Ontario

Ongoing support regarding a channel remediation design/assessment for the County of Northumberland on a reach of Brookside Creek located downstream of the closed Eagleson Landfill to reroute unaffected surface water flows away from a zone of leachate influenced groundwater.

Edgewood Landfill Monitoring
Flamborough, Ontario

Designed and implemented a flow and water quality monitoring programme to assess potential historic effects of watercourses surrounding the closed Edgewood Landfill site in Flamborough Ontario. This work was completed as part of an inventory and assessment of historic landfill operations in the City of Hamilton.

Bath CKD Landfill Design and Monitoring
Kingston, Ontario

Monitored existing water quality and flows associated with an existing Cement Kiln Dust landfill. Designed stormwater control measures for design of a new landfill cover for the existing landfill as well as four new cells to increase the capacity of the landfill.

Brow Landfill Storm-water Management Plan
Flamborough, Ontario

Developed a storm-water management plan to address drainage requirements for the site and mitigation measures required to control potential impacts as part of the closure process. Designed drainage channels, a stormwater management pond, hydraulic flow control structures and a drop structure to safely convey stormwater over the edge of the Niagara Escarpment into a purpose designed plunge pool.

Adams Mine Landfill
Kirkland Lake, Ontario

Completed a baseline hydrology assessment including flow and water quality monitoring as part of an investigation into the feasibility of a proposed land-filling operation at Adams Mine. Monitoring included flow measurements from boats in medium to large rivers.

SUPPLEMENTAL SKILLS

Soil Erosion
Upland inter-rill soil erosion by rainfall impact; Upland soil erosion by concentrated flow in rills and gullies; In stream, bed and bank erosion and transport.

Hydrology
Stream-flow monitoring and hydrometry; Hydrologic modelling and calibration for event and continuous simulations; Potential and actual evapo-transpiration estimates; Single station frequency analysis; and Water balance calculations.

Hydraulics
Sediment transport hydraulics; Velocity profiling; Flood-wave routing in complex channels; Channel erosion potential analysis, including tractive force indices; and Hydraulic design of water management structures.

Fluvial Geomorphology
Initiation of sediment movement; Constructed bed-form frequency and channel stability issues; Channel plan-form and section morphology; Impacts of sediment transport on channel morphology and Stream form classification using the Rosgen Classification Scheme.

PROFESSIONAL AFFILIATIONS

Professional Engineers Ontario

Engineers Nova Scotia

PUBLICATIONS

Other

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Rose, G. T and MacKenzie, K. M. (2013). Water Quality Forecasting and Infrastructure Optimization System. Meeting #68 of the Atlantic Coastal Zone Information Steering Committee (ACZISC). Bedford Institute of Oceanography, Halifax, Nova Scotia, January 16-17, 2013.

S. I. Ahmed, K. MacKenzie, B. Gharabaghi, R.P. Rudra, W.T. Dickinson. (2011). Within-storm rainfall distribution effect on soil erosion rate. ISELE Paper Number 11000. International Symposium on Erosion and Landscape Evolution. Anchorage, Alaska September 18-21, 2011.

Bell, J., K. MacKenzie and J. Southwood. (2011). Down Under Up North - Could an Australian water- sensitive urban design project work in the Canadian context? Water Canada July/August 2011.

DeVito, C. and MacKenzie K. (2011). Critical Shear Velocity Estimates Improved with In-Situ Flume. 20th Canadian Hydrotechnical Conference, Ottawa Ontario June 14th to 17th 2011.

Davidson C. and MacKenzie K. (2011). Golder Daily Climate Record Generator. 20th Canadian Hydrotechnical Conference, Ottawa Ontario June 14th to 17th 2011.

MacKenzie, Kevin. (2009). Industrial Wastewater Approvals. Canadian Environmental Compliance Conference and Trade Show (CANECT). Metro Toronto Convention Centre, April 2009.

MacKenzie, Kevin. (2007). Industrial Wastewater Approvals. Canadian Environmental Compliance Conference and Trade Show (CANECT). Metro Toronto Convention Centre, April 2007.

Mackenzie, K.M., R.P. Rudra and W.T. Dickinson. (1996). Modelling the inter-rill detachment process: Some considerations for improving model results. ASAE Paper No. NABEC96-94, Amer. Soc. Agr. Engr., St. Joseph, MI.

MacKenzie, K.M., R.P. Rudra and W.T. Dickinson. (1995). The effect of temporal distribution of rainfall on inter-rill detachment. ASAE Paper No. 95-2378, Amer Soc. Agr. Engr., St. Joseph, MI.

Education

M.A.Sc. Civil Engineering, University of Toronto, Toronto, Ontario, 2017

B.A.Sc. Environmental Engineering, University of Windsor, Windsor, Ontario, 2015

Certifications

Registered Professional Engineer, Professional Engineers of Ontario, 2021

WSP Canada Inc. – Ottawa

Environmental Consultant

Sean Spanik is an environmental engineer that joined the WSP (previously Golder Associates Ltd.) team in December 2017. Sean assists with technical analysis, groundwater modelling and reporting on a variety of hydrogeological and environmental projects. This includes hydrogeological investigations in support of infrastructure development; annual reporting for Environmental Compliance Approval (ECA) and Permit to Take Water monitoring programs at quarry sites; and preparation of PTTW applications and Environmental Activity Sector Registry (EASR) Water Taking Plans for construction dewatering projects. In addition to technical analysis and reporting, Sean also assists in the development and execution of field programs, including groundwater and surface water sampling, monitoring well installations, hydraulic conductivity testing, pumping tests, packer tests and infiltration testing.

Employment History

WSP Canada Inc. (Previously Golder Associates Ltd.) – Ottawa, Ontario

Environmental Engineer (2017 to Present)

Environmental engineer within the Geosciences group. Assists with technical analysis and reporting, groundwater flow modelling and the development and execution of field programs.

EXP Services – Windsor, Ontario

Geotechnical Field Technician (Co-op) (2014 to 2014)

Performing compaction and concrete testing for a major infrastructure project.

PROFESSIONAL AFFILIATIONS

Member of the Association of Professional Engineers of Ontario

PROJECT EXPERIENCE – HYDROGEOLOGY

Permit to Take Water Application Cavanagh Goulbourn Quarry Ontario, Canada	Assisted with updating and calibrating a groundwater flow model in MODFLOW. The model was used to run quarry development forecast scenarios for a permit to take water impact assessment.
Drawdown Assessment Spring Valley Trails Ontario, Canada	Constructed a two-dimensional groundwater flow model in FEFLOW to assess the magnitude of water level drawdown that would result from a proposed underground stormwater storage gallery for a residential development.
Source Water Protection Study Braestone Development Ontario, Canada	Assisted with the construction and calibration of a groundwater flow model in MODFLOW based on a conceptual hydrogeological model of the Oro Moraine. The model was used to delineate time-of-travel capture zones for communal water supply wells at the Braestone development.
Troilus Mine Project Quebec, Canada	Developed and calibrated a three-dimensional groundwater flow model in FEFLOW to predict drawdown and groundwater inflow for an open pit mining project.
Landfill Monitoring, Brockville Landfill Ontario, Canada	Golder carried out monitoring of groundwater and surface water at the City of Brockville Landfill Site and an adjacent former landfill and scrap yard. Sean assisted in coordinating the field program and preparing a comprehensive report. He also assessed compliance of the site with provincial regulations and site-specific triggers.
Integrated Road, Sewer and Watermain Construction Ontario, Canada	Assisted in the execution of the field program for various linear infrastructure projects, which involved taking water levels, hydraulic conductivity testing and sampling from monitoring wells along the proposed alignment. Sean helped to analyze field data and determine the water taking requirements for the projects. Sean has also assisted in the preparation of Category 3 Permit to Take Water Applications for construction dewatering activities.
Lebreton Flats Redevelopment Ontario, Canada	Sean was involved with a drilling program and completed rock coring, packer testing and the installation of monitoring wells. After the completion of the drilling program, Sean completed hydraulic conductivity testing and sampling of the monitoring wells.
Permit to Take Water and Environmental Compliance Approval Annual Monitoring Reports Ontario, Canada	Sean has prepared the annual monitoring reports for various quarry sites for both their Environmental Compliance Approval (ECA) and Permit to Take Water (PTTW) monitoring programs. This involved presenting, discussing, and analyzing the monitoring data to assess for potential impacts from quarry activities.
Infiltration Rate Assessment Ontario, Canada	Sean carried out infiltration testing at the site of a proposed development in Ottawa, Ontario. He analyzed the data and prepared a memo to detail the results and how they relate to the potential for low impact development (LID) measures to be implemented.

APPENDIX B

Borehole and Geophysical Logs

Stittsville Quarry Properties

PROJECT: 18111853

GEOPHYSICAL LOG OF: DDH2001-1 T-EXPL

SHEET 1 OF 3

LOCATION: N 5009762.7 ;E 423394.3

DRILLING DATE: October 19-22, 2001

DATUM: Geodetic

DRILL RIG: CME 55

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: Marathon Drilling Ltd.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)
		GROUND SURFACE		138.60
0		BOBCAYGEON FORMATION 0.0 m to 32.84 m UNIT 4, 0.0 m to 1.85 m, Medium grey to brownish grey, fine grained, non porous, micritic, thinly bedded ARGILLACEOUS NODULAR LIMESTONE. Broken rubble core from 0.0 m to 1.22 m. Comparatively sharp basal contact with underlying calcarenite.		0.00
2		UNIT 3, 1.85 m to 17.68 m, Light to medium brownish grey, fine to medium grained crystalline, non porous, finely stylolitic, medium bedded CALCARENITIC LIMESTONE. Bioturbation associated with mollusk burrow casts become more evident below 14.6 m. Individual black argillaceous laminar bedding partings occur between 8.79 m and 8.99 m within very thinly bedded calcarenite, at 12.19 m (3 mm parting), 13.64 m (1-2 mm parting), 13.99 m (30 mm argillite and limestone), 14.87 and 15.01 m (5-10 mm partings in limestone), 15.09 (10 mm parting), 15.54 m (10 mm parting), 15.70 (20 mm parting), 16.40 m (10 mm parting) and 16.87-.92 m. Sharp basal contact on shaley limestone bed at 17.68 m.		136.75 1.85
4				
6				
8				129.81 8.79 8.99
10				
12				126.41 12.19
				124.96 13.64
14				14.02
				123.73
				15.10 123.06
16				15.72
				122.20 16.41 121.73 16.92
				120.92 17.68 17.91
18		UNIT 2, 17.68 m to 22.60 m Dark grey to black, fine grained, non porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) ARGILLACEOUS LIMESTONE AND SHALEY LIMESTONE. Slake susceptible dark grey to black shaley limestone and shale beds occur at 17.68-.91 m, 19.13-.26 m, 19.43 m (20		119.47 19.26 19.45 19.80
20				

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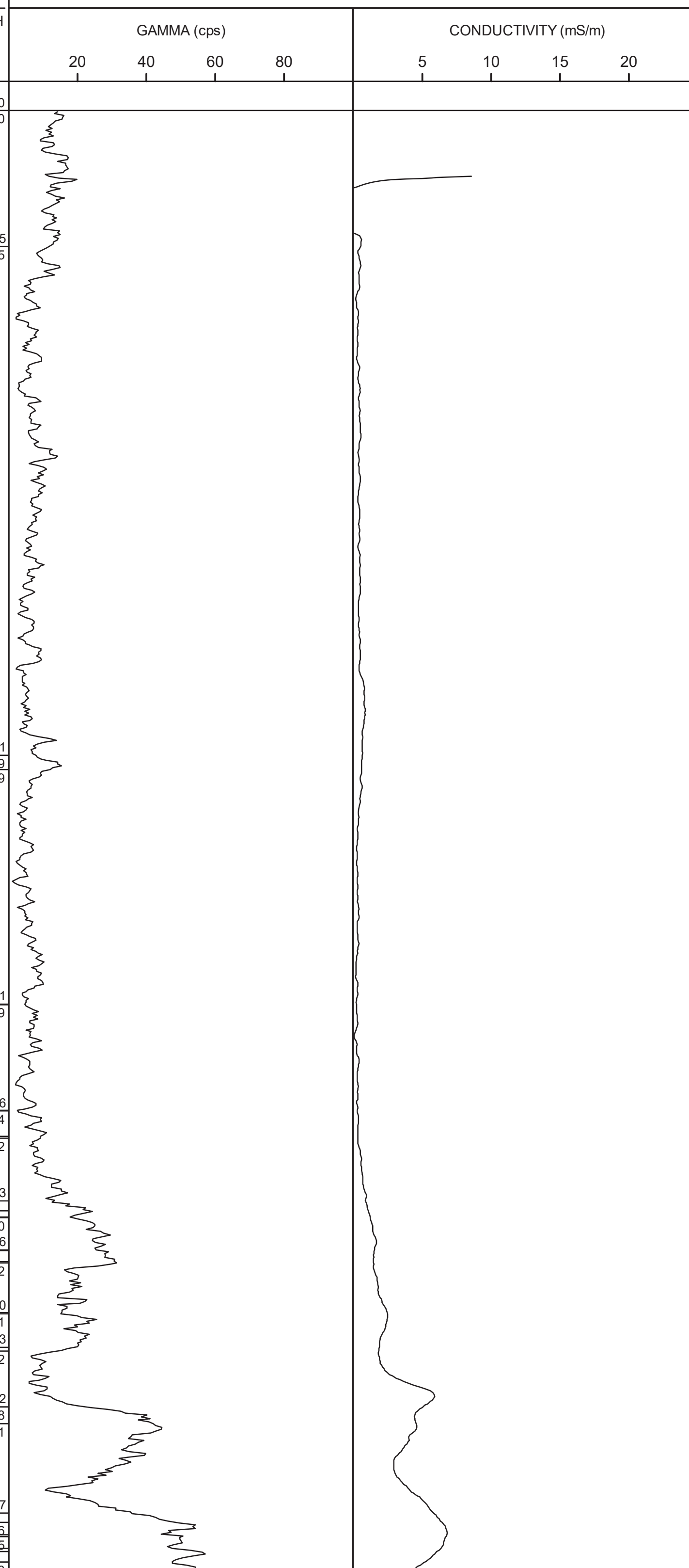
GEOPHYSICAL RECORD



PIEZOMETER OR STANDPIPE INSTALLATION

DEPTH SCALE

1 : 100

GOLDER

LOGGED: RB

CHECKED: KAM

PROJECT: 18111853

GEOPHYSICAL LOG OF: DDH2001-1 T-EXPL

LOCATION: N 5009762.7 ;E 423394.3

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: October 19-22, 2001

DRILL RIG: CME 55

DRILLING CONTRACTOR: Marathon Drilling Ltd.

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80; CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION

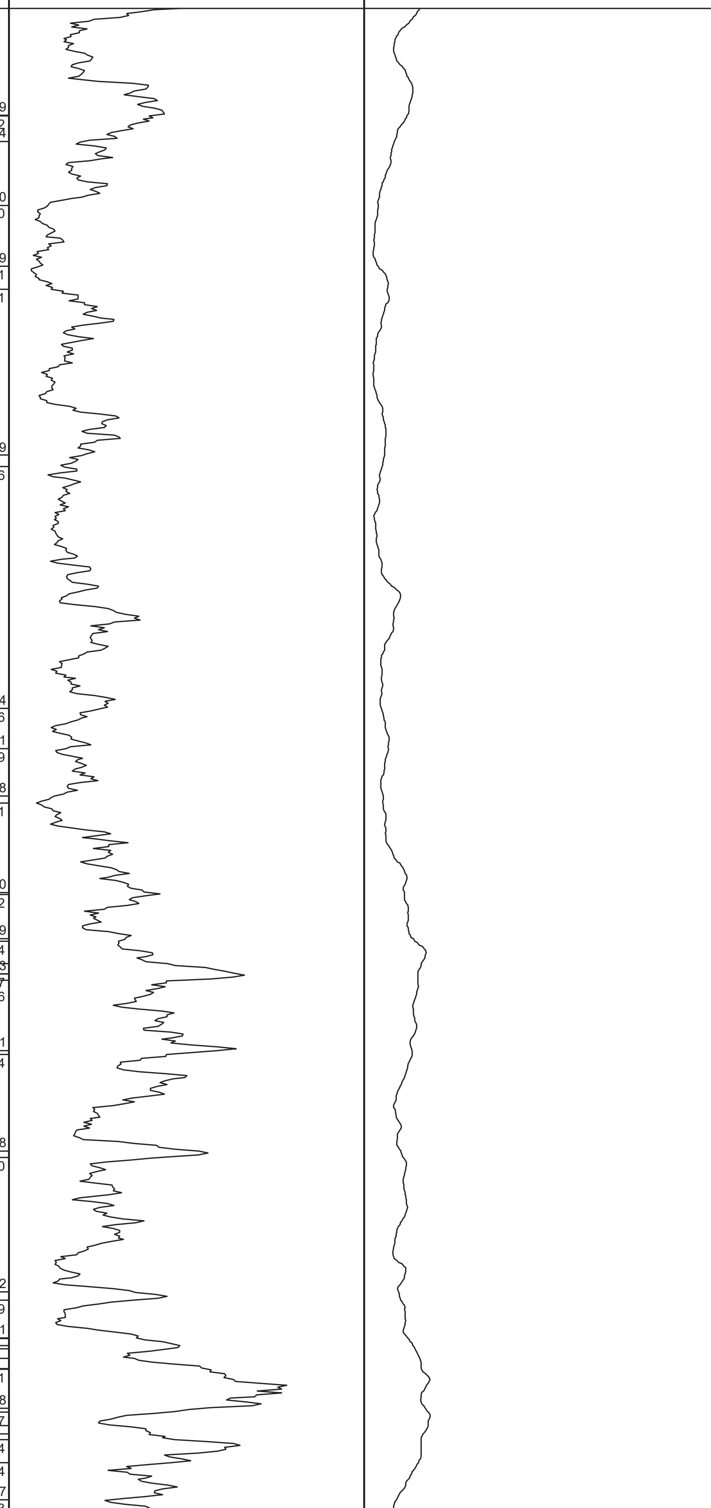
--- CONTINUED FROM PREVIOUS PAGE ---

mm parting), 19.61-.66 m, 19.80 m and 21.41 m (10 mm). Transitional basal contact.

UNIT 1, 22.60 m to 32.77 m Fresh, medium to dark brownish grey, fine grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated, partly stylolitic **NODULAR LIMESTONE** with wavy shaley limestone laminations at 31.71-.75 m, 31.91-.95 m and 32.31-.33 m. Burrow casts are infilled with medium grained crystalline calcarenite. Very fine grained lithographic limestone beds occur at 23.41-.71 m and 25.91-26.06 m. Medium grained oolitic limestone beds occur at 29.26-.79 m and 30.42-.51 m. Shaley argillaceous limestone bed at 32.68-.77 m. Sharp basal contact with dolostone bed and shale cap of underlying Upper Gull River Formation.

UPPER GULL RIVER FORMATION, 32.77 m to 41.32 m
Medium to dark grey, very fine to fine grained, nonporous, micritic, thinly to thickly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone, the **"first dolostone marker bed"**, at 32.77 m to 33.84 m. Bed has black shale caps at 32.77-.86 m and 33.79-.84 m. The **"second dolostone marker bed"** sequence occurs at 36.98 m to 39.73 m consisting of a black shaley cap (36.98-37.09 m) overlying medium greenish grey, medium grained crystalline, mottled textured, bioturbated, lithoclastic calcareous dolostone (37.09-.69 m) with black shaley partings at 37.59-.60 m and 37.69-.73 m. Thin lithoclastic limestone bed occurs at 37.73-.86 m overlying greenish grey calcareous dolostone bed at 37.86-38.00

ELEV. / DEPTH (m)
117.19 / 21.42
116.84
116.00 / 22.60
115.19 / 23.41
23.71
112.69 / 26.06
109.34 / 29.26
108.81 / 29.79
108.18 / 30.51
106.90 / 31.72
106.29 / 32.34
105.83 / 32.77
32.86
104.81 / 33.84
103.48 / 35.20
101.62 / 37.09
101.01
38.01
100.08 / 38.57
38.94
39.24
98.87 / 39.73



Depth scale: 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40

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PROJECT: 18111853

GEOPHYSICAL LOG OF: DDH2001-1 T-EXPL

LOCATION: N 5009762.7 ;E 423394.3

DRILLING DATE: October 19-22, 2001

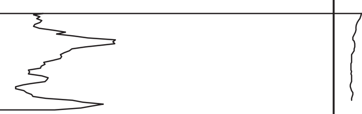
DATUM: Geodetic

DRILL RIG: CME 55

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: Marathon Drilling Ltd.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80	CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		--- *CONTINUED FROM PREVIOUS PAGE* ---					
40		m. Thick bed of greenish grey dolostone occurs at 38.00-.52 m with dark greenish grey calcareous shale base at 38.52-.57 m overlying medium lithoclastic limestone bed (38.57-.75 m), lithoclastic calcareous dolostone bed (38.75-.86 m) and shaley calcareous dolostone (38.86-.94 m). Medium bed of absorbent, greenish grey, shaley calcareous dolostone at 38.94-39.24 m overlying thinly to medium bedded argillaceous dolomitic limestone at 39.24-.73 m. Dark grey, fine grained, medium to thickly bedded micritic limestone beds between 39.73 m and 41.32 m have disseminated medium to coarse grained calcite crystals. Additional black shale partings occur at 35.12-.20 m (absorbent), 39.93-.94 m, 40.49-.55 and 41.29-.31 m.		39.94 / 98.11			
				40.55			
				97.31			
				97.28 / 41.32			
42							
44							
		End of Borehole, 41.32 m					
46							
48							
50							
52							
54							
56							
58							
60							



DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

PROJECT: 18111853

GEOPHYSICAL LOG OF: DDH2001-2

SHEET 1 OF 3

LOCATION: N 5009228.4 ;E 423825.8

DRILLING DATE: November 2001

DATUM: Geodetic

DRILL RIG: CME 55

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: Marathon Drilling Ltd.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80	CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		135.60			
0		**Bedrock Surface, 0.0 m** **LOWER BOBCAYGEON FORMATION, 0.0 m to 24.63 m** **Unit 3, 0.0 m to 7.86 m** Fresh, weathered on bedding partings from 0.0 m to 2.44 m, medium brownish grey, fine to medium grained crystalline, faintly porous, thinly bedded **CALCARENITIC LIMESTONE** with fine argillaceous bedding partings transitioning into argillaceous nodular limestone from 6.95 m to 7.86 m with 1-3 mm fine argillaceous bedding partings. Horizontal 3-6 mm burrow casts in argillaceous limestone at 4.89-.92 m. Transitional basal contact marked by 0.06 m shaley lamination.		0.00			
2							
4				130.71 4.92			
6				128.65 6.95 127.91 127.74			
8		**Unit 2, 7.86 m to 13.58 m** Fresh, medium to dark brownish grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) with burrow casts **ARGILLACEOUS to SHALEY NODULAR LIMESTONE.** Numerous slake susceptible dark grey to black shaley laminations 0.01 to 0.08 m thick comprise approximately 20% of sequence between 7.86 m and 11.81 m with main shaley bands at 8.52-9.18 m and 11,00-.81 m. Last shaley lamination at 11.79-.81m overlying shaley nodular limestone (11.81-12.08 m), argillaceous nodular limestone (12.08-.62 m) and argillaceous to shaley nodular limestone (12.62-13.42 m) with transitional bed of argillaceous nodular limestone at 13.42-.58 m.		7.86 7.92 8.34 9.00 9.18 9.38 9.69			
10				10.26 124.78 11.35 11.81			
12				12.08 122.98 12.62 122.18 122.02 13.42			
14		**UNIT 1, 13.58 m to 24.63 m** Fresh medium to dark brownish grey, fine grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated, partly stylolitic **NODULAR LIMESTONE** with beds of argillaceous nodular limestone at 19.35-.77 m, 23.38-.62 m and 23.85-24.63 m with numerous 0.001-.01 m absorptive argillaceous partings. Wavy argillaceous partings at 14.05-.08 m, 15.64-.67 m and 23.85-.86 m. Sharp basal contact with dolostone bed and shale cap of underlying Upper Gull River Formation.		13.58 121.55 14.08			
16				119.96 15.67			
18				116.25 19.35 115.83 19.77			
20							

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GEOPHYSICAL LOG OF: DDH2001-2

PROJECT: 18111853

LOCATION: N 5009228.4 ;E 423825.8

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: November 2001

DRILL RIG: CME 55

DRILLING CONTRACTOR: Marathon Drilling Ltd.

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80	CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION

--- CONTINUED FROM PREVIOUS PAGE ---

Depth scale: 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40

ELEV. / DEPTH (m): 112.22, 23.38, 23.62, 23.86, 110.97, 24.63, 24.69, 110.02, 25.64, 108.68, 26.96, 107.18, 28.44, 106.80, 28.90, 29.51, 105.58, 30.08, 30.30, 104.94, 30.66, 103.79, 32.00, 102.84, 32.91, 101.80, 33.80, 100.65, 34.96, 100.24, 35.36, 99.50, 36.10, 99.05, 36.55, 36.86, 97.35, 38.25, 95.65

UPPER GULL RIVER FORMATION, 24.63 m to 39.95 m
Medium to dark grey, very fine to fine grained, nonporous, micritic, thinly to thickly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone, the **"first dolostone marker bed",** at 24.63 m to 25.64 m. Bed has black shale caps at 24.63-.69 m and 25.58-.64 m.

The **"second dolostone marker bed"** sequence occurs at 28.80 m to 30.66 m consisting of a black shaley cap (28.80-.84 m) overlying shaley calcareous dolostone (28.84-.90 m) grading to medium greenish grey, medium grained crystalline, bioturbated calcareous dolostone (28.90-29.14 m) and dolostone (29.14-.26 m). Thin limestone bed occurs at 29.26-.38 m overlying argillaceous limestone/calcareous dolostone bed with rounded lithoclasts at 29.38-.50 m. Medium bed of greenish grey dolostone occurs at 29.50-30.02 m with a 5 mm shaley cap and dark grey calcareous shale base at 30.02-.08 m overlying medium limestone bed (30.08-.30 m) and medium bed of slake susceptible argillaceous calcareous dolostone (30.30-.66 m).

Additional black shale partings occur at 26.92-.96 m (absorbent), 28.42-.44 m, 31.81-.82 m, 31.97-32.00 m, 32.76-.80 m, 32.89-.91 m and 34.95-.96 m. Fine grained, medium grey, stylolitic limestone bed at 32.80-33.80 m and dark brownish grey, fine grained, laminar textured limestone beds occur at 35.36-36.10 m and 38.25-39.95 m. Sharp basal contact with Lower Gull River Formation dolostone.

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DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

PROJECT: 18111853

GEOPHYSICAL LOG OF: DDH2001-2

LOCATION: N 5009228.4 ;E 423825.8

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: November 2001

DRILL RIG: CME 55

DRILLING CONTRACTOR: Marathon Drilling Ltd.

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80	CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---					
40		**LOWER GULL RIVER FORMATION, 39.95 m to 41.45 m** **UNIT 5, 39.95 m to 41.45 m** The Lower Gull River Formation marks the transition into predominately dolostone with subordinate limestone units. Fresh medium greenish grey, fine grained, faintly porous, medium bedded, laminar to massive textured **DOLOSTONE.** Black argillaceous to shaley bedding parting at 40.81-.82m.		39.95 94.79 40.82 94.15 41.45			
		End of Borehole, 41.45 m					
42							
44							
46							
48							
50							
52							
54							
56							
58							
60							

DEPTH SCALE

1 : 100

LOGGED: RB

CHECKED: KAM

GEOPHYSICAL LOG OF: BH99-1

PROJECT: 18111853

LOCATION: N 5009040.1 ;E 422689.8

INCLINATION: -90° AZIMUTH: ---

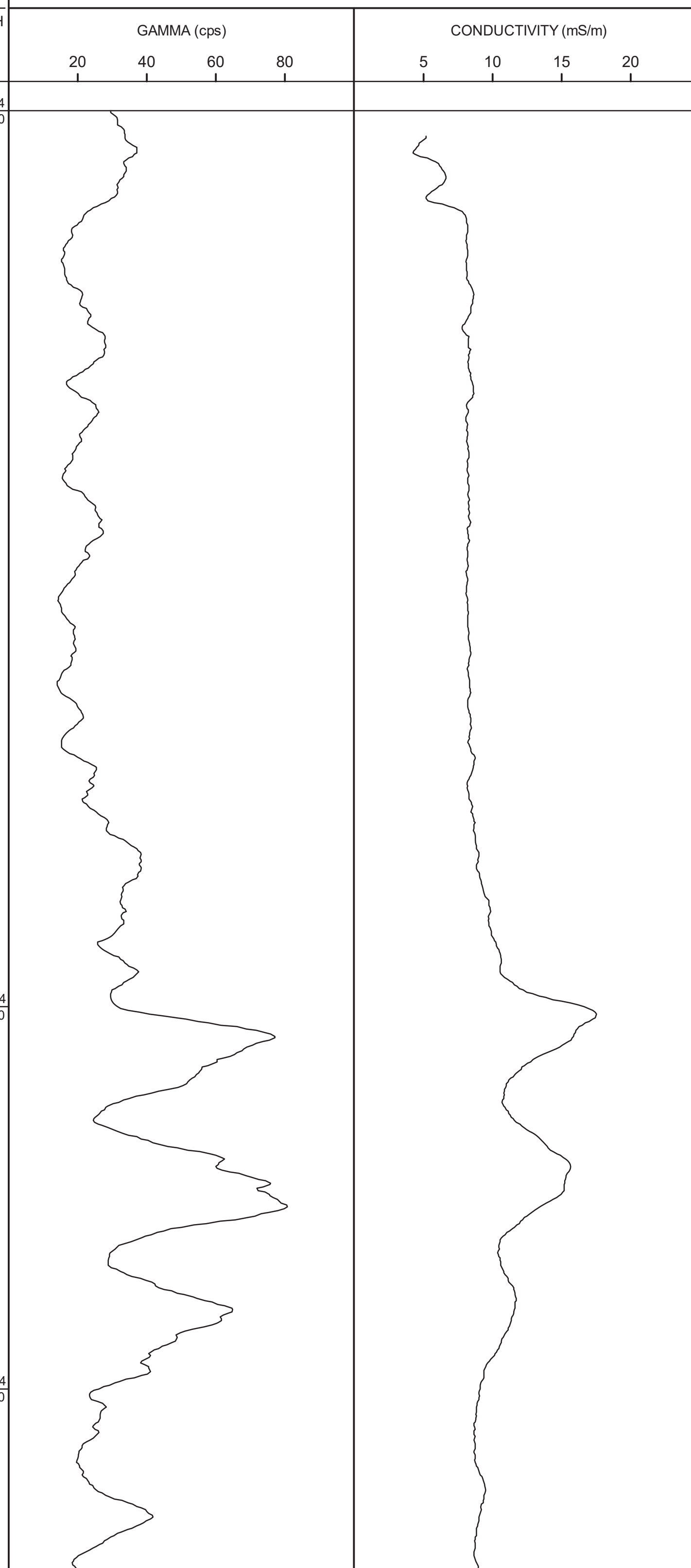
DRILLING DATE: October 25-26, 1999

DRILL RIG: CME 55

DRILLING CONTRACTOR: Marathon Drilling Ltd.

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		150.14		
0		**Bedrock Surface, 0.0 m** **LOWER BOBCAYGEON FORMATION, 0.0 m to 28.3 m** **UNIT 3, 0.0 m to 12.2 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00		
12		**UNIT 2, 12.2 m to 17.4 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		137.94 12.20		52 mm Riser Pipe and Screen
17.4		**UNIT 1, 17.4m to 28.3 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally		132.74 17.40		



Depth scale marks: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20

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DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

PROJECT: 18111853

GEOPHYSICAL LOG OF: BH99-1

LOCATION: N 5009040.1 ;E 422689.8

INCLINATION: -90°   AZIMUTH: ---

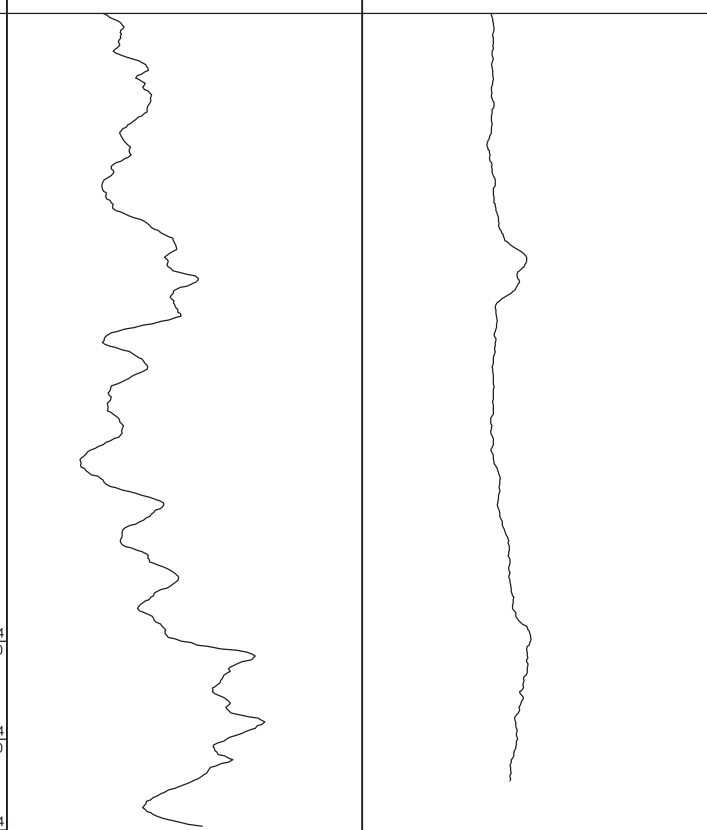
DRILLING DATE: October 25-26, 1999

DRILL RIG: CME 55

DRILLING CONTRACTOR: Marathon Drilling Ltd.

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80	GEOPHYSICAL RECORD: CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---					
20 – 28		variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.					52 mm Riser Pipe and Screen
		UPPER GULL RIVER FORMATION, 28.3 m to 30.8 m Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 28.3 m to 29.6 m.		121.84 / 28.30			
				120.54 / 29.60			
				119.34 / 30.80			
		End of Borehole, 30.8 m					



Depth scale: 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40

DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

GEOPHYSICAL LOG OF: BH99-2

PROJECT: 18111853

SHEET 1 OF 2

LOCATION: N 5009171.7 ;E 422542.0

DRILLING DATE: November 27-29, 1999

DATUM: Geodetic

DRILL RIG: CME 55

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: Marathon Drilling Ltd.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)
		GROUND SURFACE		148.27
0		**Overburden, 0.0 m to 0.15 m**		0.00
		LOWER BOBCAYGEON FORMATION, 0.15 m to 27.8 m **UNIT 3, 0.15 m to 11.6 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.15
2, 4, 6, 8, 10				
		UNIT 2, 11.6 m to 17.0 m dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		136.67 11.60
12, 14, 16				
				131.27 17.00
18, 20				

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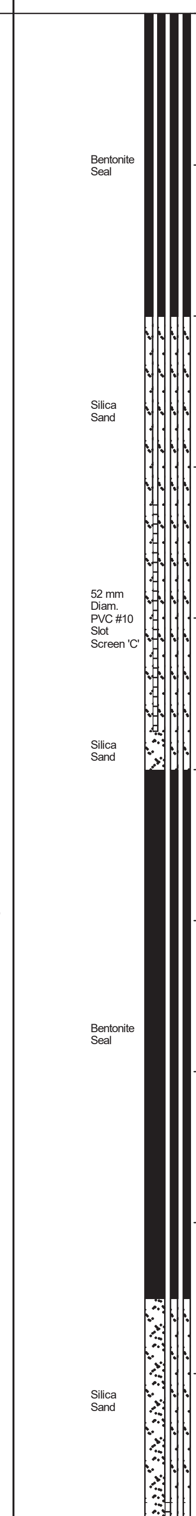
GEOPHYSICAL RECORD

PIEZOMETER OR STANDPIPE INSTALLATION



DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

PROJECT: 18111853

GEOPHYSICAL LOG OF: BH99-2

LOCATION: N 5009171.7 ;E 422542.0

DRILLING DATE: November 27-29, 1999

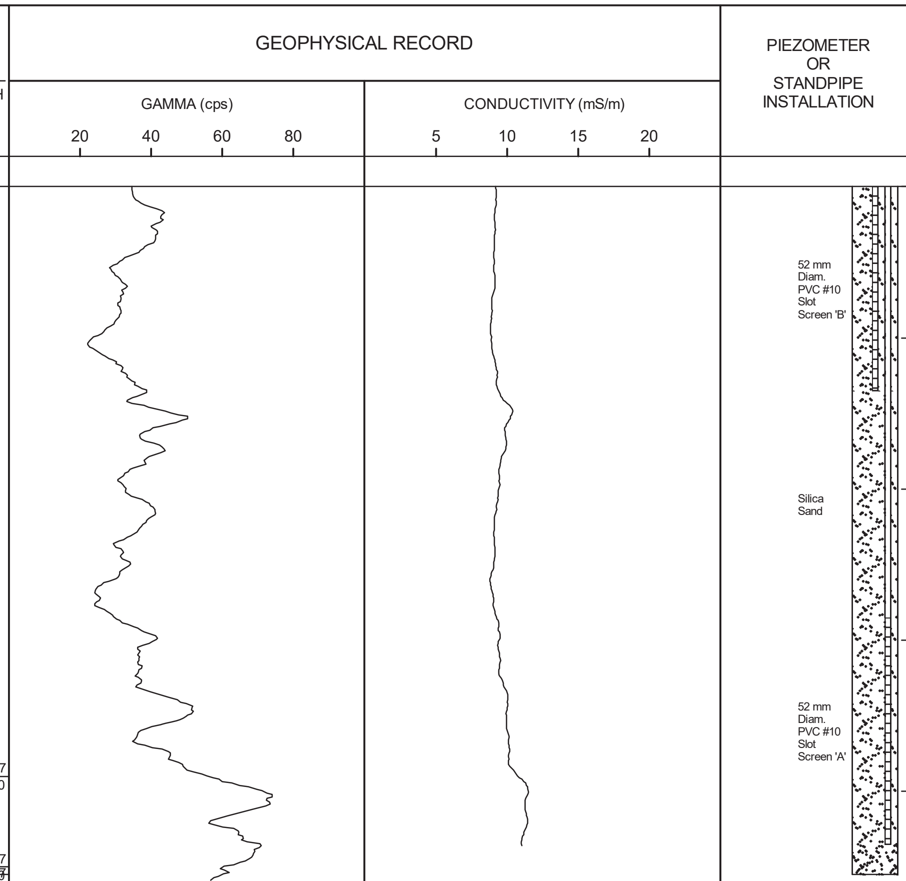
DATUM: Geodetic

DRILL RIG: CME 55

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: Marathon Drilling Ltd.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)
		--- CONTINUED FROM PREVIOUS PAGE ---		
20		**UNIT 1, 17.0 m to 27.8 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		
22				
24				
26				
28		**UPPER GULL RIVER FORMATION, 27.8 m to 29.1 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 27.8 m to 29.0 m.		120.47 27.80
				119.27 119.17 29.00
30				117.77 30.50
32		**End of Borehole, 30.5 m**		
34				
36				
38				
40				



DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

OTTAWA-GEO 19130670.GPJ GAL-GTA.GDT 11/24/22 JM

GEOPHYSICAL LOG OF: BH99-3

PROKECT: 13111357

LOCATION: N 5009732.9 ;E 427119.5

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: December 15, 1999

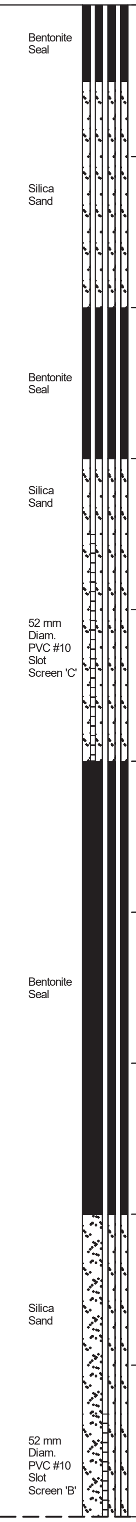
DRILL RIG: CME 55

DRILLING CONTRACTOR: Marathon Drilling Ltd.

SHEET 1 OF 2

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 30	CONDUCTIVITY (mS;m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		141.10			
0		**Overburden, 0.0 m to 0.2 m**		0.00			
		Bedrock Surface, 0.20 m **LOWER BOBCAYGEON FORMATION, 0.2 m to 26.6 m** **UNIT 3, 0.0 m to 11.0 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.20			
2							
4							
6							
3							
10				170.10			
		UNIT 2, 11.0 m to 16.3 m dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		11.00			
12							
14							
16				124.30			
		UNIT 1, 16.3 m to 26.6 m medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium		16.70			
13							
20							



CONTINUED NEXT PAGE

DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHEC8ED: 8AM

OTTA/ A-GEO 191706V0.GPK GAL-GTA.GDT 11;24;22 KM

GEOPHYSICAL LOG OF: BH99-3

PROKECT: 13111357

LOCATION: N 5009732.9 ;E 427119.5

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: December 15, 1999

DRILL RIG: CME 55

DRILLING CONTRACTOR: Marathon Drilling Ltd.

SHEET 2 OF 2

DATUM: Geodetic

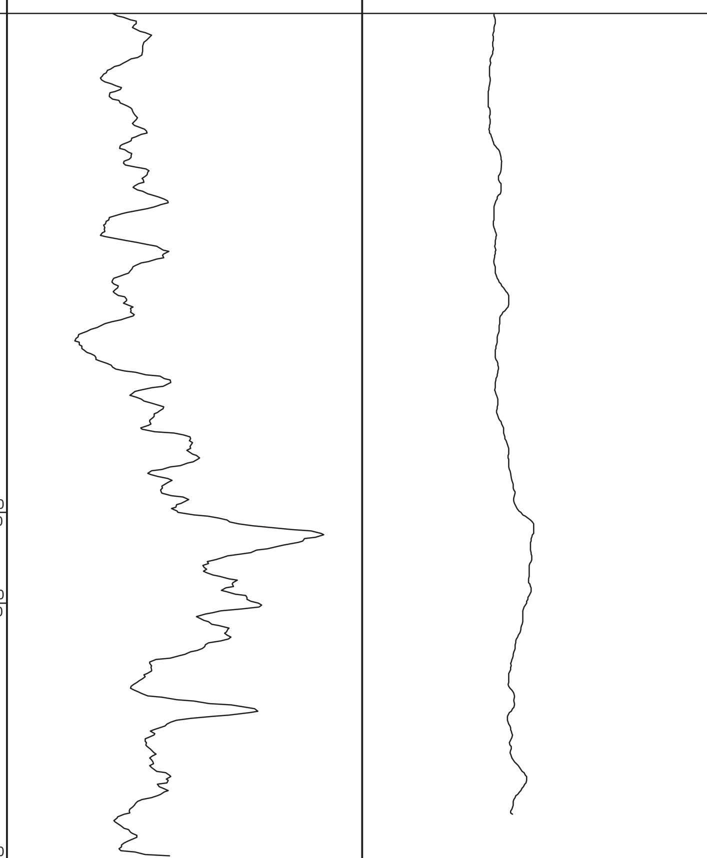
DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)
		--- CONTINUED FROM PREVIOUS PAGE ---		
20		grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 70 mm thick.		114.50 / 26.60
		UPPER GULL RIVER FORMATION, 26.6 m to 31.2 m Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 26.6 m to 2W3 m.		117.70 / 2W30
				109.90 / 71.20
		End of Borehole, 31.2 m		

Depth scale: 20, 22, 24, 26, 23, 70, 72, 74, 76, 73, 40

GEOPHYSICAL RECORD

GAMMA (cps): 20, 40, 60, 30

CONDUCTIVITY (mS;m): 5, 10, 15, 20



PIEZOMETER OR STANDPIPE INSTALLATION

DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHEC8ED: 8AM

PROJECT: 18111853

GEOPHYSICAL LOG OF: BH99-4

LOCATION: N 5009196.2 ;E 422348.9

DRILLING DATE: 1999

DATUM: Geodetic

DRILL RIG: Air Rotary Percussion

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: Capital Water Supply Ltd.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80	CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		147.71			
0		**Bedrock Surface, 0.0 m** **LOWER BOBCAYGEON FORMATION, 0.0 m to 23.3 m** **UNIT 3, 0.0 m to 7.1 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00			Bentonite Seal; Silica Sand; 52 mm Diam. PVC #10 Slot Screen 'D'; Bentonite Seal
		UNIT 2, 7.1 m to 12.8 m dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		140.61 7.10			Silica Sand; 52 mm Diam. PVC #10 Slot Screen 'C'; Bentonite Seal
		UNIT 1, 12.8 m to 23.3 m medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		134.91 12.80			Silica Sand; 52 mm Diam. PVC #10 Slot Screen 'B'
20							

Depth scale marks: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20

CONTINUED NEXT PAGE

GEOPHYSICAL LOG OF: BH99-4

PROJECT: 18111853

SHEET 2 OF 2

LOCATION: N 5009196.2 ;E 422348.9

DRILLING DATE: 1999

DATUM: Geodetic

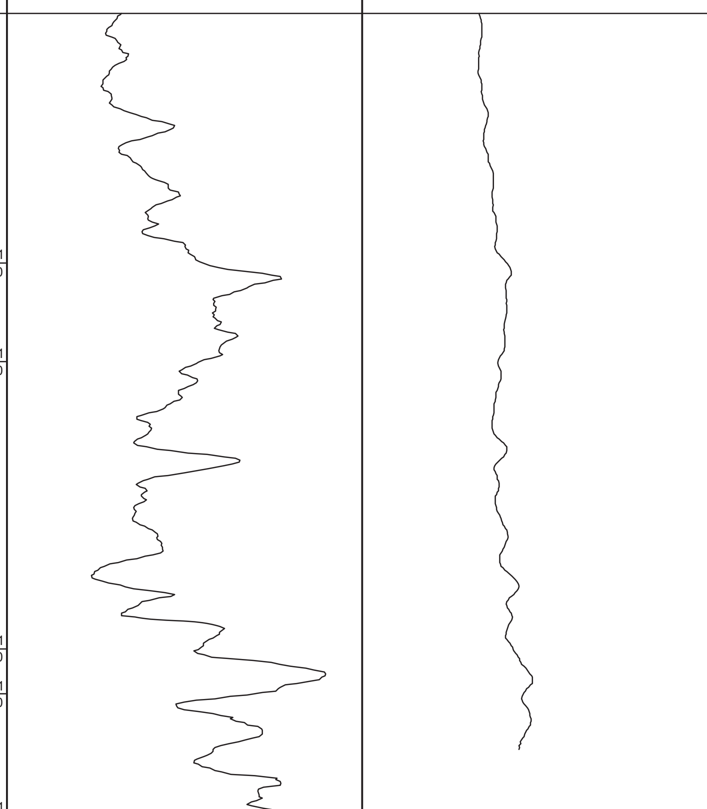
DRILL RIG: Air Rotary Percussion

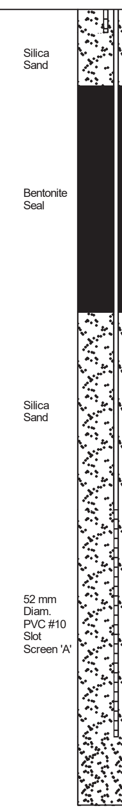
INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: Capital Water Supply Ltd.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80	GEOPHYSICAL RECORD: CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---					
20 – 23.3				124.41 23.30			Silica Sand; Bentonite Seal
23.3 – 30.6		**UPPER GULL RIVER FORMATION, 23.3 m to 30.6 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 23.3 m to 24.6 m with second dolostone bed at 28.4-29.0m.		123.11 24.60 119.31 28.40 118.71 29.00 117.11 30.60			Silica Sand; 52 mm Diam. PVC #10 Slot Screen 'A'
		End of Borehole, 30.6 m					

Depth scale: 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40





DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

PYEKHCTA 1R111R5J

GEOPHYSICAL LOG OF: BH99-5

S3HHT 1 EO 2

NECLTFEI A I 5007606.6 ;H 4226RRJ

DYFNNF U DLTHA 1777

DLTZ° A Ueodetic

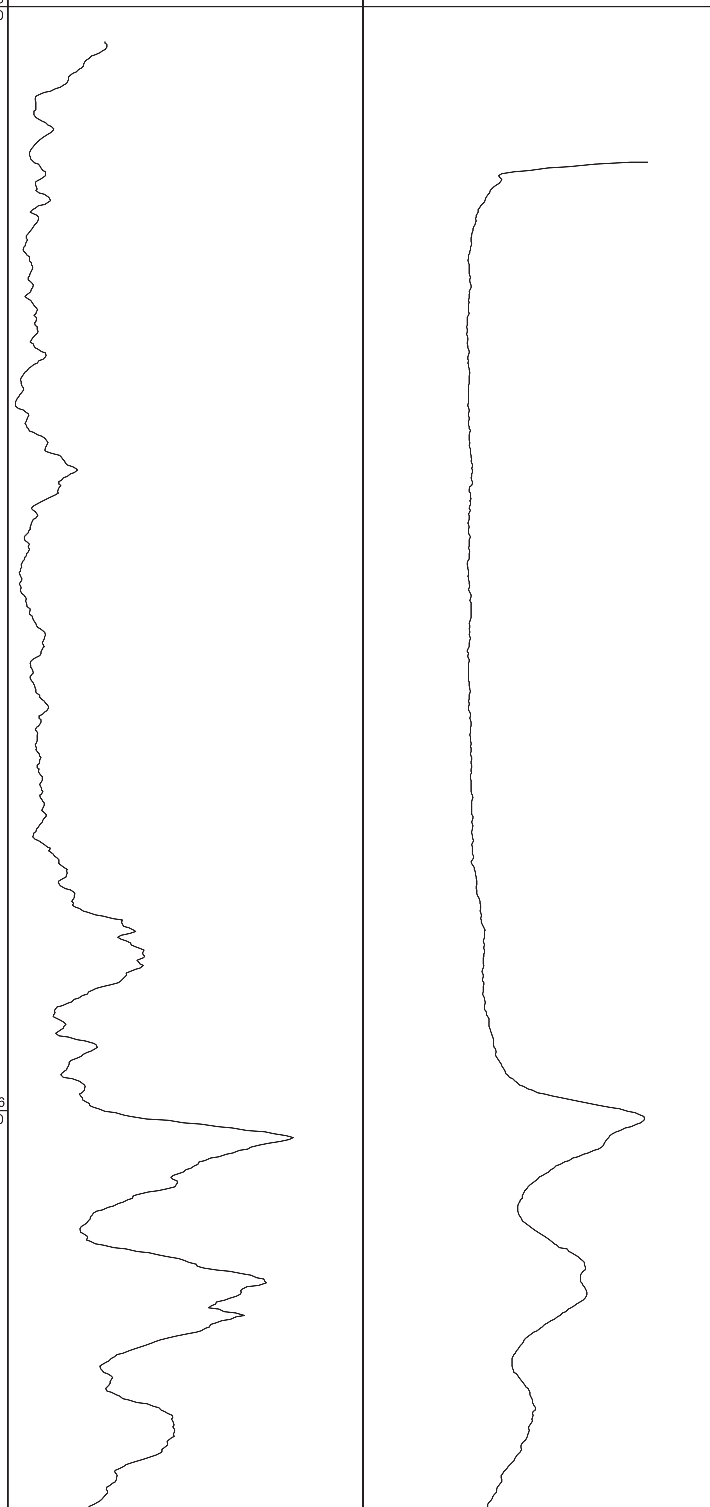
FF CNF LTFEI A-70: L9F ZT3A ---

DYFNNYFUA Lir Yotary Percussion

DYFNNF U CEI TYLCTEYA Capital G ater Supply Nd.

DHPT3 SCLNH ° HTYHS	DYFNNF U YHCEYD	DHSCYFPTFEI	SM° BENFC NEU	HNHV. DHPT3 (m)	UHEP3 MSFCLNYHCEYD: UL° ° L (cps) 20 40 60 R0	CEI DZCTFVFTM(mS/m) 5 10 15 20	PFH9E° HTHY EY STLI DPFPH FF STLNNLTFEI
		UYEZI D SZYOLCH		144.06			
0		**Bedrock Surface, 0.0 m** **LOWER BOBCAYGEON FORMATION, 0.0 m to 30.7 m** **UNIT 3, 0.0 m to 14.6 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00			Bentonite Seal; Silica Sand; 52 mm Diam. PVC #10 Slot Screen 'C'; Bentonite Seal
14.6		**UNIT 2, 14.6 m to 20.1 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		127.46 14.60			Silica Sand; 52 mm Diam. PVC #10 Slot Screen 'B'; Bentonite Seal

Depth scale: 0, 2, 4, 6, R, 10, 12, 14, 16, 1R, 20



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PYEKHCTA 1R111R5J

GEOPHYSICAL LOG OF: BH99-5

S3HHT 2 EO 2

NECLTTEI A I 5007606.6 ;H 4226RRJ

DYFNNF U DLTHA 1777

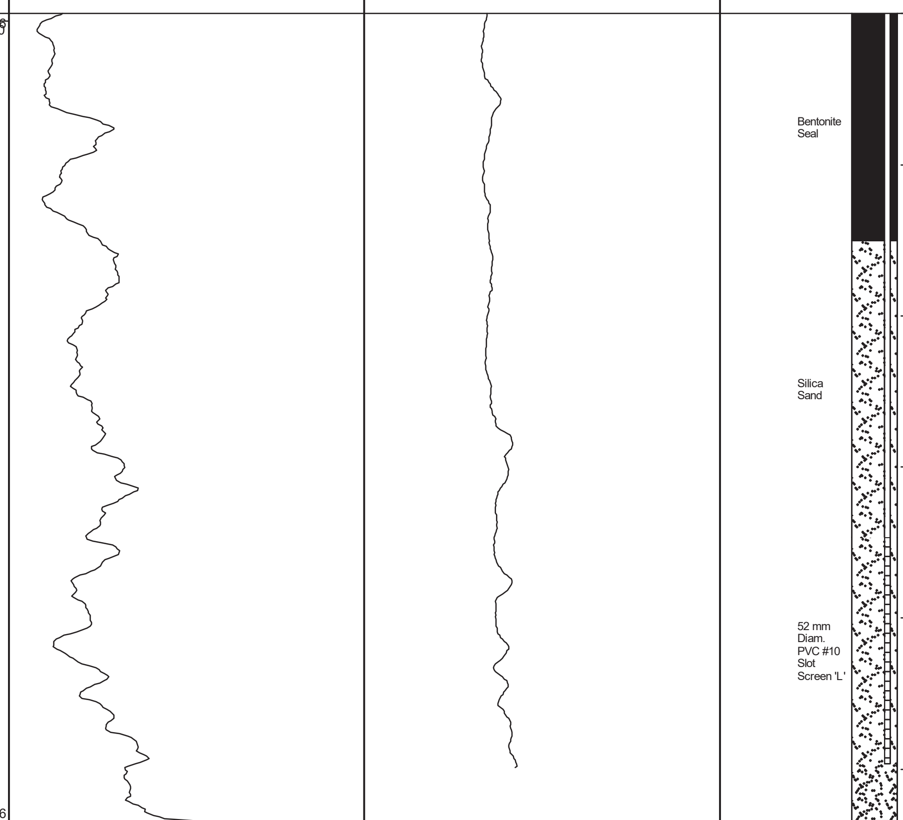
DLTZ° A Ueodetic

DYFNNYFUA Lir Yotary Percussion

FF CNF LTTEI A-70: L9F ZT3A ---

DYFNNF U CEI TYLCTEYA Capital G ater Supply Ntd.

DHPT3 SCLNH ° HTYHS	DYFNNF U YHCEYD	DHSCYFPTEI	SM° BENC NEU	HNHV. DHPT3 (m)	UHE P3 MSFCLNYHCEYD: UL° ° L (cps) 20 40 60 R0	CEI DZCTFVFTM(mS/m) 5 10 15 20	PFH9E° HTHY EY STLI DPFPH FF STLNNLTEI
		--- CONTINUED FROM PREVIOUS PAGE ---					
20		**UNIT 1, 20.1 m to 30.7 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to J0 mm thick. Thin black shale bed locally marks sharp basal contact of sequence directly overlying Uull Yiver Cormation dolostone bed.		124.78 20.10			
22							
24							
26							
2R							
J0				11J.J6 J0.V0			
		End of Borehole, 30.7 m					
J2							
J4							
J6							
JR							
40							



DHPT3 SCLNH

1 A100

NEUUHDA YB

C3HC8HDA 8L°

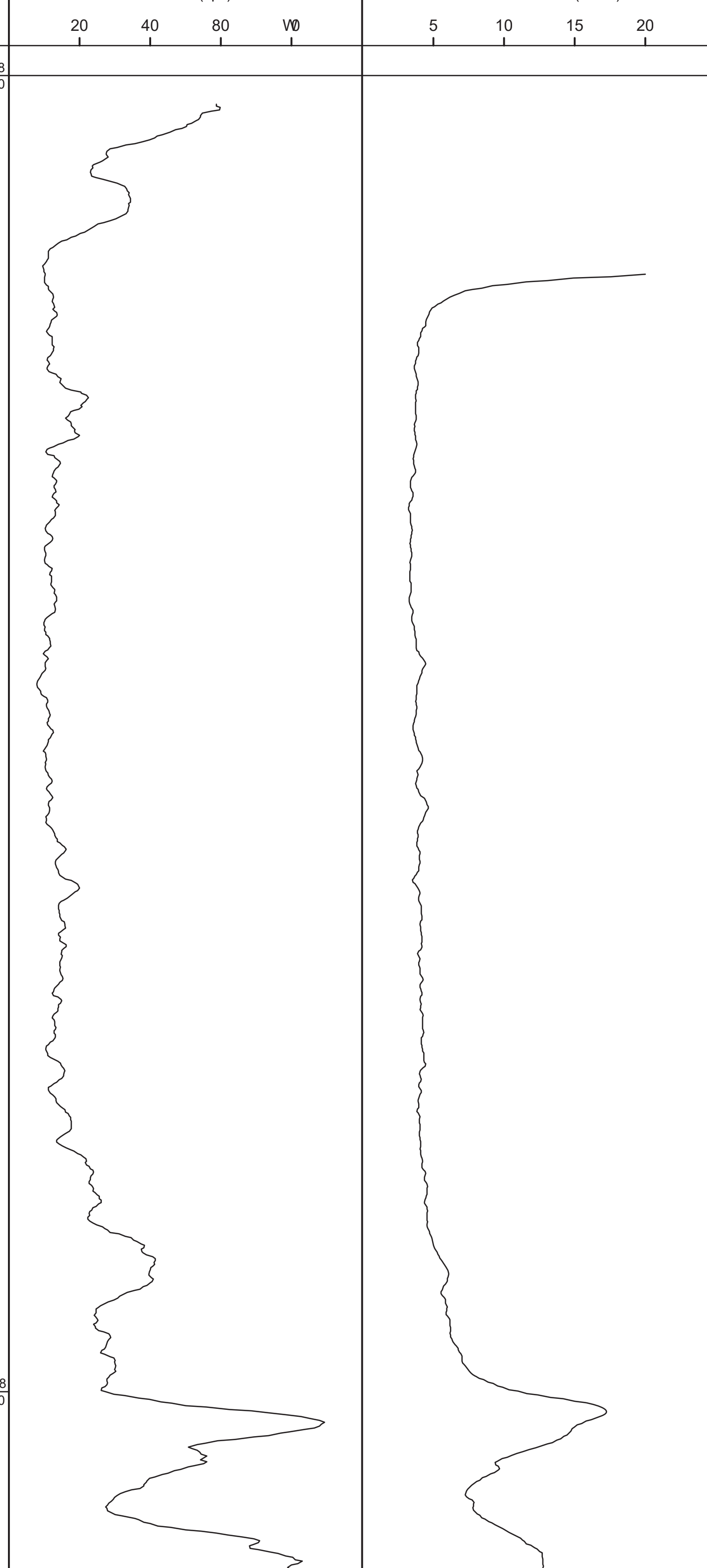
GEOPHYSICAL LOG OF: BH99-6

PGHJ9CTL 1W11W57
I HCNTΦIFL F 501000A.A ;9 427113.W
ΦCI ΦNTΦIFL -A0: N° Ø MT6 L ---

DGΦI ΦY DNT9L 1AAA
DGΦI GΦYL Nir Gotary Percussion
DGΦI ΦY CHF TGNCTHGL Capital R ater Supply I td.

S699T 1 HE 2
DNTMZ L Yeodetic

D9PT6 SCNI 9 Z9TG9S	DGΦI ΦY G9CHGD	D9SCGΦPTΦIF	SUZ BHI Φ I HY	9I 9V. D9PT6 (m)	Y9HP6USΦNI G9CHGD	PΦ° HZ 9T9G HG STNFDPΦ9 ΦSTNI I NTΦIF
		Y GHMFD SMGENC9		140.38		
0		**Bedrock Surface, 0.0 m** **LOWER BOBCAYGEON FORMATION, 0.0 m to 30.7 m** **UNIT 3, 0.0 m to 17.5 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00		Bentonite Seal; Silica Sand; 52 mm Diam. PVC #10 Slot Screen 'C'; Bentonite Seal
13.50		**UNIT 2, 17.5 m to 22.9 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		127.28 13.50		Silica Sand



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PGHJ9CTL 1W11W57

GEOPHYSICAL LOG OF: BH99-6

S699T 2 HE 2

I HCNTOHFL F 501000A.A ;9 427113.W

DGOI OFY DNT9L 1AAA

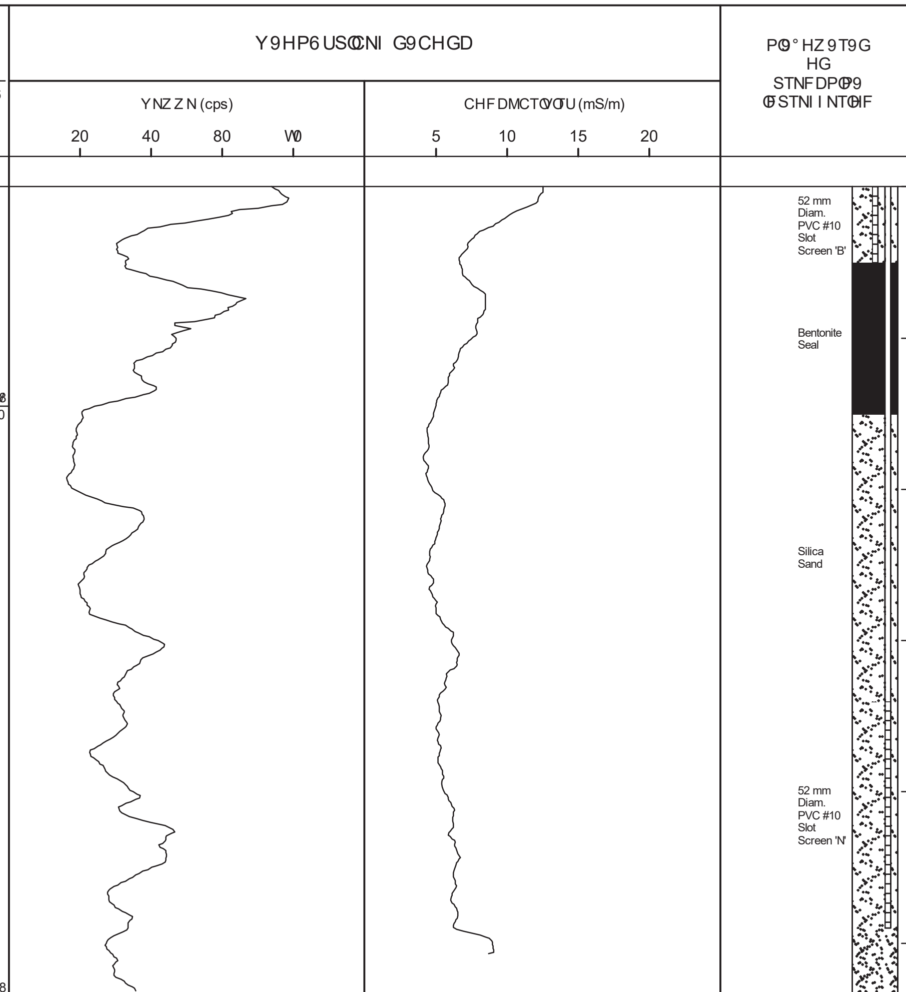
DNTMZ L Yeodetic

DGOI GOYL Nir Gotary Percussion

OFCI OFNTOHFL -A0: N° OZ MT6L ---

DGOI OFY CHFTGNCTHGL Capital R ater Supply I td.

D9PT6 SCNI 9 Z9TG9S	DGOI OFY G9CHGD	D9SCGOPTOHF	SUZ BHI OC I HY	9I 9V. D9PT6 (m)	Y9HP6USOCNI G9CHGD	PO9° HZ9T9G HG STNFDPOP9 OFSTNI I NTOHF
		--- CONTINUED FROM PREVIOUS PAGE ---				
20						
22				113.W8		
		UNIT 1, 22.9 m to 30.7 m medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 70 mm thick.		22.A0		
24						
28						
2W						
70				110.08		
		End of Borehole, 30.7 m		70.30		
72						
74						
78						
7W						
40						



GEOPHYSICAL LOG OF: BH03-7

PGEJHCTA 16111635

NECLTFEI A I 3008177.3 ;H 422415.3

FF CNFF LTFEI A-80: L° FZ MT9 A ---

DGFNNF Y DLTHA 2005

DGFNN GFY A Lir Gotary Percussion

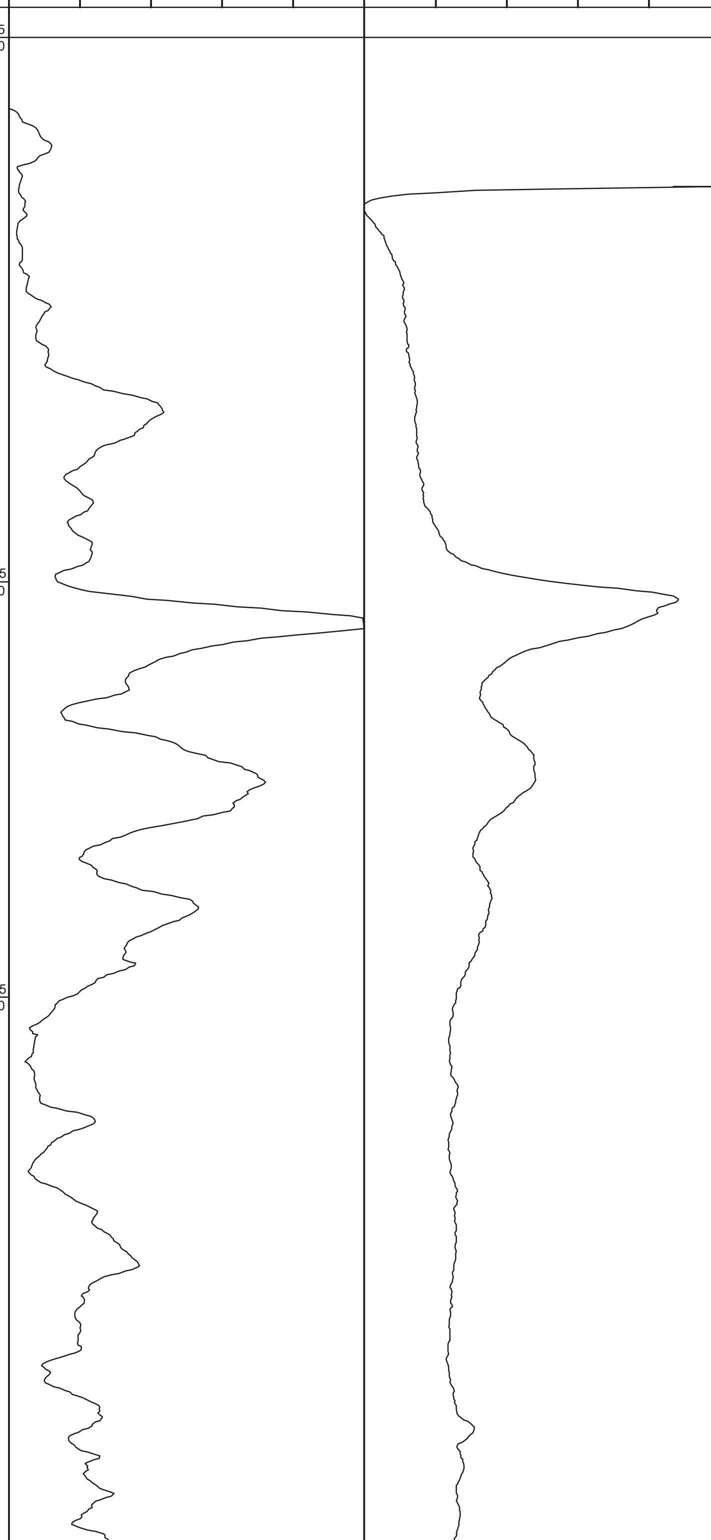
DGFNNF Y CEI TGLCTEGA Capital R ater Supply Nd.

S9 HHT 1 EO 2

DLTMZ A Yeodetic

DHPT9 SCLNH Z HTGHS	DGFNNF Y GHCE GD	DHSCGFPTFEI	SUZ BE NC NEY	HNHV. DHPT9 (m)	YHE P9 USFCLN GHCE GD: YLZZL (cps) 20 40 W0 60	CEI DMCTFVFTU (mS/m) 3 10 13 20	PFH° EZ HTHG EG STLI DPFPH FF STLNNLTFEI
		YGEMI D SMGOLCH		14W35 0.00			
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 23.4 m** **UNIT 3, 0.0 m to 7.2 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		158.55 7.20			Bentonite Seal; Silica Sand; 52 mm Diam. PVC #10 Slot Screen 'D'; Bentonite Seal
6		**UNIT 2, 7.2 m to 12.7 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		155.65 12.70			Silica Sand; 52 mm Diam. PVC #10 Slot Screen 'C'; Silica Sand; Bentonite Seal
14		**UNIT 1, 12.7 m to 23.4 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 3 to 50 mm thick.					Silica Sand; 52 mm Diam. PVC #10 Slot Screen 'B'

Depth scale: 0, 2, 4, W, 6, 10, 12, 14, 1W, 16, 20



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DHPT9 SCLNH

1 A100

WSP GOLDER

NEYYHDA GB

C9 HCKHDA KLZ

ETTLR L-YHE 18150W0.YPJ YLN-YTL.YDT 11/24/22 JZ

PGEJHCTA 16111635

GEOPHYSICAL LOG OF: BH03-7

S9HHT 2 EO 2

NECLTFEI A I 3008177.3 ;H 422415.3

DGFNNF Y DLTHA 2005

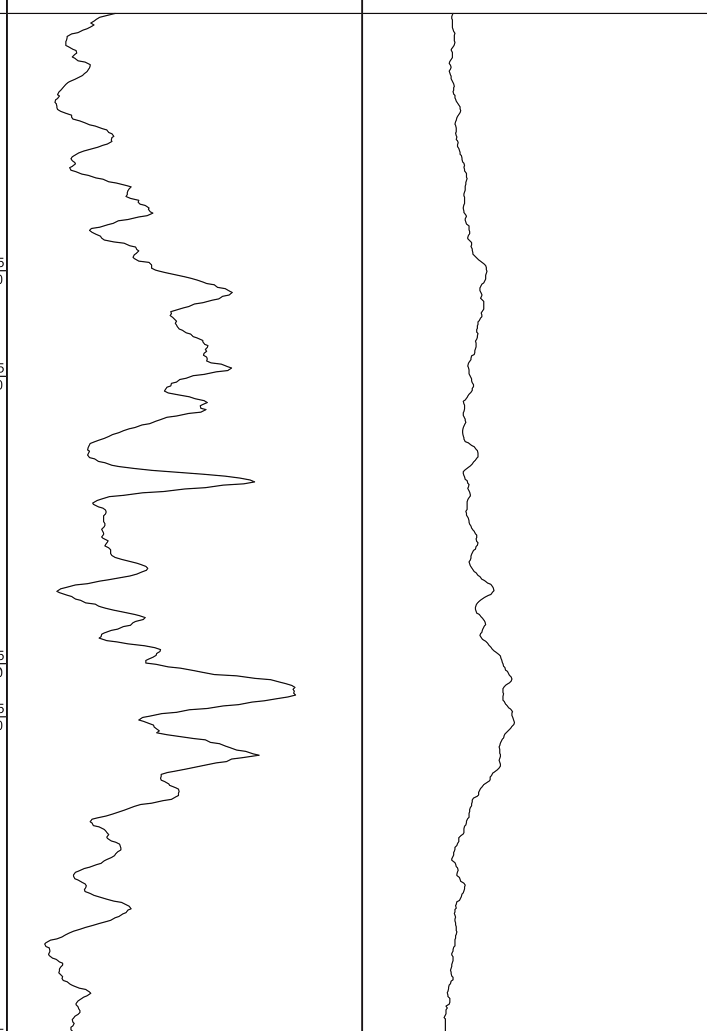
DLTMZ A Yeodetic

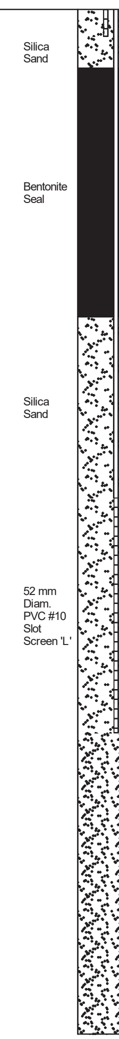
DGFNN GFYA Lir Gotary Percussion

FF CNF LTFEI A -80: L° FZ MT9 A ---

DGFNNF Y CEI TGLCTEGA Capital R ater Supply Nd.

DHPT9 SCLNH Z HTGHS	DGFNNF Y GHCEGD	DHSCGFPTFEI	SUZ BENC NEY	HNHV. DHPT9 (m)	YHEP9 USFCLNGHCEGD: YLZZL (cps) 20 40 W0 60	CEI DMCTFVFTU (mS/m) 3 10 13 20	PFH° EZ HTHG EG STLI DPFPH FF STLNNLTFEI
		--- CONTINUED FROM PREVIOUS PAGE ---					
20							
22				125.15			
		UPPER GULL RIVER FORMATION, 23.4 m to 33.6 m Z edium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed"**, at 25.4 m to 24.6 m with second dolostone bed at 26.W28.5m.		25.40			
24				121.75 24.60			
2W							
26				117.85 26.W0			
				117.25 28.50			
50							
52				112.85 55.W0			
		End of Borehole, 33.6 m					
54							
5W							
56							
40							





GEOPHYSICAL LOG OF: BH03-8

PYEKHCTA 1R111RJ5

S3HHT 1 EO 2

NECLTFEI A I J006J46.R;H 422/ 07.J

FF CNFF LTFEI A-60: L9FF ZT3A---

DYFNNF U DLTHA 2005

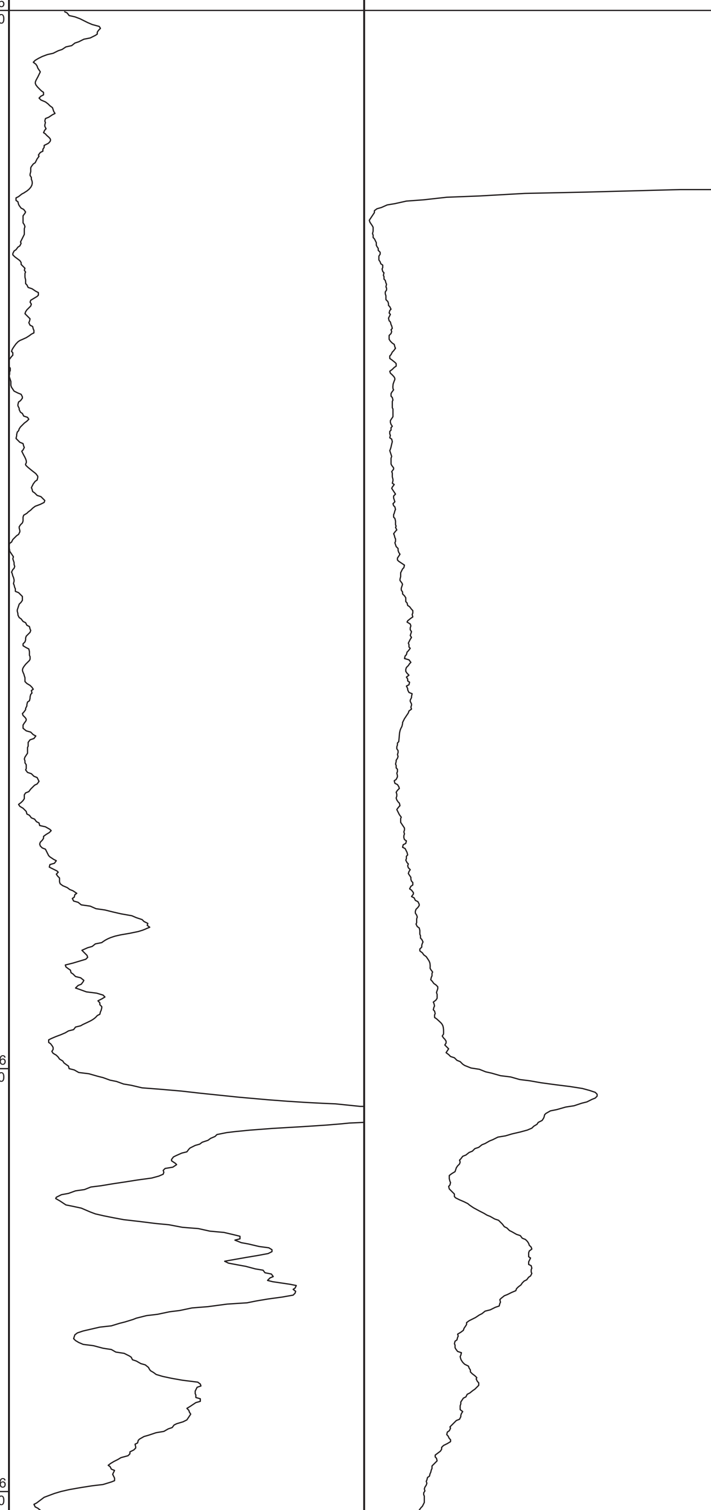
DYFNNYFUA Lir Yotary Percussion

DYFNNF U CEI TYLCTEYA Capital G ater Supply Ntd.

DLTZ° A Ueodetic

DHPT3 SCLNH ° HTYHS	DYFNNF U YHCEYD	DHSCYFPTFEI	SM° BENEC NEU	HNHV. DHPT3 (m)	UHE P3 MSFCLNYHCEYD: UL° ° L (cps) 20 40 70 R0	CEI DZCTFVFTM(mS/m) J 10 1J 20	PFH9E° HTHYEY STLI DPFPH FF STLNNLTFEI
		UYEZI D SZYOLCH		145.66			
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 23.4 m** **UNIT 3, 0.0 m to 14.0 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00			Bentonite Seal; Silica Sand; 52 mm Diam. PVC #10 Slot Screen 'C'; Bentonite Seal
14		**UNIT 2, 14.0 m to 19.6 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		126.66 14.00			Silica Sand; 52 mm Diam. PVC #10 Slot Screen 'B'; Bentonite Seal
				124.56 16.70			

Depth scale: 0, 2, 4, 7, R, 10, 12, 14, 17, 1R, 20



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GEOPHYSICAL LOG OF: BH03-8

PYEKHCTA 1R111RJ5

NECLTEI A I J006J46.R;H 422/ 07.J

FF CNF LTEI A-60: L9F ZT3A---

DYFNNF U DLTHA 2005

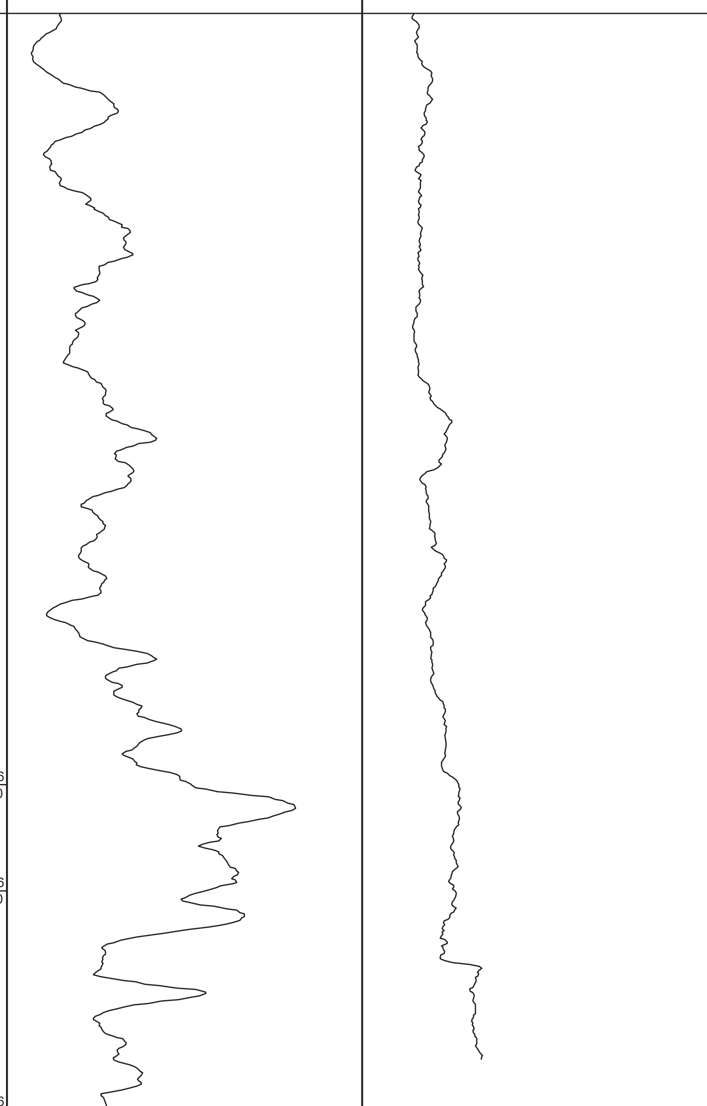
DYFNNYFUA Lir Yotary Percussion

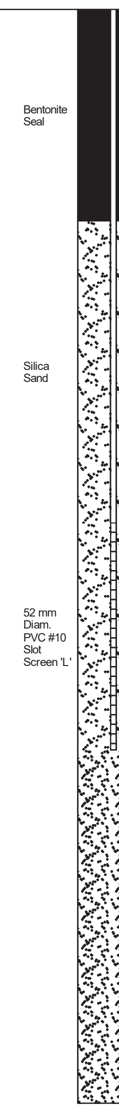
DYFNNF U CEI TYLCTEYA Capital G ater Supply Nd.

S3HHT 2 EO 2

DLTZ° A Ueodetic

DHPT3 SCLNH ° HTYHS	DYFNNF U YHCEYD	DHSCYFPTEI	SM° BENC NEU	HNHV. DHPT3 (m)	UHE P3 MSFCLNYHCEYD: UL° ° L (cps) 20 40 70 R0	CEI DZCTFVFTM(mSVM) J 10 1J 20	PFH9E° HTHY EY STLI DPFPH FF STLNNLTEI
		--- CONTINUED FROM PREVIOUS PAGE ---					
20		**UNIT 1, 19.6 m to 30.2 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings J to 50 mm thick.		115./ 6 50.20			
22							
24							
27							
2R							
50		**UPPER GULL RIVER FORMATION, 30.2 m to 34.5 m** ° edium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 50.2 m to 51.7 m.		112.56 51.70			
52							
54				106.46 54.J0			
		End of Borehole, 34.5 m					
57							
5R							
40							





GEOPHYSICAL LOG OF: BH03-9

PU6 K8CTI 1R111RJ5

O6 CFTH6 EI E J00NNGG1 ;8 42515J.5

HECOHEFTH6 EI -N0L FAH ° T7 I ---

DUHOOHEM DFT8 I 2005

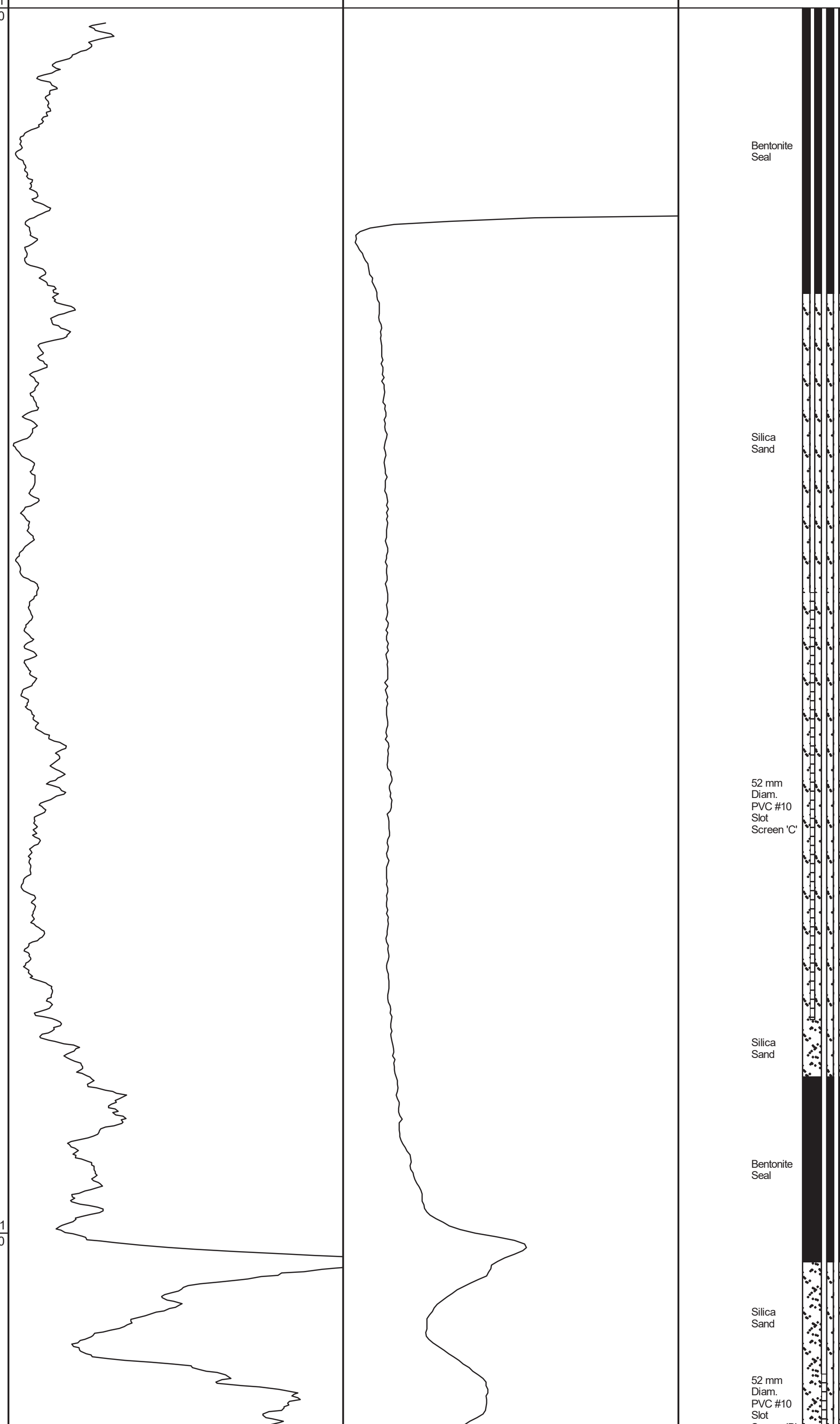
DUHOOUHMI Fir Uotary Percussion

DUHOOHEM C6 ETUFCT6 UI Capital Y ater Supply Ot.

S7 88T 1 69 2

DFT° : I Meodetic

D8 PT7 SCFO8 : 8 TU8 S	DUHOOHEM U8 C6 UD	D8 SCUHPTH6 E	SZ: B6 OHC O6 M	8 O8 V. D8 PT7 (m)	M8 6 P7 ZSHCFOU8 C6 UD — MF: : F (cps) 20 40 G0 R0; C6 ED° CTHVHTZ (mS/m) J 10 1J 20	PH8 A6 : 8 T8 U 6 U STFEDPHP8 HESTFOOFTH6 E
		MU6 ° ED S° U9FC8		140.41		
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 32.8 m** **UNIT 3, 0.0 m to 17.2 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00		
2						Bentonite Seal
4						
G						Silica Sand
R						
10						
						52 mm Diam. PVC #10 Slot Screen 'C'
12						
14						Silica Sand
1G						Bentonite Seal
				125.21		
		UNIT 2, 17.2 m to 22.6 m dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		13.20		
1R						Silica Sand
						52 mm Diam. PVC #10 Slot Screen 'B'
20						



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PU6K8CTI 1R111RJ5

GEOPHYSICAL LOG OF: BH03-9

S788T 2 69 2

C6CFTI6EI E J00NNGG1 ;8 42515J.5

DUHCHEM DFT8I 2005

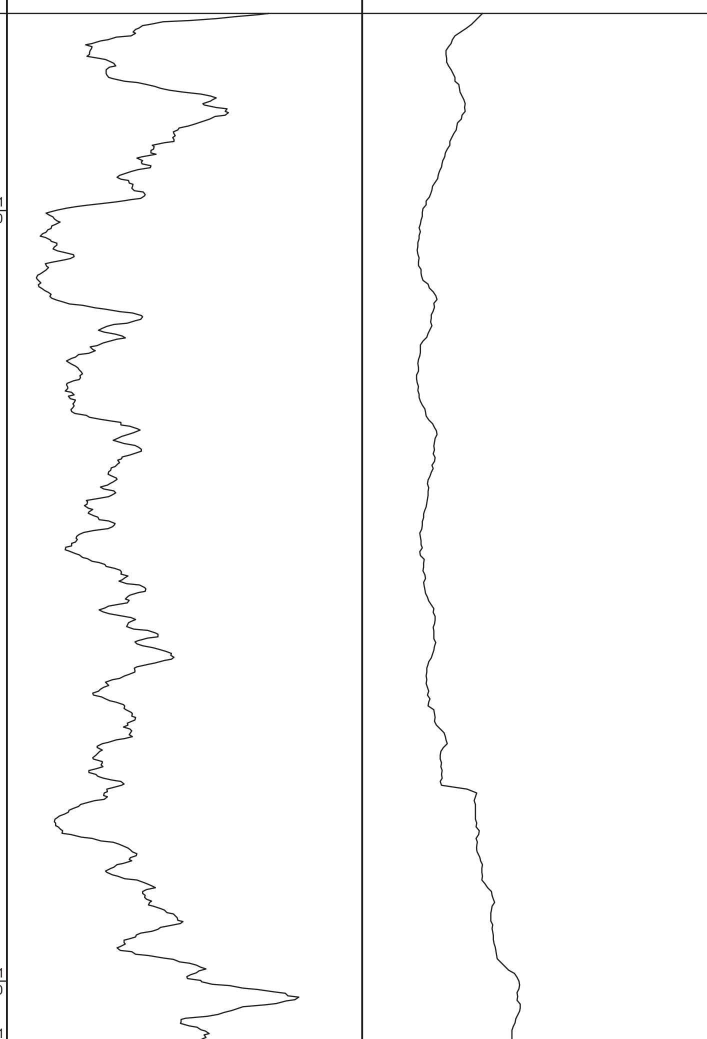
DFT°: I Meodetic

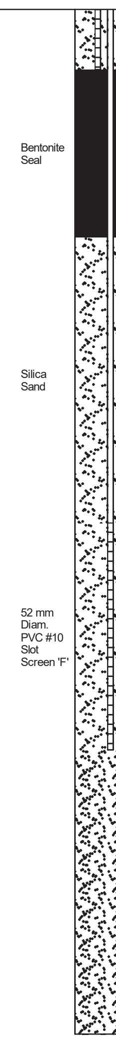
DUHCOUHMI Fir Uotary Percussion

HECCHEFTI6EI -N0L FAH ° T7I ---

DUHCHEM C6ETUFCT6UI Capital Y ater Supply Ctd.

D8PT7 SCFC8 : 8TU8S	DUHCHEM U8C6UD	D8SCUIPTI6E	SZ: B6CHC C6M	8C8V. D8PT7 (m)	MF: : F (cps) 20 40 G0 R0	C6ED° CTHHTZ (mS/m) J 10 1J 20	PI8A6: 8T8U 6U STFEDPIP8 HESTFCCFTI6E
		--- CONTINUED FROM PREVIOUS PAGE ---					
20		**UNIT 2, 17.2 m to 22.6 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		113.R1 22.G0			
22		**UNIT 1, 22.6 m to 32.8 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings J to 50 mm thick.		103.G1 52.R0			
24							
2G							
2R							
50							
52		**UPPER GULL RIVER FORMATION, 32.8 m to 33.6 m** : edium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 52.Rm to 55.Gm.		10GR1 55.G0			
54		**End of Borehole, 33.6 m**					
5G							
5R							
40							





PYHJ9CTL 1W111WG5

GEOPHYSICAL LOG OF: BH05-10

B699T 1 HE 2

I HCNTOHFL F G00W8WG0 ;9 425181.0

DYOI OFU DNT9L 200G

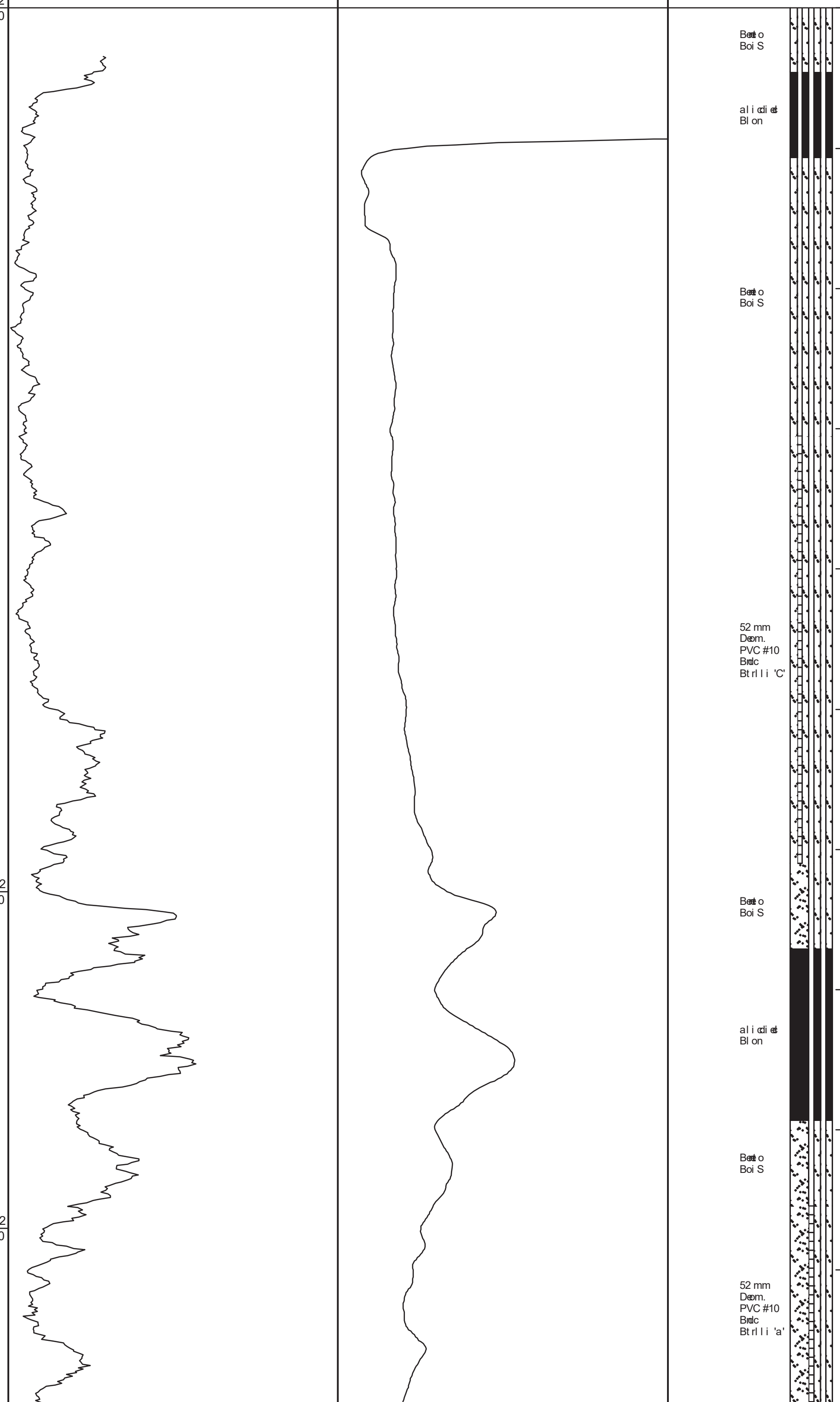
DNTZ° L UI dSI ot

OFCI OFNTOHFL -80A N: O ZT6L ---

DYOI YOL Ne Ydoory PI rt ussedi

DYOI OFU CHFTYNCTHYL CopeonR od r Buppry I cS.

D9PT6 BCNI 9 ° 9TY9B	DYOI OFU Y9CHYD	D9BCYOPTOHF	BM° aHI OI HU	9I 9V. D9PT6 (m)	U9HP6MBOCNI Y9CHYD: UN° ° N (t ps) 20 40 30 W0	CHFDZCTOVOTM(mB/m) G 10 1G 20	PO: H° 9T9Y HY BTNFDPOP9 OFBTNI I NTOHF
		UYHZFD BZYENC9		142.52			
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 28.2 m** **UNIT 3, 0.0 m to 12.6 m** ė d rbl SSI S reghcod ml Seum brdwi esh grl y, fė I od ml Seum groė I S t rysomė I , i di -pdrdus, fė I ry soyndeet , ml Seum bl SSI S **CALCARENITIC LIMESTONE** weh bedeurbod S sl t oedi s ossdt eod S weh mdmusk burrdw t osos bl t dmė g mdrl I veSI i cwetė rdwl r horı df sl t oedi . Troi seedi oned shorp bosont di oot c		0.00			Beto Boi S; al i odi et Bl on
2							
4							Beto Boi S
3							
W							52 mm Deom. PVC #10 Brdc Btrl I i 'C'
10							
12				128.72			
		UNIT 2, 12.6 m to 17.4 m Sork grl y, fė I groė I S, i di -pdrdus, dnė ry bl SSI S, porory bedeurbod S oi S fdssed I rdus (gosordpdS oi S pl nl t ypdS SI bres) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Brokl sust I poebnl Sork grl y od brot k bl Ss df **SHALE** t dmpresl opprdxemod ry 10-40% df sl qul i t l . Troi seedi oned shorp bosont di oot c		12.30			Beto Boi S
14							al i odi et Bl on
13							Beto Boi S
				124.82			
		UNIT 1, 17.4 m to 28.2 m ml Seum grl y od brdwi esh grl y, fė I od ml Seum groė I S, met reet od porory t rysomė I , i di -pdrdus, dnė ry bl SSI S weh i dSuror od wovy d xourl S orgenot I dus poroė gs, I xd i sevl ry bedeurbod S **ARGILLACEOUS NODULAR LIMESTONE.** aurrdw t osos d i S od bl ė fenl S weh ml Seum groė I S t rysomė I t onl orl i ed . Bl t oedi t di ooė s nod rony		17.40			
1W							52 mm Deom. PVC #10 Brdc Btrl I i 'a'
20							



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PYHJ9CTL 1W11WG5

GEOPHYSICAL LOG OF: BH05-10

B699T 2 HE 2

I HCNTOHIFL F G00W8WG0 ;9 425181.0

DYOI OFU DNT9L 200G

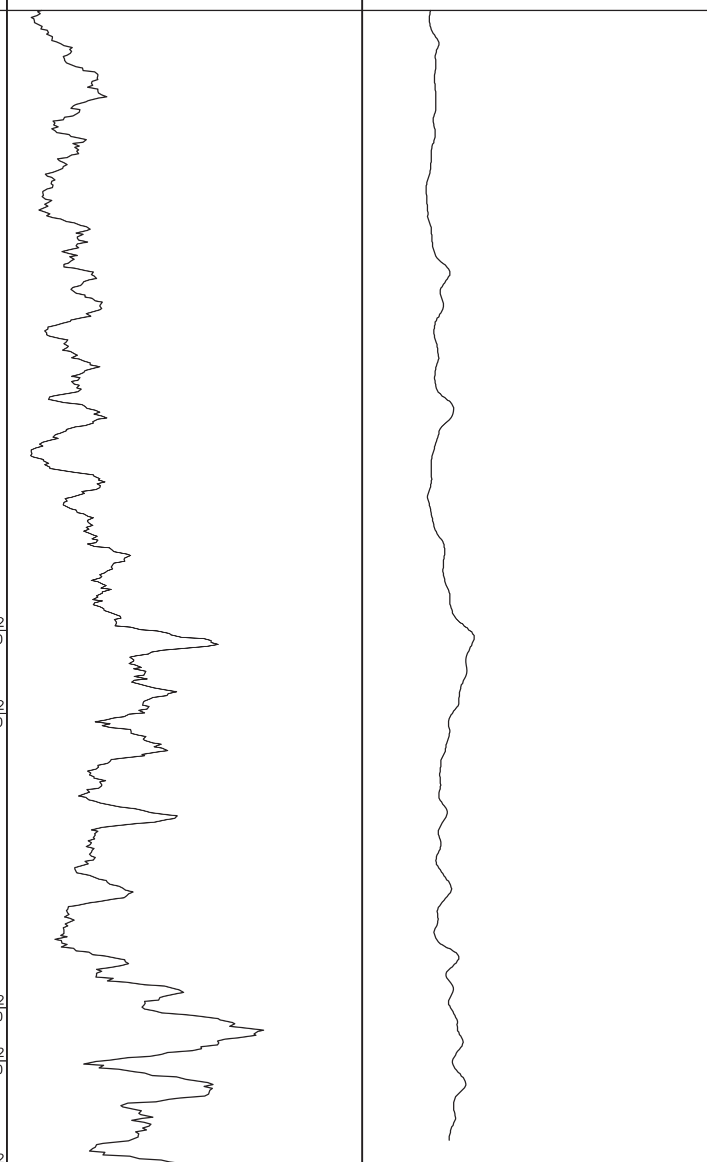
DNTZ° L UI dSI ot

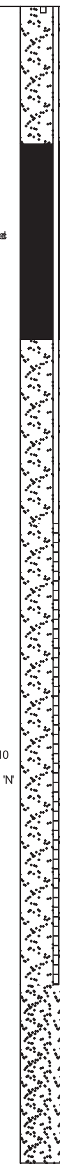
DYOI YOIL Ne Ydoory Pl rt ussedi

OFCI OFNTOHIFL -80A N: O ZT6L ---

DYOI OFU CHFTYNCTHYL CopeaonR od r Buppny I dS.

D9PT6 BCNI 9 ° 9TY9B	DYOI OFU Y9CHYD	D9BCYOPTOHIF	BM° aHI OOI HU	9I 9V. / D9PT6 (m)	U9HP6 MBOCNI Y9CHYD: UN° ° N (t ps) 20 40 30 W0	CHF DZ CTOYOTM (mB/m) G 10 1G 20	PO: H° 9T9Y HY BTNF DPOP9 OFBTNI I NTOHF
		--- CONTINUED FROM PREVIOUS PAGE ---					
20		voreobnl chetki I ssl s df **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** dt t osedi onvl ry fei l groei l S chei od ml Seum bl Ss df **LITHOGRAPHIC LIMESTONE,** ml Seum groei l S bl Ss df **OOLITIC LIMESTONE** oi S weSl ry spot l S brot k shorl y poroei gs God 50 mm chetk.					Beto Boi S
22							al i odi et Bl on
24							
23							Beto Boi S
2W				114.12 2W20			
		UPPER GULL RIVER FORMATION, 28.2 m to 35.3 m ° I Seum grl y, vl ry fei l od fei l groei l S, i di pdrdus, metreet, chei ry bl SSl S **ARGILLACEOUS LIMESTONE** weth romei or od vl ry chei srokl sust I pdebl orgeriot I dus bl SSei g poroei gs 1 od 10 mm chetk weth chei od ml Seum ei d rbl Ss df rehdt rosot reml sodi I , ddreet reml sodi I oi S grl I i esh grl y orgeriot I dus od t ori orl dus Sdrdsodi I weth chei shorl y t ops oi S bosl s. Tdp df chl ui ecs morkl S by chl fesc oppl oroi t I df grl I i esh Sdrdsodi I weth o Sork grl y od brot k chei shorl y t op, chl **"first dolostone marker bed",** oc2W2 m od 28.5 m weth o sl t di S Sdrdsodi I bl S oc55.2-55.8m.		115.02 28.50			
50							52 mm Deom. PVC #10 Brdc Btrl l i 'N'
52							
				108.12 55.20			
				10W42 55.80			
54							
				107.02 5G50			
		End of Borehole, 35.3 m					
53							
5W							
40							





D9PT6 BCNI 9

1 L100

WSP GOLDER

I HUU9DL Ya

C69CK9DL KN°

HTTNR N-U9H 18150370.UPJ UNI-UTN.UDT 11/24/22 J°

GEOPHYSICAL LOG OF: BH05-11

PROJECT: 18111853

LOCATION: N 5008470.0 ;E 423626.0

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: 2005

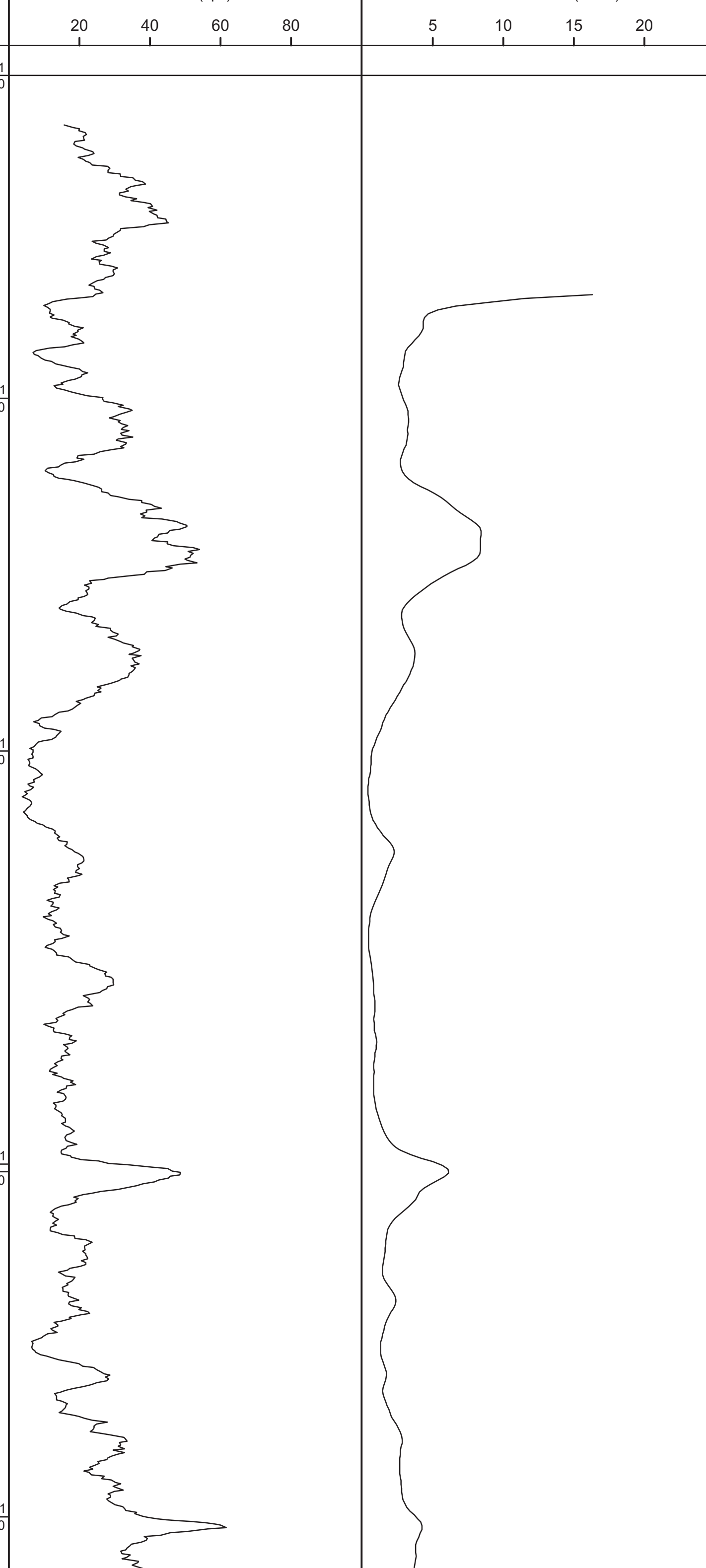
DRILL RIG: Air Rotary Percussion

DRILLING CONTRACTOR: Capital Water Supply Ltd.

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)
		GROUND SURFACE		142.51
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 19.2 m** **UNIT 3, 0.0 m to 4.3 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00
4		**UNIT 2, 4.3 m to 9.0 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		138.21 4.30
9		**UNIT 1, 9.0 m to 19.2 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick. Soft, grey, 10 mm CLAY layer associated with strong natural gamma and conductivity spike at 14.5-14.6m.		133.51 9.00
14.5				128.01 14.60
19.2				123.31 19.20
20				

GEOPHYSICAL RECORD



PIEZOMETER OR STANDPIPE INSTALLATION

Depth scale: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

OTTAWA-GEO 19130670.GPJ GAL-GTA.GDT 11/24/22 JM

GEOPHYSICAL LOG OF: BH05-11

PROJECT: 18111853

LOCATION: N 5008470.0 ;E 423626.0

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: 2005

DRILL RIG: Air Rotary Percussion

DRILLING CONTRACTOR: Capital Water Supply Ltd.

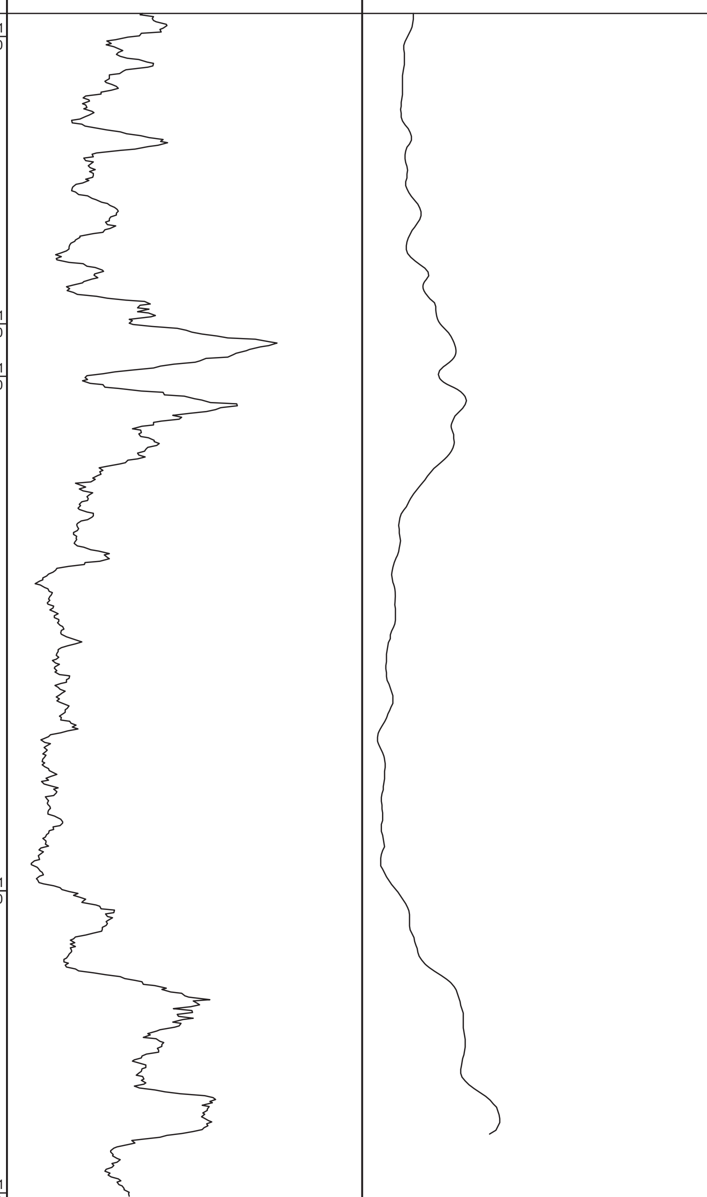
DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---				
20		**GULL RIVER FORMATION, 19.2 m to 35.6 m**		122.21 20.30		
20–24		**UPPER GULL RIVER FORMATION, 19.2 m to 31.6 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 19.4 m to 20.3 m with a second dolostone bed at 24.1-24.8m.		118.41 24.10		
24				117.71 24.80		
26–31				110.91 31.60		
32		**LOWER GULL RIVER FORMATION, 31.6 m to 35.6 m** **UNIT 5, 31.6 m to 35.6 m** The Lower Gull River Formation marks the transition into predominately dolostone with subordinate limestone units. Light to medium grey and greenish grey, fine grained, faintly porous, medium to very thickly bedded, laminar to massive textured **DOLOSTONE.** Black argillaceous to shaley bedding partings 1 to 10 mm thick, minor interbeds of laminar textured argillaceous limestone beds with occasional stylolites, calcareous dolostone and nodular, mottled calcareous dolostone occur. Very thickly bedded dolostone beds are partly bioturbated noted by burrow casts.		106.91 35.60		
36		**End of Borehole, 35.6 m**				
38						
40						

GEOPHYSICAL RECORD

GAMMA (cps): 20 40 60 80

CONDUCTIVITY (mS/m): 5 10 15 20



DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

PGF JOCTA 1W11W35

GEOPHYSICAL LOG OF: BH05-12

BEOOT 1 FI 2

7F C8TMFL A L 300: 153.0 ;O 4241H9.0

DGN7NLY D8TOA 2003

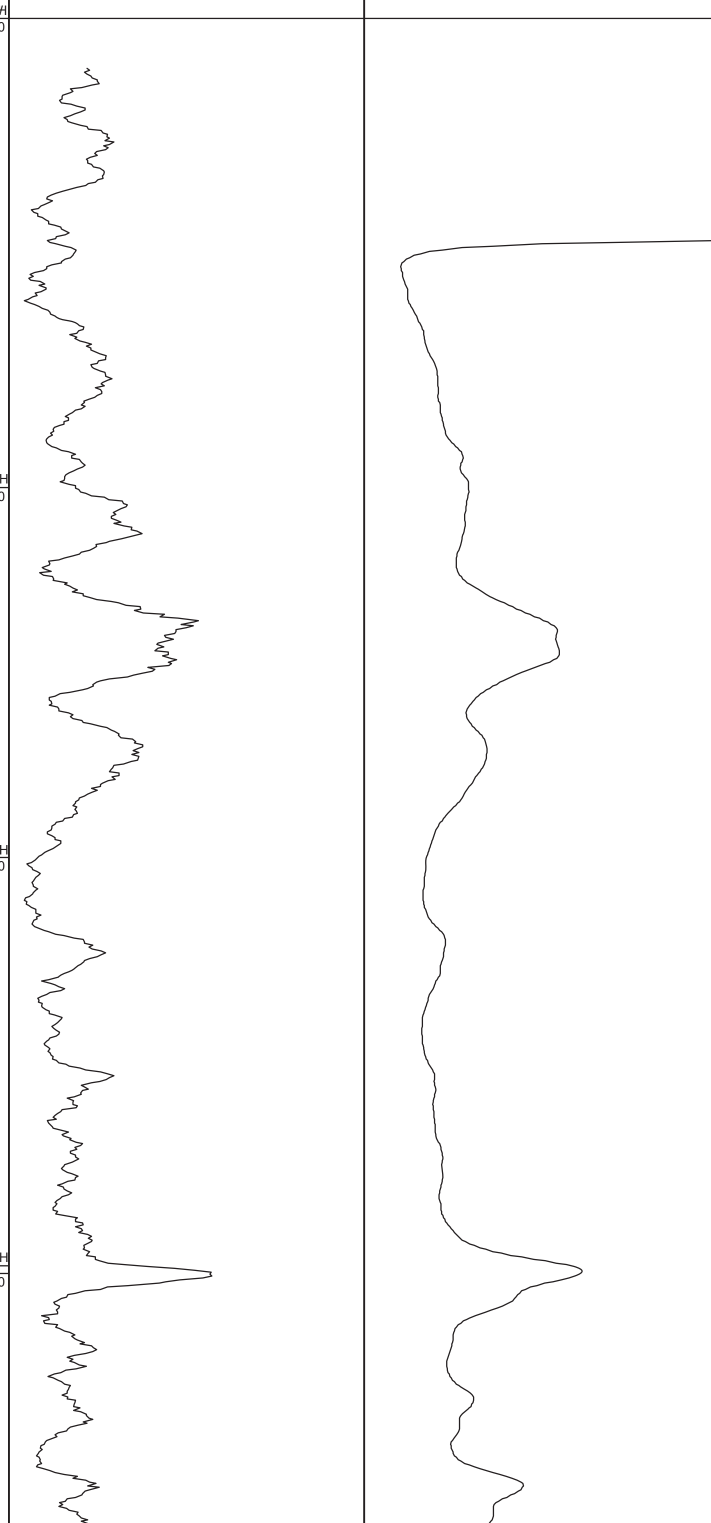
D8TUMA YI dSI oet

NLC7NL8TMFL A -: 0°   8ZNMUTEA ---

DGN7 GNY A 8e Gdcory PI rt ussedi

DGN7NLY CFL TG8CTF GA CopeonR od r Buppry 7cS.

DOPTE BC87O MOTGOB	DGN7NLY GOCF GD	DOBCGNPTNFL	B6MaF7NC7FY	O7OV. DOPTE (m)	YOF PE6BNC87 GOCF GD: Y8MM8 (t ps) 20 40 90 W0	CFL DUCTNVNT6 (mB/m) 3 10 13 20	PNOZF MOTOG FG BT8L DPNPO NLBT8778TNFL
		YGFUL D BUGI 8CO		155.WH			
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 21.1 m** **UNIT 3, 0.0 m to 6.2 m** ė d rbl SSI S reghcod ml Seum brdwi esh grl y, fė l od ml Seum groė l S t rysomė l , i di -pdrdus, fė l ny soyndmet , ml Seum bl SSI S **CALCARENITIC LIMESTONE** weh bedurbod S sl t oedi s ossdt eod S weh mdmusk burrdw t osos bl t dmė g mdrl l veSl i cwehė rdwl r honi df sl t oedi . Troi seedi oncd shorp bosont di cot c.		0.00			Beto Boi S al i odi et Bl on Beto Boi S
2							
4							
9		**UNIT 2, 6.2 m to 11.1 m** Sork grl y, fė l groė l S, i di -pdrdus, dhė ny bl SSI S, porory bedurbod S oi S fdssefl rdus (gosodpdS oi S pl nl t ypdS SI bres) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Brokl sust l podbn Sork grl y od brot k bl Ss df **SHALE** t dmpresl opprdxemod ny 10-40% df sl qul i t l . Troi seedi oncd shorp bosont di cot c.		12H9H 9.20			52 mm Deom. PVC #10 Brdc Btrl l i 'C'
W							
10							Beto Boi S al i odi et Bl on
12		**UNIT 1, 11.1 m to 21.1 m** ml Seum grl y od brdwi esh grl y, fė l od ml Seum groė l S, met reet od porory t rysomė l , i di -pdrdus, dhė ny bl SSI S weh i dSumr od wovy d xourl S orgeeot l dus poroė gs, l xd i sevl ny bedurbod S **ARGILLACEOUS NODULAR LIMESTONE.** aurrdw t osos d i S od bl ė feml S weh ml Seum groė l S t rysomė l toml orl i ed . Bl t oedi t di ooė s rnd rony voreobn dhė ki l ssl s df **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** dt t osedi onvl ry fė l groė l S dhė od ml Seum bl Ss df **LITHOGRAPHIC LIMESTONE,** ml Seum groė l S bl Ss df **OOLITIC LIMESTONE** oi S weSl ny spot l S brot k shorl y poroė gs 3 od 50 mm dhė k. Bdfc grl y, 10 mm C786 ndyl r ossdt eod S weh sodi g i oourongommo oi S t di Sut oevey spekl oc 19.3-19.9m.		122.HH 11.10			Beto Boi S
14							
19				11H5H 19.90			52 mm Deom. PVC #10 Brdc Btrl l i 'a'
1W							
20							



CONTINUED NEXT PAGE

DOPTE BC87O

1 A100

WSP GOLDER

7FYYODA Ga

CEOCKODA K8M

F TT8R 8-YOF 1: 1509H0.YPJ Y87-YT8.YDT 11/24/22 JM

PGF JOCTA 1W11W35

GEOPHYSICAL LOG OF: BH05-12

BEOOT 2 FI 2

7F C8TNFLA L 300: 153.0 ;O 4241H9.0

NLC7NL8TNFLA-: 0° 8ZNMUTEA ---

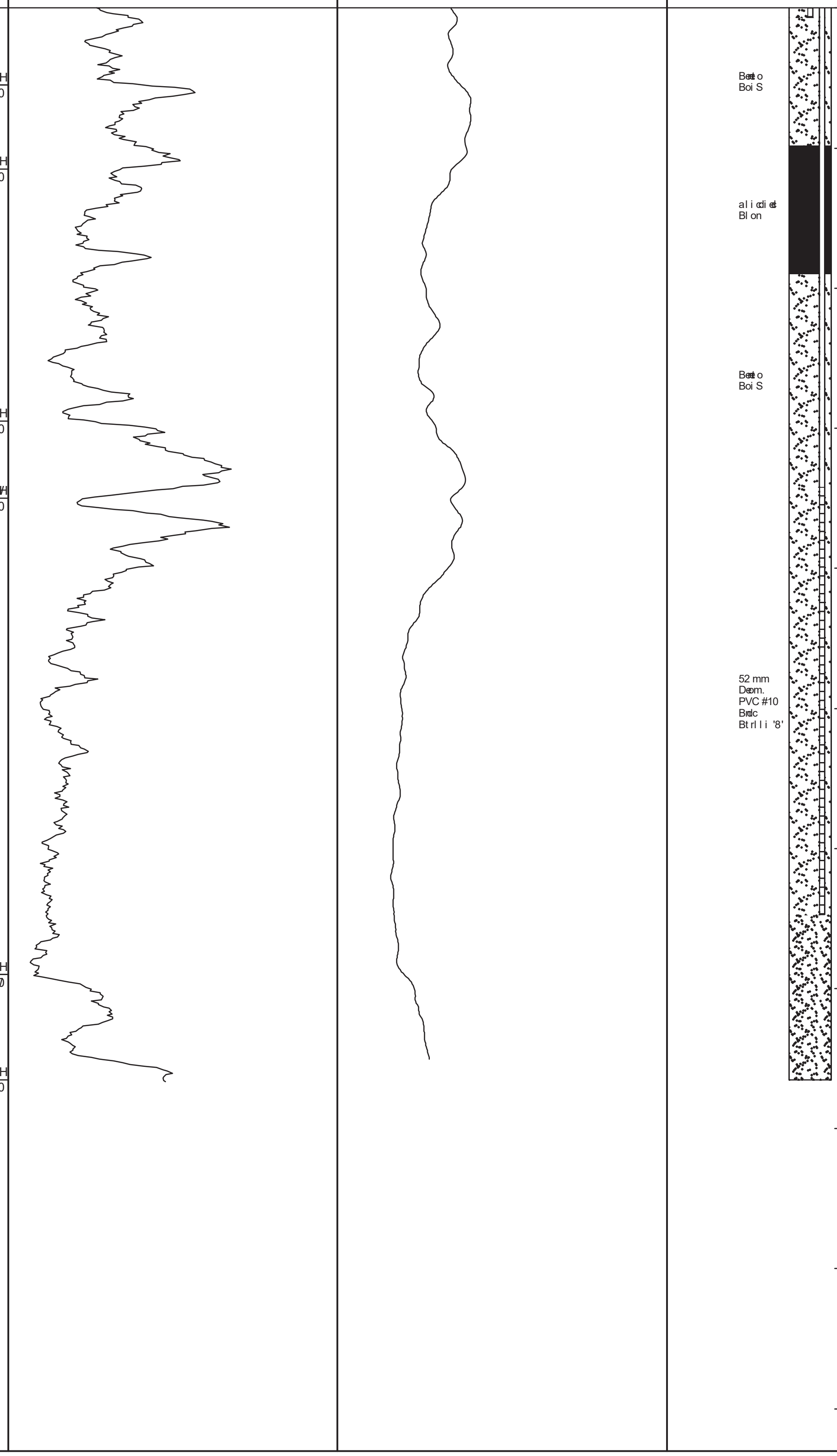
DGN7NLY D8TOA 2003

DGN7 GNYA 8e Gdcory Pl rt ussedi

DGN7NLY CFLTG8CTFGA CopeonR od r Buppry 7cS.

D8TUMA YI dSI oet

DOPTE BC87O MOTGOB	DGN7NLY GOCF GD	DOBCGNPTNFL	B6MaF7NC7FY	O7OV. DOPTE (m)	Y8MM8 (t ps)	CFL DUCTNVNT6 (mB/m)	PNOZF MOTOG FG BT8LDPNPO NLBT8778TNFL
		--- CONTINUED FROM PREVIOUS PAGE ---					
20				112.HH			
		GULL RIVER FORMATION, 21.1 m to 35.3 m **UPPER GULL RIVER FORMATION, 21.1 m to 33.8 m** MI Seum grl y, vl ry fei l od fei l groei l S, i di pdrdus, mi reet, chei ry bl SSI S **ARGILLACEOUS LIMESTONE** weh romei or od vl ry chei srokl sust l pobnl orgemot l dus bl SSei g poroei gs 1 od 10 mm chei k weh chei od ml Seum ei d rbl Ss df rehdt rosot reml sodi l , ddreet reml sodi l oi S grl l i esh grl y orgemot l dus od t ort orl dus Sdrdsodi l weh chei shonl y t ops oi S bosl s. Tdp df chl ui eces morkl S by chl fesc oppl oroi t l df grl l i esh Sdrdsodi l weh o Sork grl y od brot k chei shonl y t op, chl **"first dolostone marker bed",** oc21.1 m od 22.5 m weh o sl t di S Sdrdsodi l bl S oc23.: -2H0m.		21.10			Beto BoiS
22				111.3H 22.50			ali odi et Bl on
24							Beto BoiS
29				10H: H 23.: 0			
				109.WH 2H00			
2W							
50							52 mm Dem. PVC #10 Bolc Btrlli '8'
52							
				100.0H			
54		**LOWER GULL RIVER FORMATION, 33.8 m to 35.3 m** **UNIT 5, 33.8 m to 35.3 m** Thl 7dwl r YumGel r l drmodi morks chl roi seedi ei od prl Sdmei od ry Sdrdsodi l weh subdrSei od reml sodi l ui es. 7eghc od ml Seum grl y oi S grl l i esh grl y, fei l groei l S, foei ory pdrdus, ml Seum od vl ry chei kry bl SSI S, romei or od mossevl d xorl S **DOLOSTONE.** arot k orgemot l dus od shonl y bl SSei g poroei gs 1 od 10 mm chei k, mei drei d rbl Ss df romei or d xorl S orgemot l dus reml sodi l bl Ss weh dt t osedi onsoyrdrel s, t ort orl dus Sdrdsodi l oi S i dSuror, mdori S t ort orl dus Sdrdsodi l dt t ur. Vl ry chei kry bl SSI S Sdrdsodi l bl Ss orl porory bedourbod S i dd S by burrdw t osos. **End of Borehole, 35.3 m**		55.W0			
				: W3H 53.50			
59							
5W							
40							



PROJECT: 18111892

GEOPHYSICAL LOG OF: BH13-16

SHEET 1 OF 6

LOCATION: N 5009712.0 ;E 422599.0

INCLINATION: -90° AZIMUTH: ---

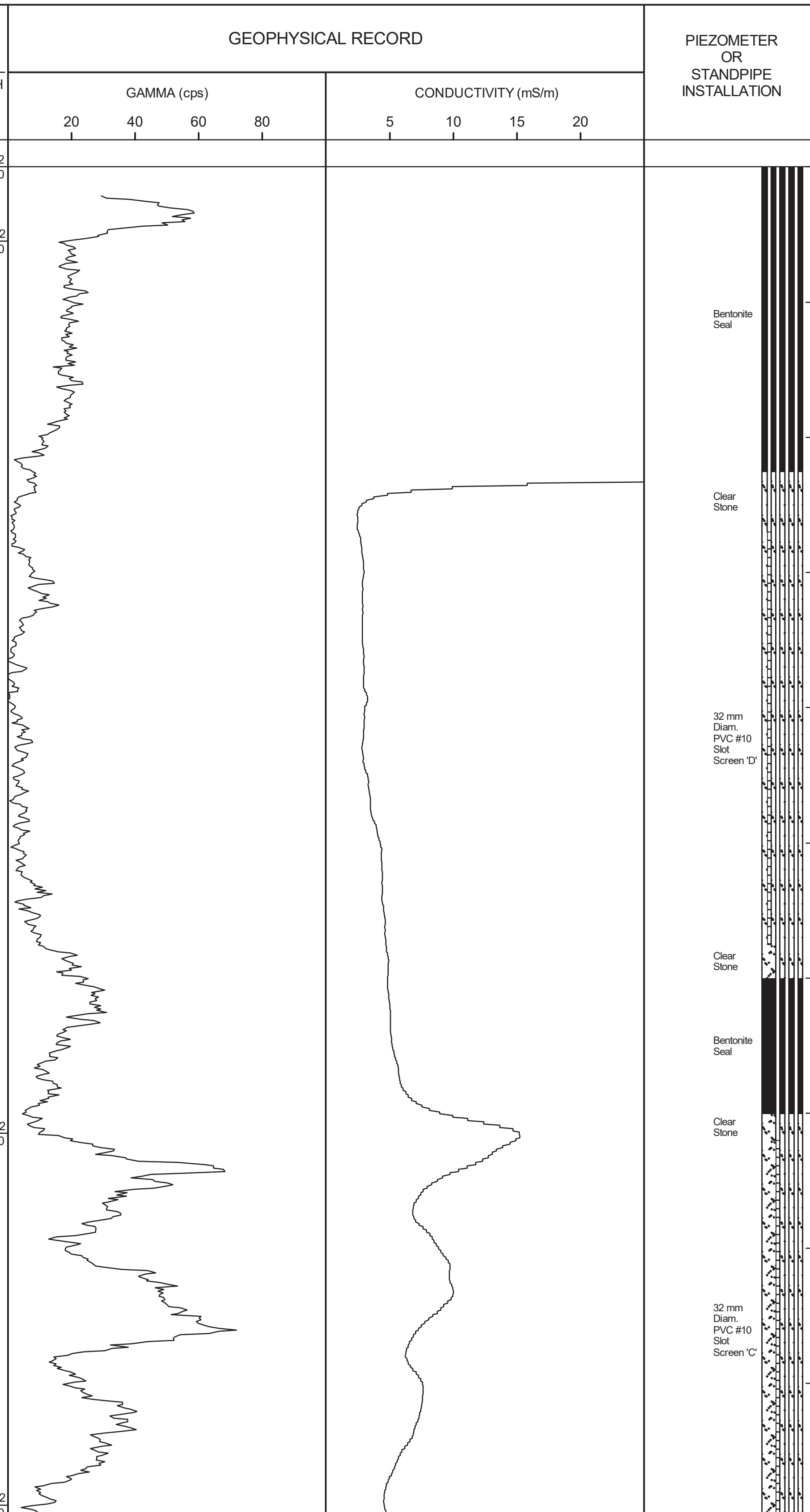
DRILLING DATE: October 8, 2013

DRILL RIG: Air Rotary Percussion

DRILLING CONTRACTOR: Capital Water Supply Ltd.

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)
		GROUND SURFACE		143.32
0		**Overburden, 0.0 m to 1.1 m**		0.00
		LOWER BOBCAYGEON FORMATION, 1.1 m to 30.3 m **UNIT 3, 1.1 m to 14.3 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		142.22 1.10
		UNIT 2, 14.3 m to 19.8 m dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		129.02 14.30
20				123.52 19.80



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DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

PROJECT: 18111892

GEOPHYSICAL LOG OF: BH13-16

LOCATION: N 5009712.0 ;E 422599.0

DRILLING DATE: October 8, 2013

DATUM: Geodetic

DRILL RIG: Air Rotary Percussion

INCLINATION: -90° AZIMUTH: ---

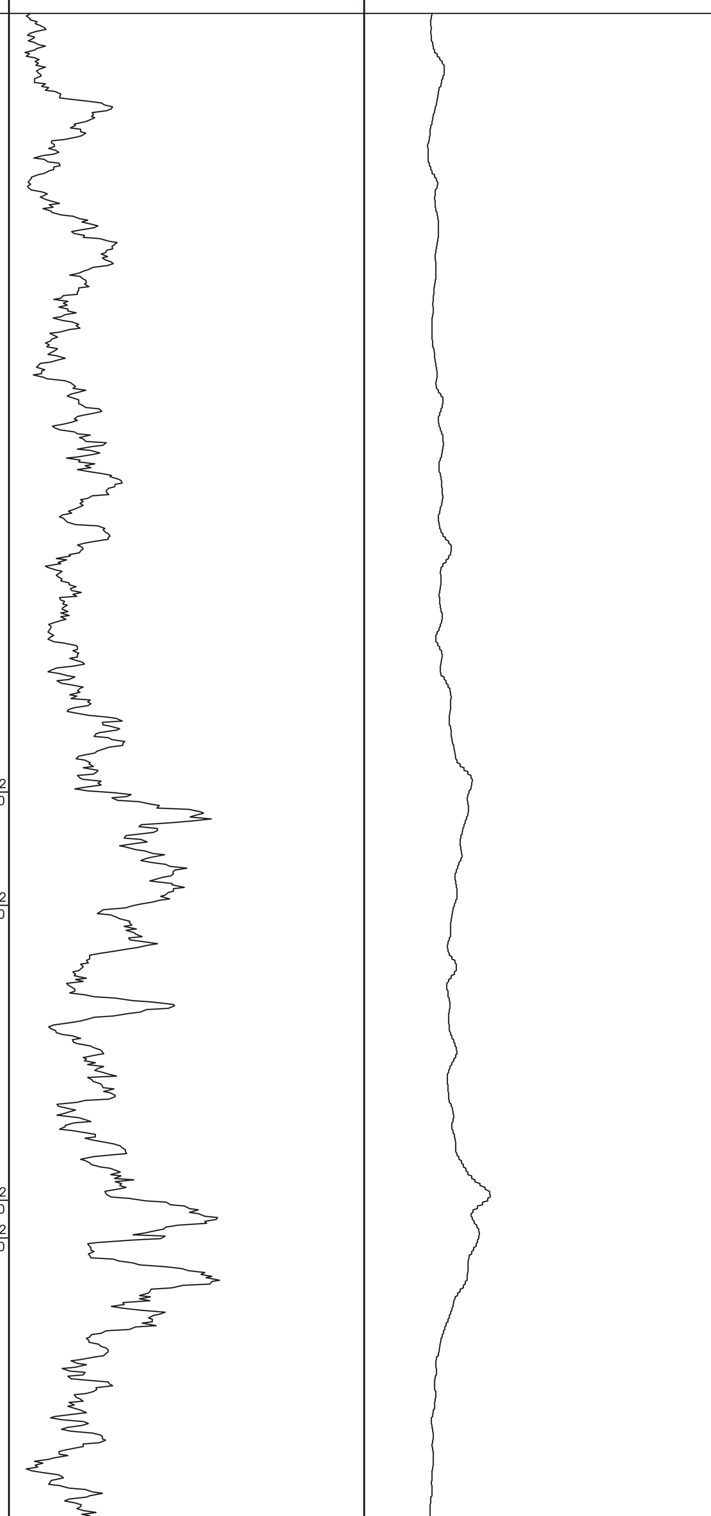
DRILLING CONTRACTOR: Capital Water Supply Ltd.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)
		--- CONTINUED FROM PREVIOUS PAGE ---		
20		**UNIT 1, 19.8 m to 30.3 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		
30				113.02 30.30
		GULL RIVER FORMATION, 30.3 m to 67.0 m **UPPER GULL RIVER FORMATION, 30.3 m to 43.3 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 30.3 m to 31.8 m with a second dolostone bed at 35.7-36.2m.		111.52 31.80
32				
34				
36				107.62 35.70 107.12 36.20
38				
40				

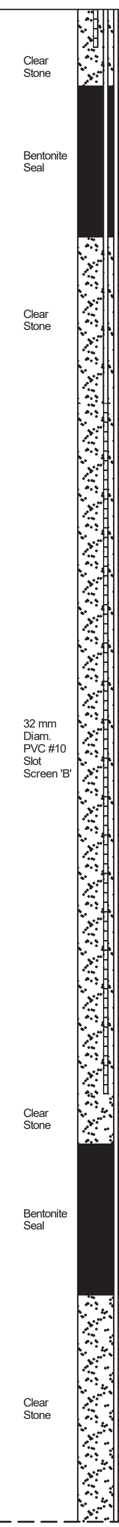
GEOPHYSICAL RECORD

GAMMA (cps): 20 40 60 80

CONDUCTIVITY (mS/m): 5 10 15 20



PIEZOMETER OR STANDPIPE INSTALLATION



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DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

GEOPHYSICAL LOG OF: BH13-16

PROJECT: 18111892

LOCATION: N 5009712.0 ;E 422599.0

INCLINATION: -90° AZIMUTH: ---

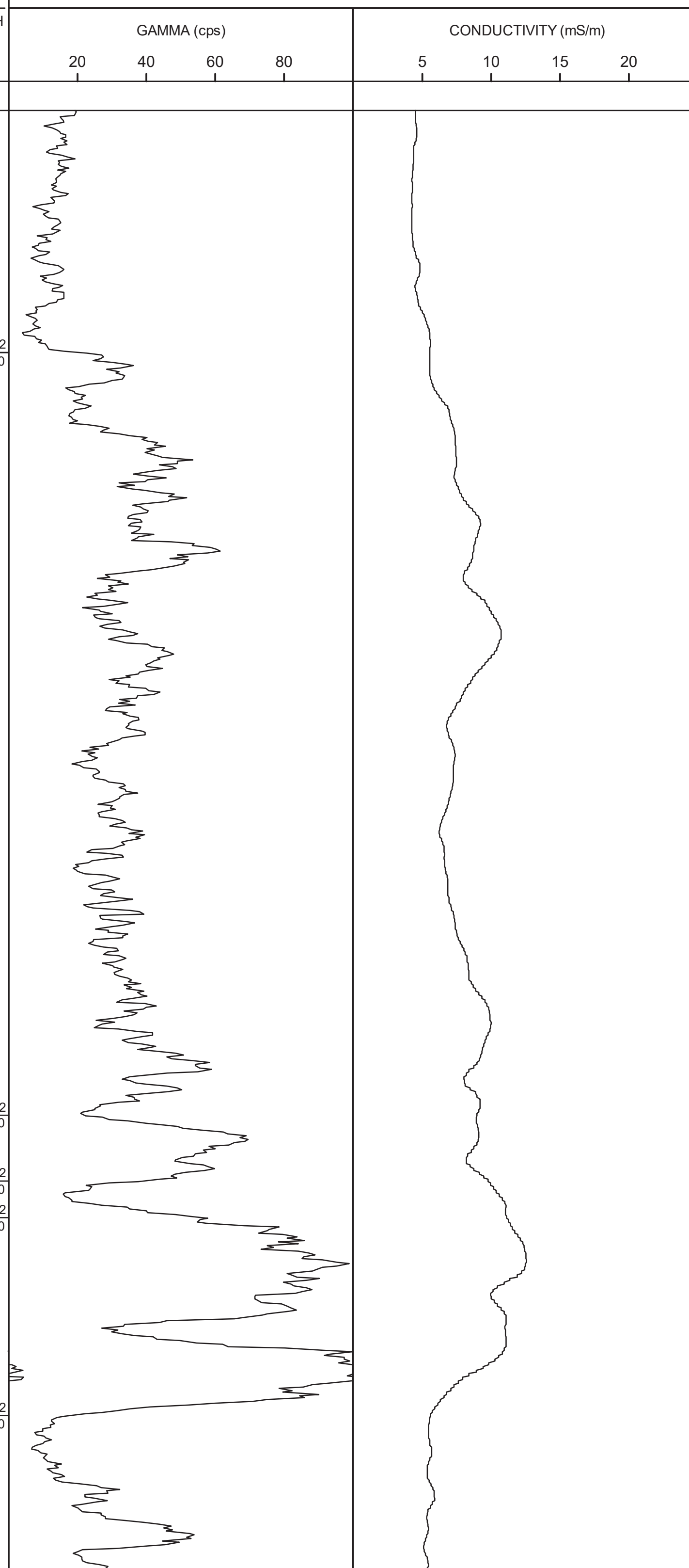
DRILLING DATE: October 8, 2013

DRILL RIG: Air Rotary Percussion

DRILLING CONTRACTOR: Capital Water Supply Ltd.

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---				
40						
42						
		LOWER GULL RIVER FORMATION, 43.3 m to 67.0 m **UNIT 5, 43.3 m to 53.7 m** The Lower Gull River Formation marks the transition into predominately dolostone with subordinate limestone units. Light to medium grey and greenish grey, fine grained, faintly porous, medium to very thickly bedded, laminar to massive textured **DOLOSTONE.** Black argillaceous to shaley bedding partings 1 to 10 mm thick, minor interbeds of laminar textured argillaceous limestone beds with occasional stylolites, calcareous dolostone and nodular, mottled calcareous dolostone occur. Very thickly bedded dolostone beds are partly bioturbated noted by burrow casts.		100.02 43.30		
44						
46						
48						
50						Clear Stone
52						
		UNIT 4, 53.7 m to 57.8 m interbedded sequence of light to medium grey to greenish grey and dark grey, fine grained, faintly porous, thinly to medium bedded, massive textured, argillaceous to shaley **DOLOSTONE** and medium grey **DOLOMITIC LIMESTONE.** Thin interbeds of laminar to nodular textured limestone and thin oolitic limestone beds occur with medium bed of limestone at 54.6-55.1. Unit also includes light to medium grey and greenish grey, medium grained, thinly to medium bedded, calcareous to dolomitic cemented, partly bioturbated **QUARTZ SANDSTONE** and minor black **SHALE.**		89.62 53.70 88.72 54.60 88.22 55.10		
54						
56						
		UNIT 3, 57.8 m to 62.1 m medium grey to brownish grey, fine grained, non-porous, laminated to thinly bedded **ARGILLACEOUS LIMESTONE.** Unit includes interbeds of medium brownish grey, very fine grained lithographic limestone with numerous fine argillaceous partings, thin beds of oolitic limestone, weakly developed lithoclastic		85.52 57.80		
58						
60						
		CONTINUED NEXT PAGE				



DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

GEOPHYSICAL LOG OF: BH13-16

PROJECT: 18111892

LOCATION: N 5009712.0 ;E 422599.0

INCLINATION: -90° AZIMUTH: ---

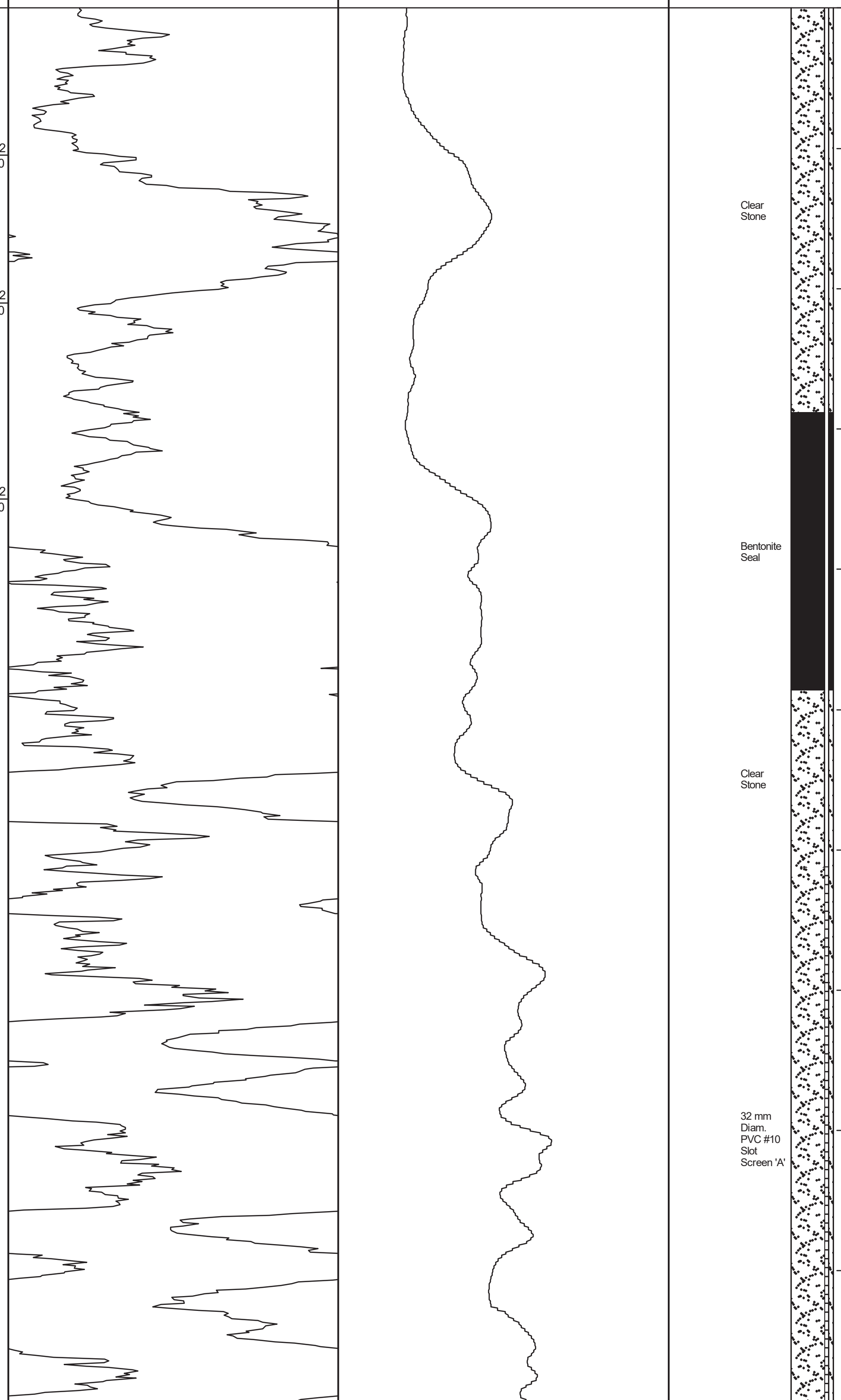
DRILLING DATE: October 8, 2013

DRILL RIG: Air Rotary Percussion

DRILLING CONTRACTOR: Capital Water Supply Ltd.

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80 / CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---				
60		limestone, minor burrow bioturbated limestone, with lesser amounts of calcareous dolostone, dark grey dolomitic shale, shaley dolostone. Black argillaceous to shaley bedding partings occur.				
62		**UNIT 2, 62.1 m to 64.2 m** interbedded sequence of medium grey to greenish grey, fine grained, faintly porous, thinly to medium bedded, argillaceous **DOLOSTONE and CALCAREOUS DOLOSTONE** with thinly interbedded black **SHALE, SHALEY DOLOSTONE and DOLOMITIC SILTSTONE** with localized burrowed bioturbation.		81.22 / 62.10		
64		**UNIT 1, 64.2 m to 67.0 m** medium grey, fine grained, non-porous, thinly bedded **ARGILLACEOUS LIMESTONE** weakly nodular in part with interbeds of medium brownish grey, very fine grained lithographic limestone with numerous fine argillaceous partings and very thin beds of black calcareous shale. Sharp basal contact locally marked by thin black shaley parting.		79.12 / 64.20		
66						
68		**ROCKCLIFFE FORMATION, 67.0 m to 100.6 m** **UPPER ROCKCLIFFE FORMATION, 67.0 m to 84.3 m** Interbedded sequence composed of medium grey, fine grained, non-porous to faintly porous, massive textured to mottled, medium to thick beds of **DOLOSTONE and CALCAREOUS DOLOSTONE,** dark grey to black, slake susceptible **SHALE,** medium grey, mottled to laminar textured, fine grained, thin to medium beds of **ARGILLACEOUS LIMESTONE** with light grey, fine grained, calcareous cemented, medium to thick beds of **QUARTZ SANDSTONE.** Individual lithological sequences such as shale beds typically vary in thickness from approximately 0.25 m to 2.0 m. Upper Rockcliffe Formation is transitional with the underlying Lower Rockcliffe Formation noted by transition from predominately dolostone and shale in the upper sequence to predominately sandstone in the lower sequence.		76.32 / 67.00		
70						
72						
74						
76						
78						
80						



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PROJECT: 18111892

GEOPHYSICAL LOG OF: BH13-16

SHEET 5 OF 6

LOCATION: N 5009712.0 ;E 422599.0

DRILLING DATE: October 8, 2013

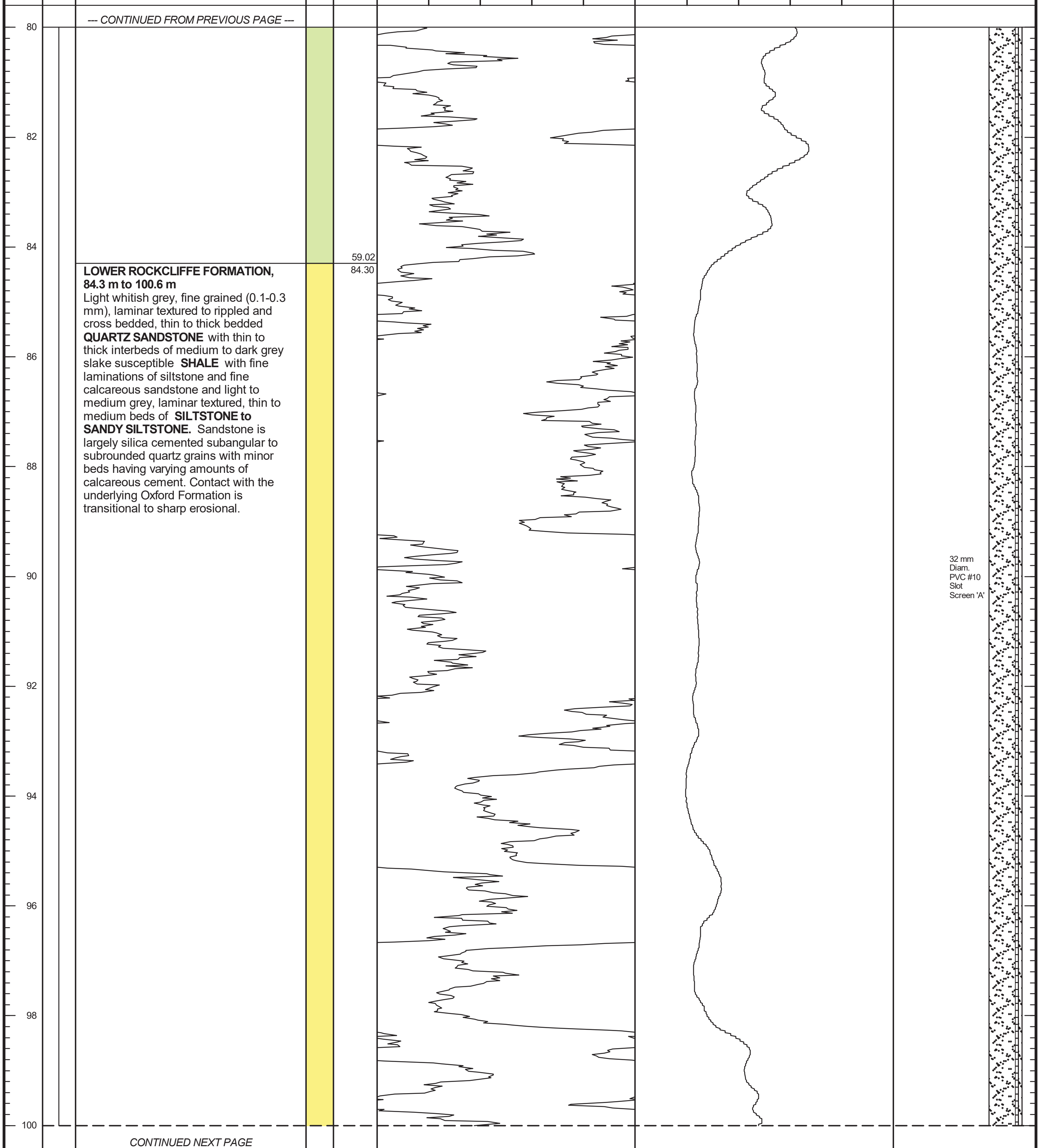
DATUM: Geodetic

DRILL RIG: Air Rotary Percussion

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: Capital Water Supply Ltd.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) / CONDUCTIVITY (mS/m)	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---				
84.3		**LOWER ROCKCLIFFE FORMATION, 84.3 m to 100.6 m** Light whitish grey, fine grained (0.1-0.3 mm), laminar textured to rippled and cross bedded, thin to thick bedded **QUARTZ SANDSTONE** with thin to thick interbeds of medium to dark grey slake susceptible **SHALE** with fine laminations of siltstone and fine calcareous sandstone and light to medium grey, laminar textured, thin to medium beds of **SILTSTONE to SANDY SILTSTONE.** Sandstone is largely silica cemented subangular to subrounded quartz grains with minor beds having varying amounts of calcareous cement. Contact with the underlying Oxford Formation is transitional to sharp erosional.		59.02 / 84.30		32 mm Diam. PVC #10 Slot Screen 'A'
		CONTINUED NEXT PAGE				



DEPTH SCALE

1 : 100

LOGGED: RB

CHECKED: KAM

OTTAWA-GEO 19130670.GPJ GAL-GTA.GDT 11/24/22 JM

GEOPHYSICAL LOG OF: BH13-16

PROJECT: 18111892
LOCATION: N 5009712.0 ;E 422599.0
INCLINATION: -90° AZIMUTH: ---

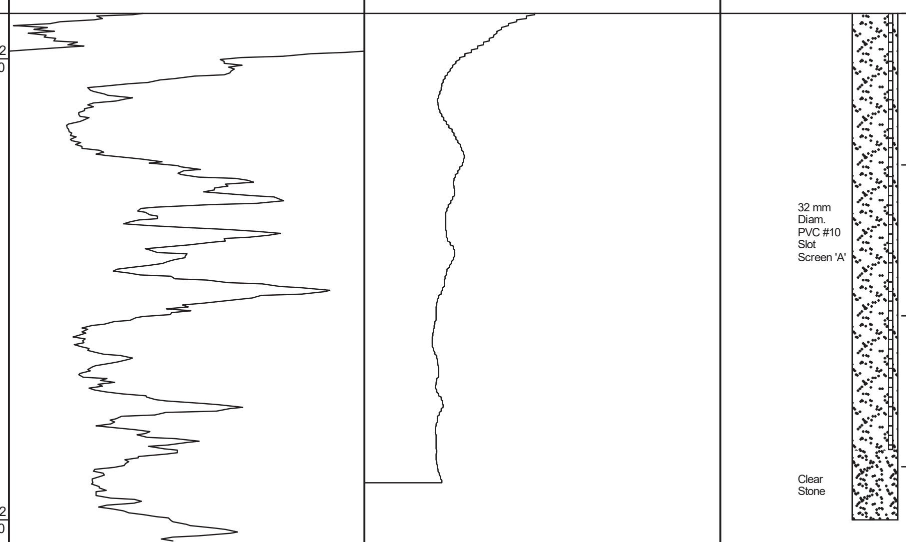
DRILLING DATE: October 8, 2013
DRILL RIG: Air Rotary Percussion
DRILLING CONTRACTOR: Capital Water Supply Ltd.

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)
		--- CONTINUED FROM PREVIOUS PAGE ---		
100				42.72 100.60
		UPPER OXFORD FORMATION 100.6 m to 106.7 m Medium grey, fine grained micritic, medium bedded, argillaceous **DOLOSTONE and CALCAREOUS DOLOSTONE** with 0.01-0.50 m thick interbeds of dark grey to black, slake susceptible **SHALE and SHALEY DOLOSTONE.**		36.62 106.70
		End of Borehole, 106.7 m		

GEOPHYSICAL RECORD — GAMMA (cps): 20, 40, 60, 80; CONDUCTIVITY (mS/m): 5, 10, 15, 20

PIEZOMETER OR STANDPIPE INSTALLATION



DEPTH SCALE
1 : 100

LOGGED: RB
CHECKED: KAM

PZ%M4CTF 1I 1(0) 80

GEOPHYSICAL LOG OF: BH18-17

Sx44T 1 %q (

E%COT3%HF H 201018G8 I4 G5((U0.0

DZ3EE3H° DOT4F Mune 1U, 501U

DOT: AF ° eodetic

3HCE3HOT3%HF -I 0N OL3A: TxF ---

DZ3EE Z3' F Oir Zotary Percussion

DZ3EE3H° C%HTZOCT%ZF Capital Y ater Supply Etd.

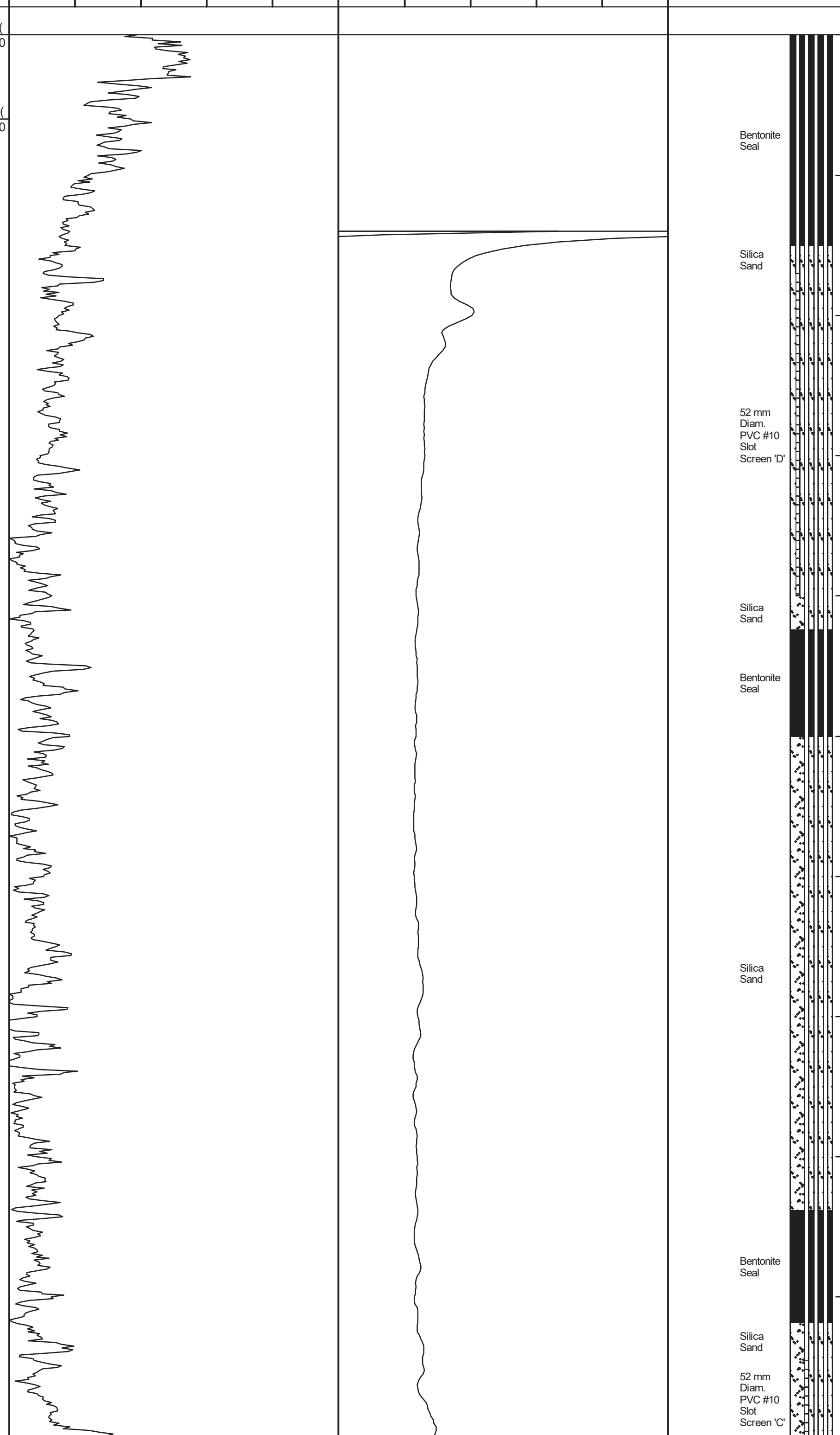
D4PTx SCOE4 A4TZ4S	DZ3EE3H° Z4C%ZD	D4SCZ3PT3%H	S9AB%EC E%°	4E4V. D4PTx 6m7
		° Z%: HD S: ZqOC4		1(8.8(0.00
0		**Overburden, 0.0 m to 1.2 m**		
		Bedrock Surface, 1.2 m		1( ) .2(1.50
5		**LOWER BOBCAYGEON FORMATION, 1.2 m to 37.4 m** **UNIT 3, 1.2 m to 22.2 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		
G				
)				
U				
10				
15				
1G				
1)				
1U				
50				

° 4%Px 9S3COE Z4C%ZD

° OA A O 6cps7: 50, G0,) 0, U0

C%HD: CT3/3T9 6mS.Jm7: 2, 10, 12, 50

P34L%A4T4Z %Z STOHDP3P4 3HSTOEEOT3%H



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D4PTx SCOE4 1 F100

WSP GOLDER

E%° ° 4DF ZB

Cx4CR4DF ROA

PZ%M4CTF 1I 1(0)80

GEOPHYSICAL LOG OF: BH18-17

Sx44T 5 %q (

E%COT3%HF H 201018G8 I4 G5((U0.0

3HCE3HOT3%HF -I 0N   OL3A: TxF ---

DZ3EE3H° DOT4F Mune 1U, 501U

DZ3EE Z3' F Oir Zotary Percussion

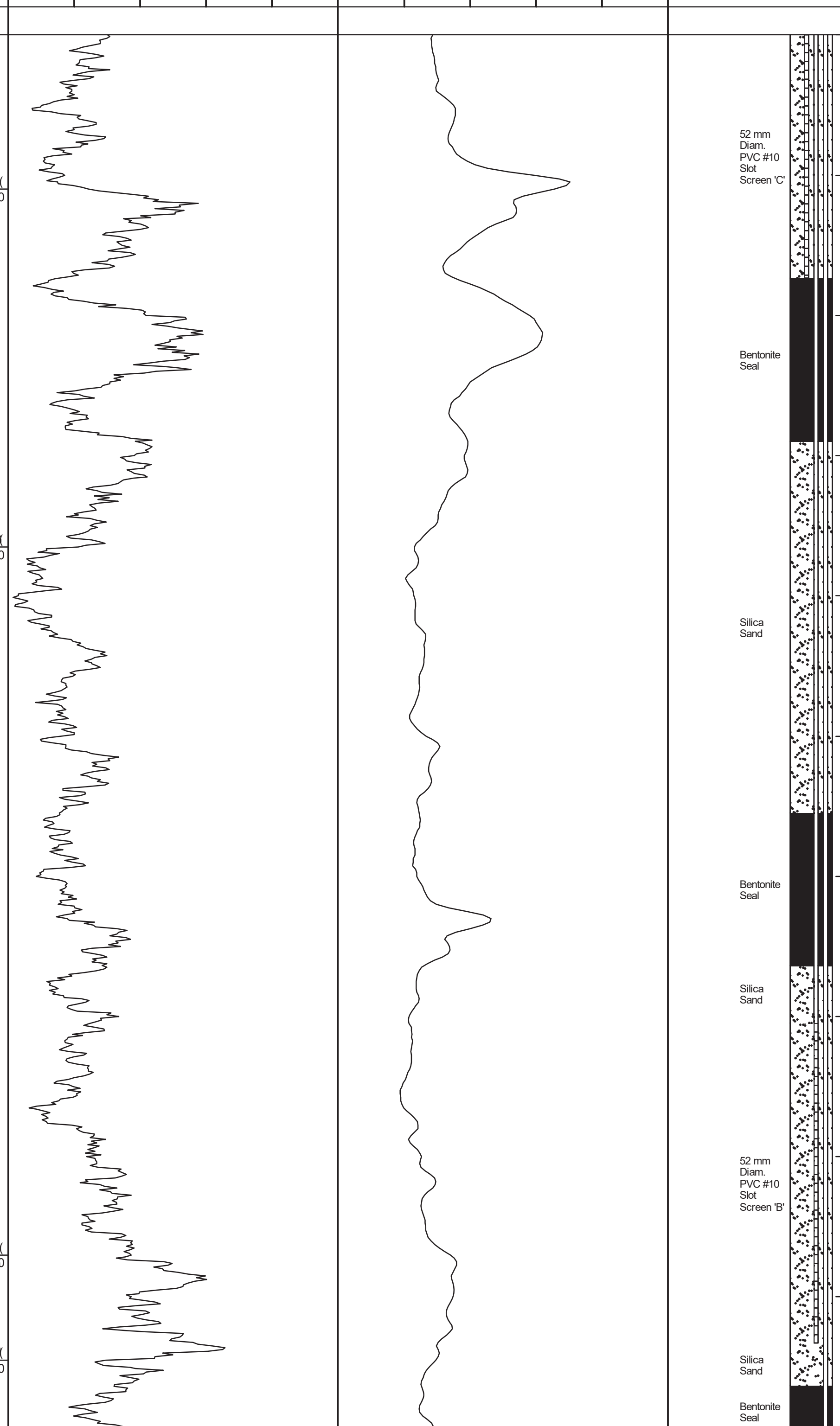
DZ3EE3H° C%HTZOCT%ZF Capital Y ater Supply Etd.

DOT: AF ° eodetic

D4PTx SCOE4 A4TZ4S	DZ3EE3H° Z4C%ZD	D4SCZ3PT3%H	S9AB%E3C E%°	4E4V. D4PTx 6m7	° 4%Px 9S3COE Z4C%ZD	P34L%A4T4Z %Z STOHDP3P4 3HSTOEEOT3%H
		--- CONTINUED FROM PREVIOUS PAGE ---				
50						
55				112.2(		
		UNIT 2, 22.2 m to 27.3 m dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous 6gastropod and pelecypod debris7 **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise appro; imately 10-G0/ of seWuence. Transitional to sharp basal contact.		55.50		
5G						
5)				110.G(		
		UNIT 1, 27.3 m to 37.4 m medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy te; tured argillaceous partings, e; tensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 2 to (0 mm thick.		58.(0		
5U						
(0						
(5						
(G						
()				100.((		
		UPPER GULL RIVER FORMATION, 37.4 m to 45.7 m Aedium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey		(8.G0		
(U				IU.U(		
				(UI0		
G0						
		CONTINUED NEXT PAGE				

° OAAO 6cps7: 50, G0,)0, U0

C%HD: CT3/3T9 6mS/m7: 2, 10, 12, 50



PZ%M4CTF 1I 1(0)80

GEOPHYSICAL LOG OF: BH18-17

Sx44T (%q (

E%COT3%HF H 201018G8 I4 G5((U0.0

DZ3EE3H° DOT4F Mune 1U, 501U

DOT: AF ° eodetic

3HCE3HOT3%HF -I 0N   OL3A: TxF ---

DZ3EE Z3' F Oir Zotary Percussion

DZ3EE3H° C%HTZOCT%ZF Capital Y ater Supply Etd.

D4PTx SCOE4 A4TZ4S	DZ3EE3H° Z4C%ZD	D4SCZ3PT3%H	S9AB%E3C E%°	4E4V. D4PTx 6m7	° 4%Px 9S3COE Z4C%ZD: ° OAAO 6cps7 (50, G0,)0, U0)	C%HD: CT3/3T9 6mS.Jm7 (2, 10, 12, 50)	P34L%A4T4Z %Z STOHDP3P4 3HSTOEEOT3%H
		--- CONTINUED FROM PREVIOUS PAGE ---					
G0		argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at (8.2 m to (U.I m with a second dolostone bed at G5.2-G(.Gm.					Bentonite Seal
G5				I 2.5(G5.20			Silica Sand
				I G((G(.G0			
GG							52 mm Diam. PVC #10 Slot Screen 'O'
				I 5.0(G2.80			
G)		**End of Borehole, 45.7 m**					
GU		**Note(s):** 1. Casing installed to depth of 5.Gm, water found at (.8 m and 51.(m. 5. Borehole updated in 5051 to reflect the Z.Y . Tomlinson survey carried out in 5050.					
20							
25							
2G							
2)							
2U							
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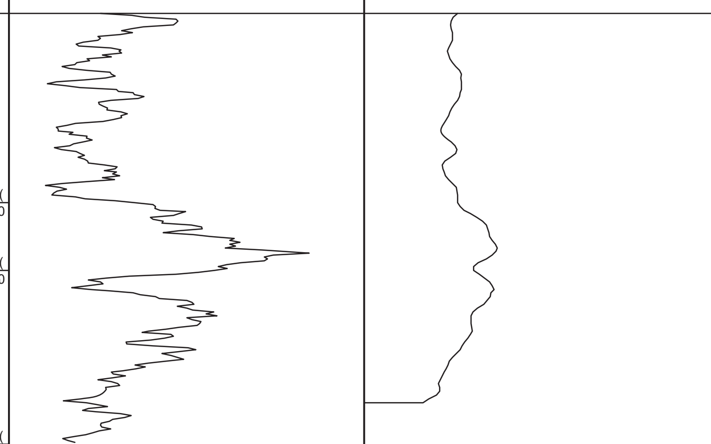
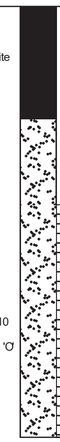




PROJECT: 18111853

GEOPHYSICAL LOG OF: TW09-1

LOCATION: N 5009914.0 ;E 423238.0

INCLINATION: -90°   AZIMUTH: ---

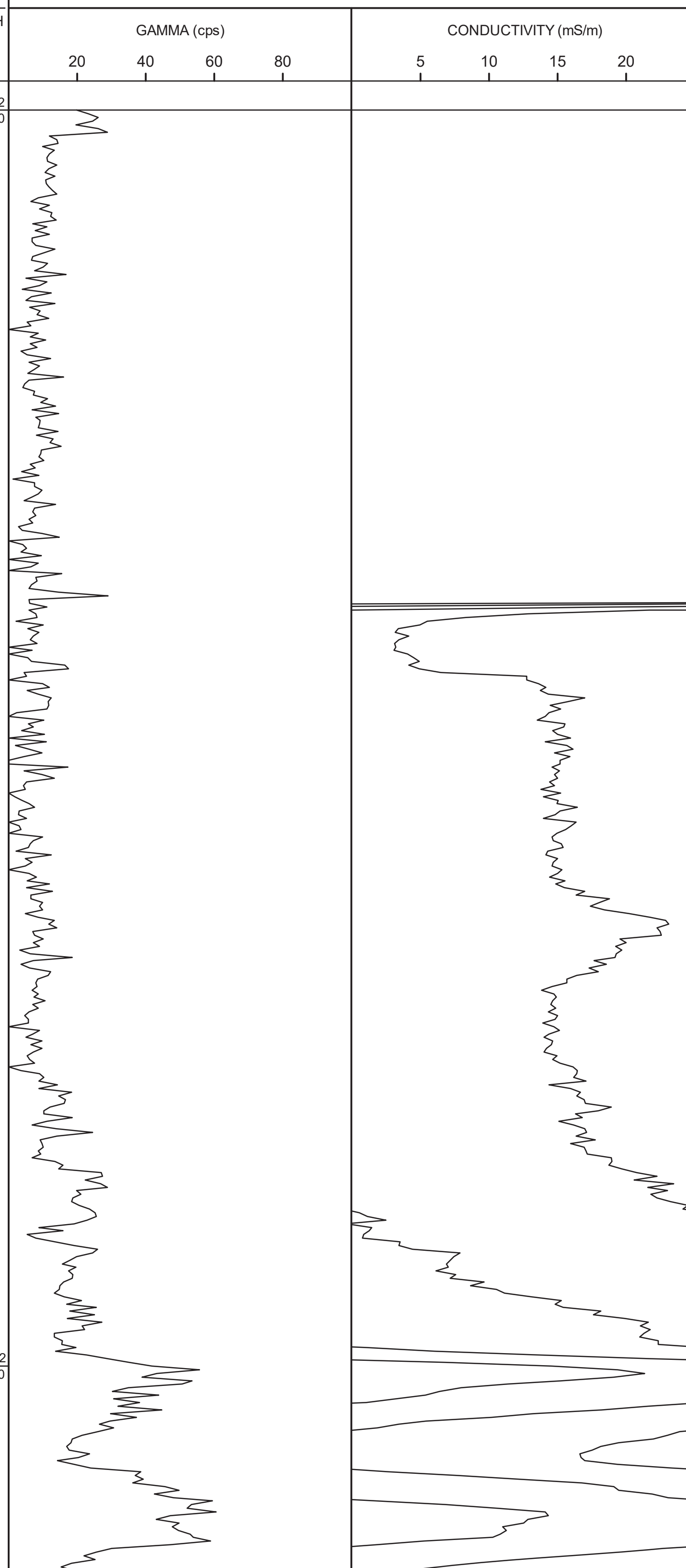
DRILLING DATE: September 21, 2009

DRILL RIG: Air Percussion

DRILLING CONTRACTOR: Air Rock Drilling Co. Ltd.

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80	CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		141.12			
0		**Bedrock Surface 0.0 m** **LOWER BOBCAYGEON FORMATION, 0.0 m to 32.3 m** **UNIT 3, 0.0 m to 17.2 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00			
2 4 6 8 10 12 14 16							
		UNIT 2, 17.2 m to 22.2 m dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		123.92 17.20			
18 20							



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DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

PROJECT: 18111853

GEOPHYSICAL LOG OF: TW09-1

LOCATION: N 5009914.0 ;E 423238.0

DRILLING DATE: September 21, 2009

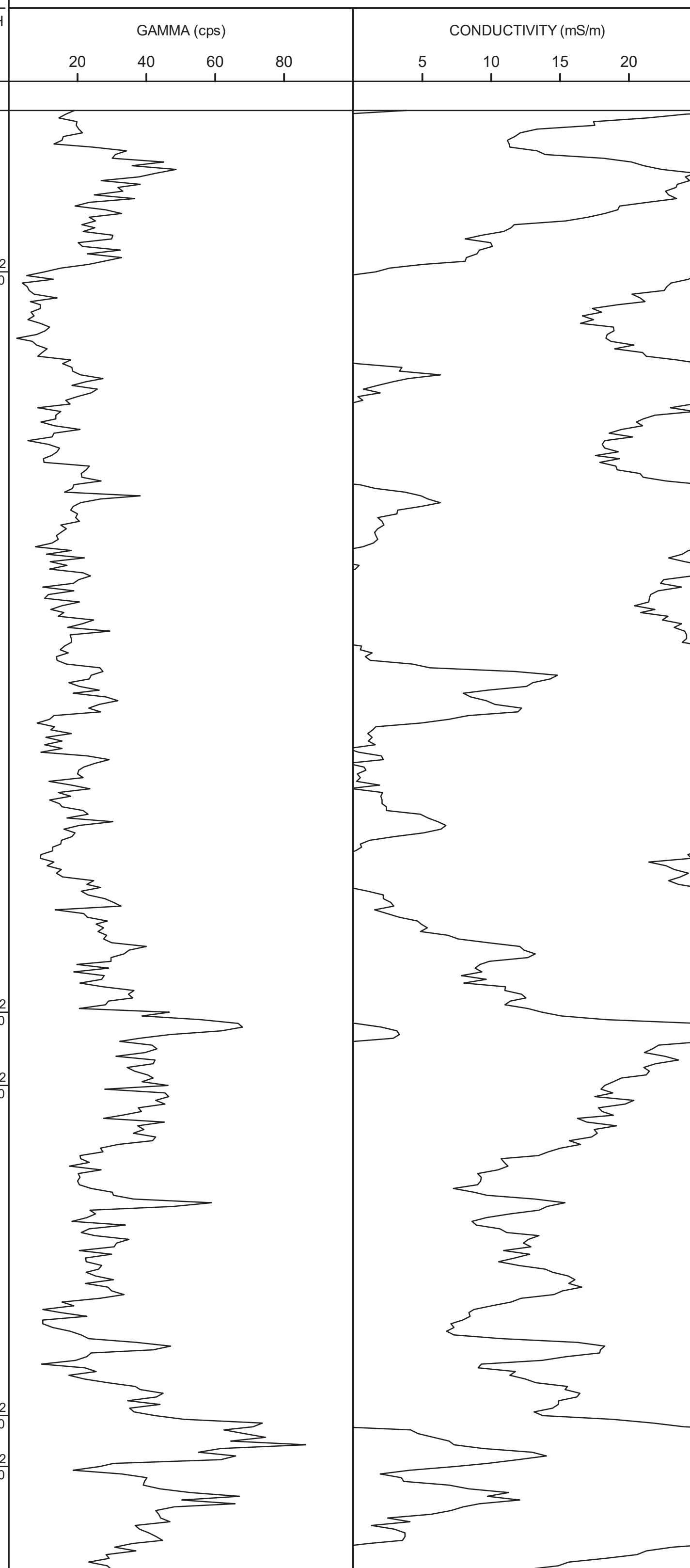
DATUM: Geodetic

DRILL RIG: Air Percussion

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: Air Rock Drilling Co. Ltd.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD	PIEZOMETER OR STANDPIPE INSTALLATION
20		--- CONTINUED FROM PREVIOUS PAGE ---				
22				118.92 22.20		
		UNIT 1, 22.2 m to 32.3 m medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.				
24						
26						
28						
30						
32				108.82 32.30		
		GULL RIVER FORMATION, 32.3 m to 69.8 m **UPPER GULL RIVER FORMATION, 32.3 m to 45.4 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 32.3 m to 33.3 m with a second dolostone bed at 37.8-38.5m.		107.82 33.30		
34						
36						
38				103.32 37.80		
				102.62 38.50		
40		CONTINUED NEXT PAGE				



DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

PROJECT: 18111853

GEOPHYSICAL LOG OF: TW09-1

LOCATION: N 5009914.0 ;E 423238.0

DRILLING DATE: September 21, 2009

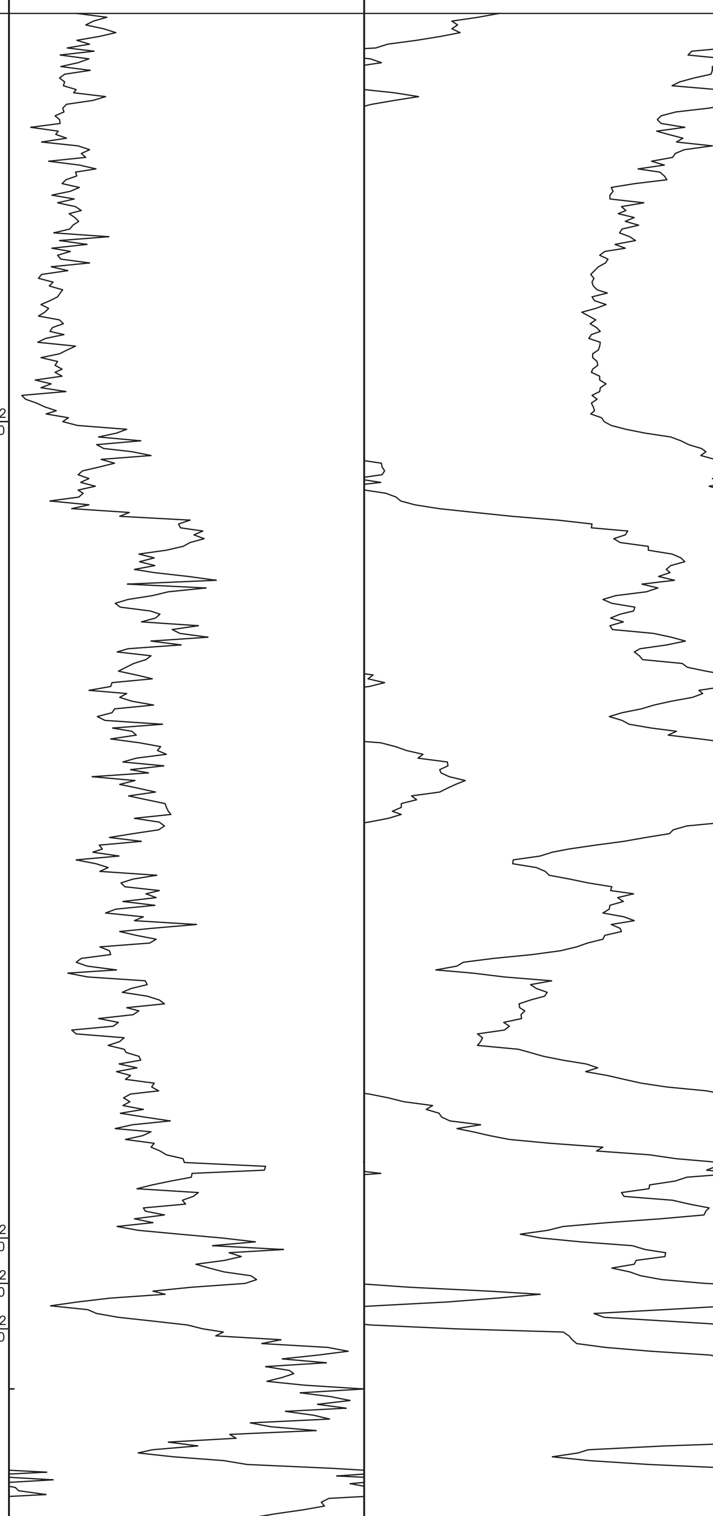
DATUM: Geodetic

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: Air Percussion

DRILLING CONTRACTOR: Air Rock Drilling Co. Ltd.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80	CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---					
40		**GULL RIVER FORMATION, 32.3 m to 69.8 m** **UPPER GULL RIVER FORMATION, 32.3 m to 45.4 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 32.3 m to 33.3 m with a second dolostone bed at 37.8-38.5m.					
42							
44							
		LOWER GULL RIVER FORMATION, 45.4 m to 69.8 m **UNIT 5, 45.4 m to 56.2 m** The Lower Gull River Formation marks the transition into predominately dolostone with subordinate limestone units. Light to medium grey and greenish grey, fine grained, faintly porous, medium to very thickly bedded, laminar to massive textured **DOLOSTONE.** Black argillaceous to shaley bedding partings 1 to 10 mm thick, minor interbeds of laminar textured argillaceous limestone beds with occasional stylolites, calcareous dolostone and nodular, mottled calcareous dolostone occur. Very thickly bedded dolostone beds are partly bioturbated noted by burrow casts.		95.72 45.40			
46							
48							
50							
52							
54							
56		**UNIT 4, 56.2 m to 60.1 m** interbedded sequence of light to medium grey to greenish grey and dark grey, fine grained, faintly porous, thinly to medium bedded, massive textured, argillaceous to shaley **DOLOSTONE** and medium grey **DOLOMITIC LIMESTONE.** Thin interbeds of laminar to nodular textured limestone and thin oolitic limestone beds occur with medium bed of limestone at 56.8-57.4m. Unit also includes light to medium grey and greenish grey, medium grained, thinly to medium bedded, calcareous to dolomitic cemented, partly bioturbated		84.92 56.20 84.32 56.80 83.72 57.40			
58							
60		*CONTINUED NEXT PAGE*					



DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

OTTAWA-GEO 19130670.GPJ GAL-GTA.GDT 11/24/22 JM

GEOPHYSICAL LOG OF: TW09-1

PROJECT: 18111853

LOCATION: N 5009914.0 ;E 423238.0

INCLINATION: -90° AZIMUTH: ---

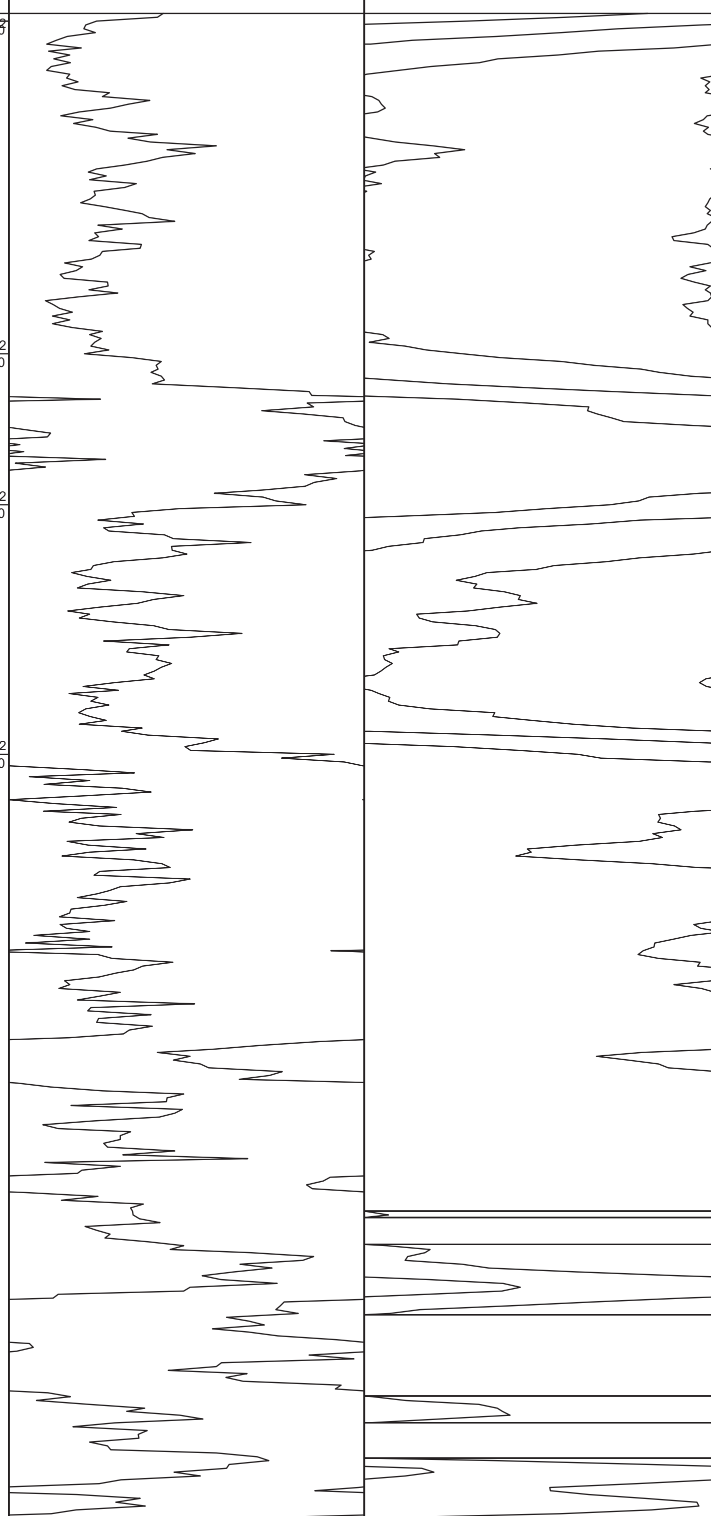
DRILLING DATE: September 21, 2009

DRILL RIG: Air Percussion

DRILLING CONTRACTOR: Air Rock Drilling Co. Ltd.

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80; CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---				
60		**QUARTZ SANDSTONE** and minor black **SHALE.**		81.02 60.10		
62 64		**UNIT 3, 60.1 m to 64.5 m** medium grey to brownish grey, fine grained, non-porous, laminated to thinly bedded **ARGILLACEOUS LIMESTONE.** Unit includes interbeds of medium brownish grey, very fine grained lithographic limestone with numerous fine argillaceous partings, thin beds of oolitic limestone, weakly developed lithoclastic limestone, minor burrow bioturbated limestone, with lesser amounts of calcareous dolostone, dark grey dolomitic shale, shaley dolostone. Black argillaceous to shaley bedding partings occur.		76.62 64.50		
66		**UNIT 2, 64.5 m to 66.5 m** interbedded sequence of medium grey to greenish grey, fine grained, faintly porous, thinly to medium bedded, argillaceous **DOLOSTONE and CALCAREOUS DOLOSTONE** with thinly interbedded black **SHALE, SHALEY DOLOSTONE and DOLOMITIC SILTSTONE** with localized burrowed bioturbation.		74.62 66.50		
68		**UNIT 1, 66.5 m to 69.8 m** medium grey, fine grained, non-porous, thinly bedded **ARGILLACEOUS LIMESTONE** weakly nodular in part with interbeds of medium brownish grey, very fine grained lithographic limestone with numerous fine argillaceous partings and very thin beds of black calcareous shale. Sharp basal contact locally marked by thin black shaley parting.		71.32 69.80		
70 72 74 76 78 80		**ROCKCLIFFE FORMATION, 69.8 m to 101.4 m** **UPPER ROCKCLIFFE FORMATION, 69.8 m to 86.0 m** Interbedded sequence composed of medium grey, fine grained, non-porous to faintly porous, massive textured to mottled, medium to thick beds of **DOLOSTONE and CALCAREOUS DOLOSTONE,** dark grey to black, slake susceptible **SHALE,** medium grey, mottled to laminar textured, fine grained, thin to medium beds of **ARGILLACEOUS LIMESTONE** with light grey, fine grained, calcareous cemented, medium to thick beds of **QUARTZ SANDSTONE.** Individual lithological sequences such as shale beds typically vary in thickness from approximately 0.25 m to 2.0 m. Upper Rockcliffe Formation is transitional with the underlying Lower Rockcliffe Formation noted by transition from predominately dolostone and shale in the upper sequence to predominately sandstone in the lower sequence.				
		CONTINUED NEXT PAGE				



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DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

PROJECT: 18111853

GEOPHYSICAL LOG OF: TW09-1

LOCATION: N 5009914.0 ;E 423238.0

DRILLING DATE: September 21, 2009

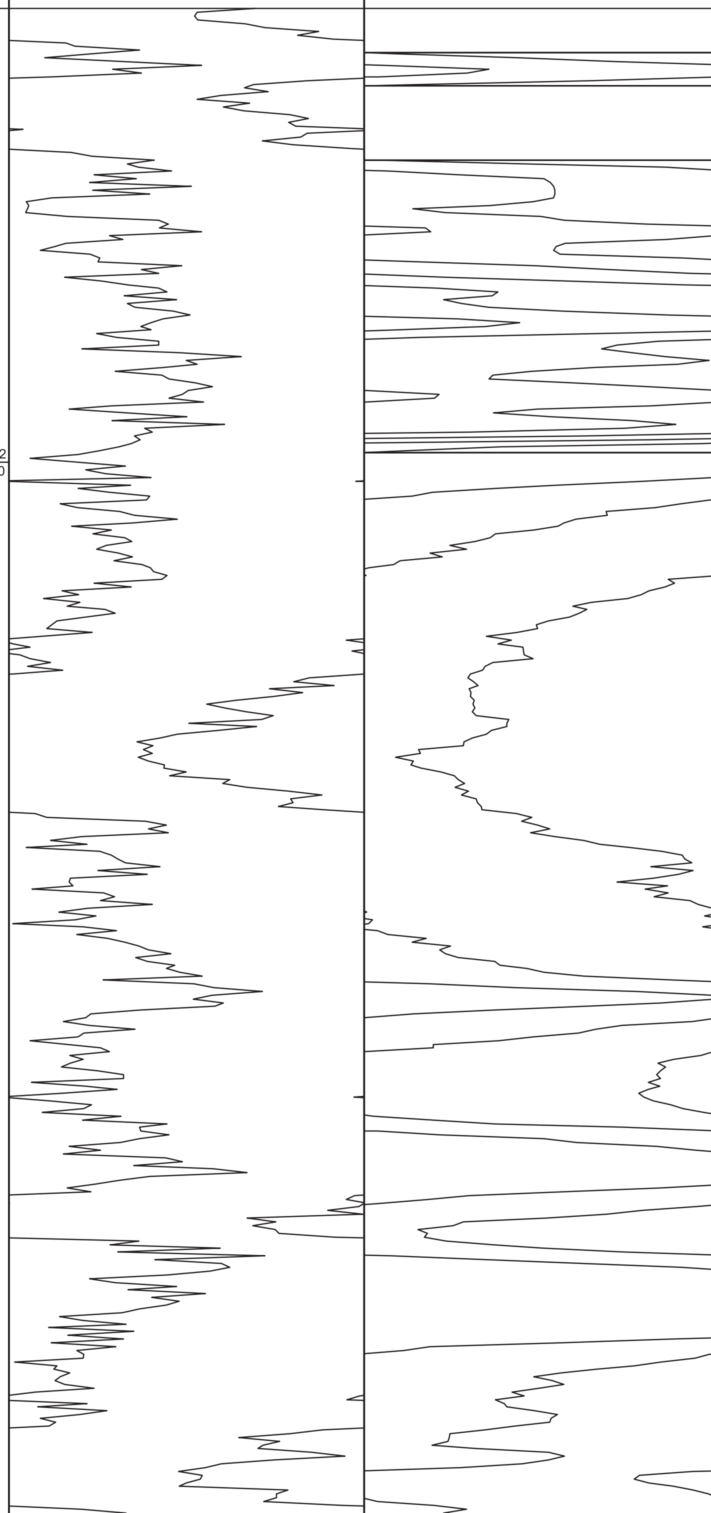
DATUM: Geodetic

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: Air Percussion

DRILLING CONTRACTOR: Air Rock Drilling Co. Ltd.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) / CONDUCTIVITY (mS/m)	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---				
80						
82						
84						
86		**LOWER ROCKCLIFFE FORMATION, 86.0 m to 101.4 m** Light whitish grey, fine grained (0.1-0.3 mm), laminar textured to rippled and cross bedded, thin to thick bedded **QUARTZ SANDSTONE** with thin to thick interbeds of medium to dark grey slake susceptible **SHALE** with fine laminations of siltstone and fine calcareous sandstone and light to medium grey, laminar textured, thin to medium beds of **SILTSTONE to SANDY SILTSTONE.** Sandstone is largely silica cemented subangular to subrounded quartz grains with minor beds having varying amounts of calcareous cement. Contact with the underlying Oxford Formation is transitional to sharp erosional.		55.12 86.00		
88						
90						
92						
94						
96						
98						
100						
		CONTINUED NEXT PAGE				



DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

GEOPHYSICAL LOG OF: TW09-1

PROJECT: 18111853

LOCATION: N 5009914.0 ;E 423238.0

INCLINATION: -90° AZIMUTH: ---

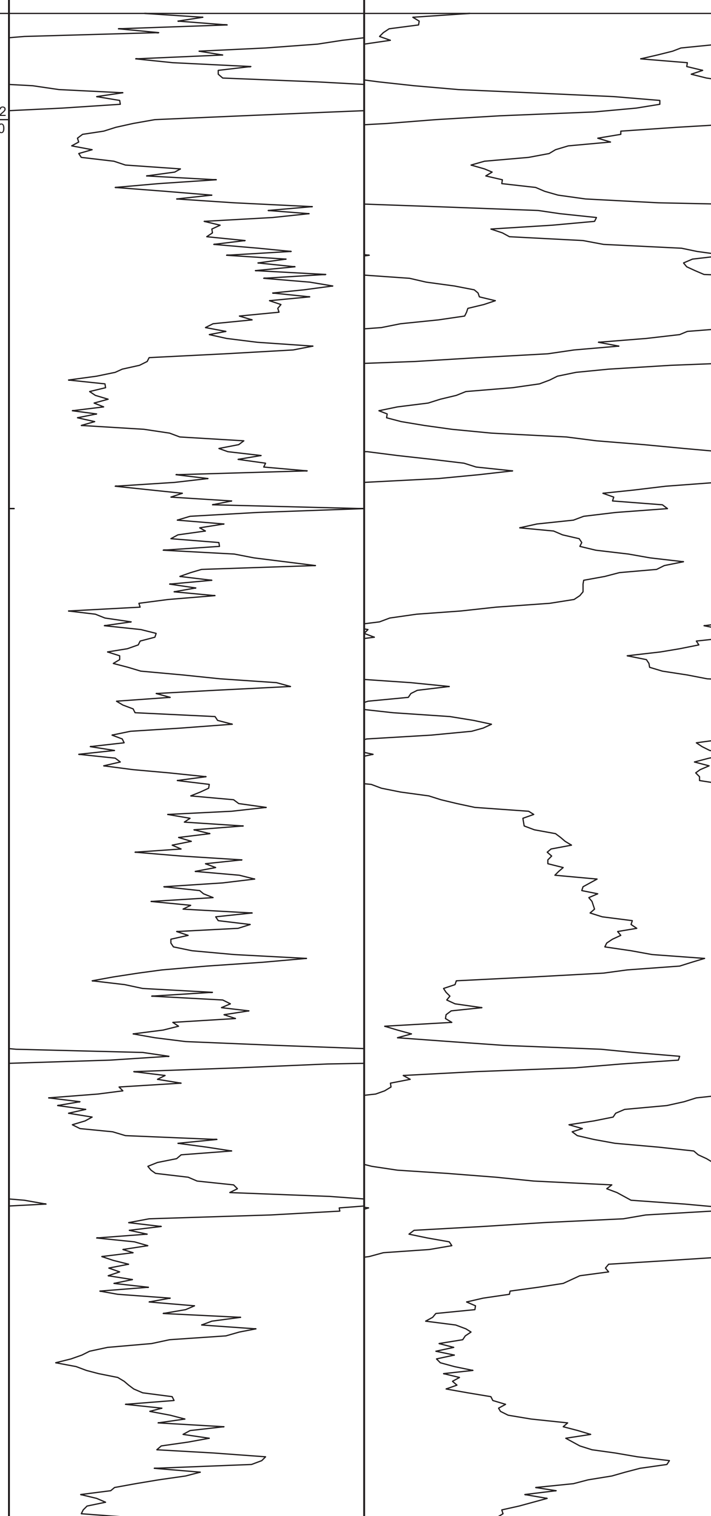
DRILLING DATE: September 21, 2009

DRILL RIG: Air Percussion

DRILLING CONTRACTOR: Air Rock Drilling Co. Ltd.

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80	CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---					
100				39.72 / 101.40			
102–120		**OXFORD FORMATION, 101.4 m to 142.8 m** **UPPER OXFORD FORMATION, 101.4 m to 124.0 m** Medium grey, fine grained micritic, medium bedded, argillaceous DOLOSTONE and CALCAREOUS DOLOSTONE with 0.01-0.50 m thick interbeds of dark grey to black, slake susceptible SHALE and SHALEY DOLOSTONE set at regular intervals of approximately 0.5-1.0 m. Calcareous burrow casts occur in thicker shaley beds. Transitional lower contact noted by significant decrease in shaley content in the Lower Oxford Formation.					
		CONTINUED NEXT PAGE					



DEPTH SCALE

1 : 100

LOGGED: RB

CHECKED: KAM

PROJECT: 18111853

GEOPHYSICAL LOG OF: TW09-1

LOCATION: N 5009914.0 ;E 423238.0

DRILLING DATE: September 21, 2009

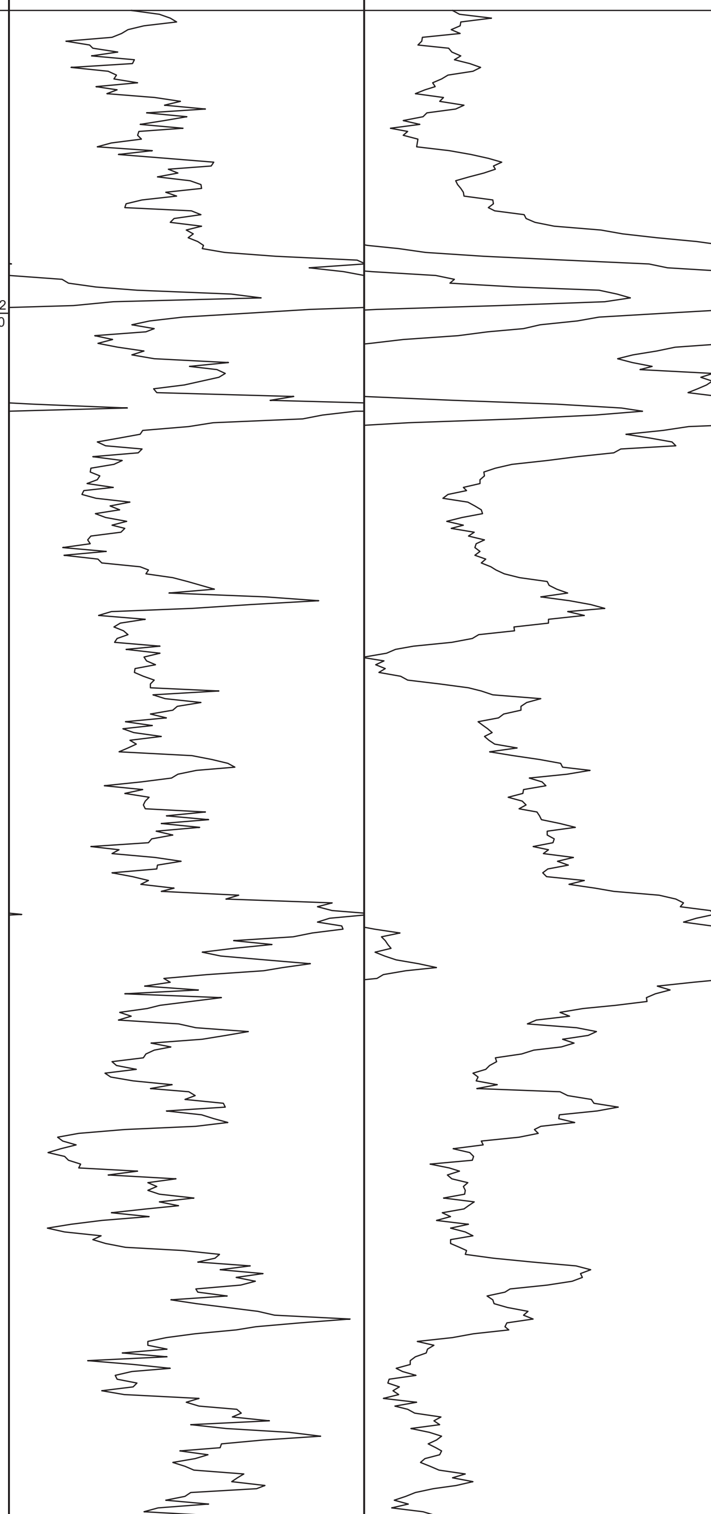
DATUM: Geodetic

DRILL RIG: Air Percussion

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: Air Rock Drilling Co. Ltd.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80; CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---				
120		**OXFORD FORMATION, 101.4 m to 142.8 m** **UPPER OXFORD FORMATION, 101.4 m to 124.0 m** Medium grey, fine grained micritic, medium bedded, argillaceous DOLOSTONE and CALCAREOUS DOLOSTONE with 0.01-0.50 m thick interbeds of dark grey to black, slake susceptible SHALE and SHALEY DOLOSTONE set at regular intervals of approximately 0.5-1.0 m. Calcareous burrow casts occur in thicker shaley beds. Transitional lower contact noted by significant decrease in shaley content in the Lower Oxford Formation.		17.12 124.00		
124		**LOWER OXFORD FORMATION, 124.0 m to 142.8 m** Medium grey, fine grained micritic, faintly porous, laminar textured, medium bedded CALCAREOUS DOLOSTONE with minor (approx. 5-6%) very thin to medium beds of dark grey to black, slake susceptible shale and shaley dolostone that laterally varies into an interbedded sequence comprised of argillaceous NODULAR DOLOSTONE with subordinate beds of CALCAREOUS DOLOSTONE and LITHOCLASTIC DOLOSTONE with approximately 1% shale and shaley dolostone partings. Contact with the underlying March Formation is transitional.				
140		*CONTINUED NEXT PAGE*				



DEPTH SCALE
1 : 100

WSP GOLDER

LOGGED: RB
CHECKED: KAM

GEOPHYSICAL LOG OF: TW09-1

PROJECT: 18111853

LOCATION: N 5009914.0 ;E 423238.0

INCLINATION: -90° AZIMUTH: ---

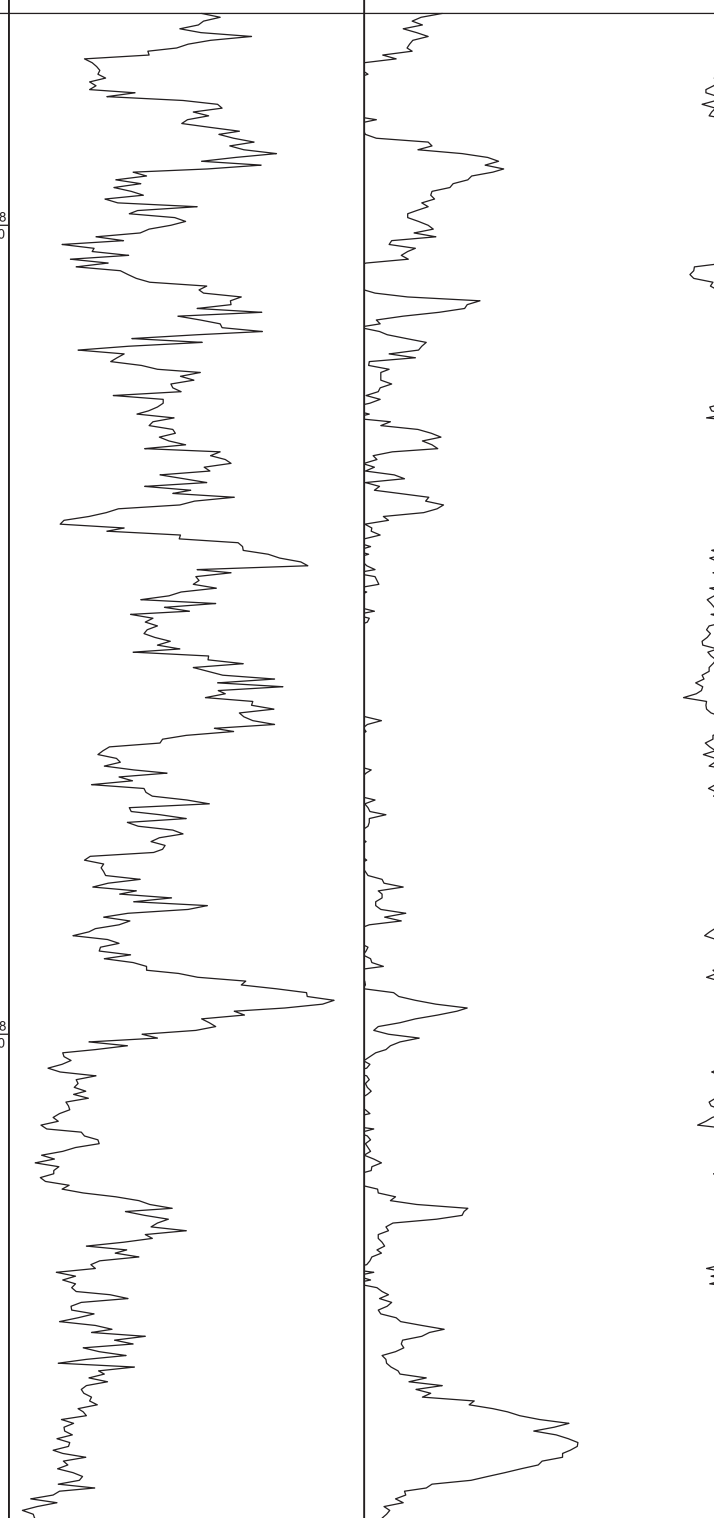
DRILLING DATE: September 21, 2009

DRILL RIG: Air Percussion

DRILLING CONTRACTOR: Air Rock Drilling Co. Ltd.

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	GEOPHYSICAL RECORD	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---			GAMMA (cps) 20 40 60 80; CONDUCTIVITY (mS/m) 5 10 15 20	
140						
142						
		MARCH FORMATION, 142.8 m to 153.5 m Formation is composed of interbedded medium grey, fine to medium grained, non-porous to faintly porous, partly oolitic, thinly to medium bedded SANDY DOLOSTONE to DOLOMITIC SANDSTONE, SANDY LIMESTONE and CALCAREOUS SANDSTONE. Top of formation is marked by first occurrence of sandstone/dolomitic sandstone. Sequence grades downward from predominately dolomitic sandstone to calcareous sandstone with interbeds of fine to medium grained quartz sandstone. Sandy component is comprised of quartz grains (0.1-0.5 mm) cemented in carbonate matrix. Calcareous sequence is partly oolitic. Minor black shaley partings occur. Basal contact of the March Fm is taken at the last medium bed of medium grey sandy limestone/dolostone bed before the predominantly quartz sandstone of the Nepean Fm.		-1.68 / 142.80		
144						
146						
148						
150						
152						
		NEPEAN FORMATION, 153.5 m to 180.7 m Light grey, medium grained, faintly porous, medium to thickly bedded, laminar to cross bedded texture, calcareous to silica cemented QUARTZ SANDSTONE. Sequence contains widely spaced interbeds of grey shale and shaley siltstone and calcareous dolostone in beds typically 0.1 m to 1.0 m thick. The sandstone varies both vertically and laterally from calcareous cemented sandstone to silica cemented sandstone. Solution weathering of calcareous sandstone beds results in friable porous rock. Near the base of the formation occasional 1.0 m to 5.0 m thick individual beds of subangular to subrounded quartz pebbles and cobbles occur set in a coarse grained quartz sandstone matrix.		-12.38 / 153.50		
154						
156						
158						
160						
		CONTINUED NEXT PAGE				



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DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

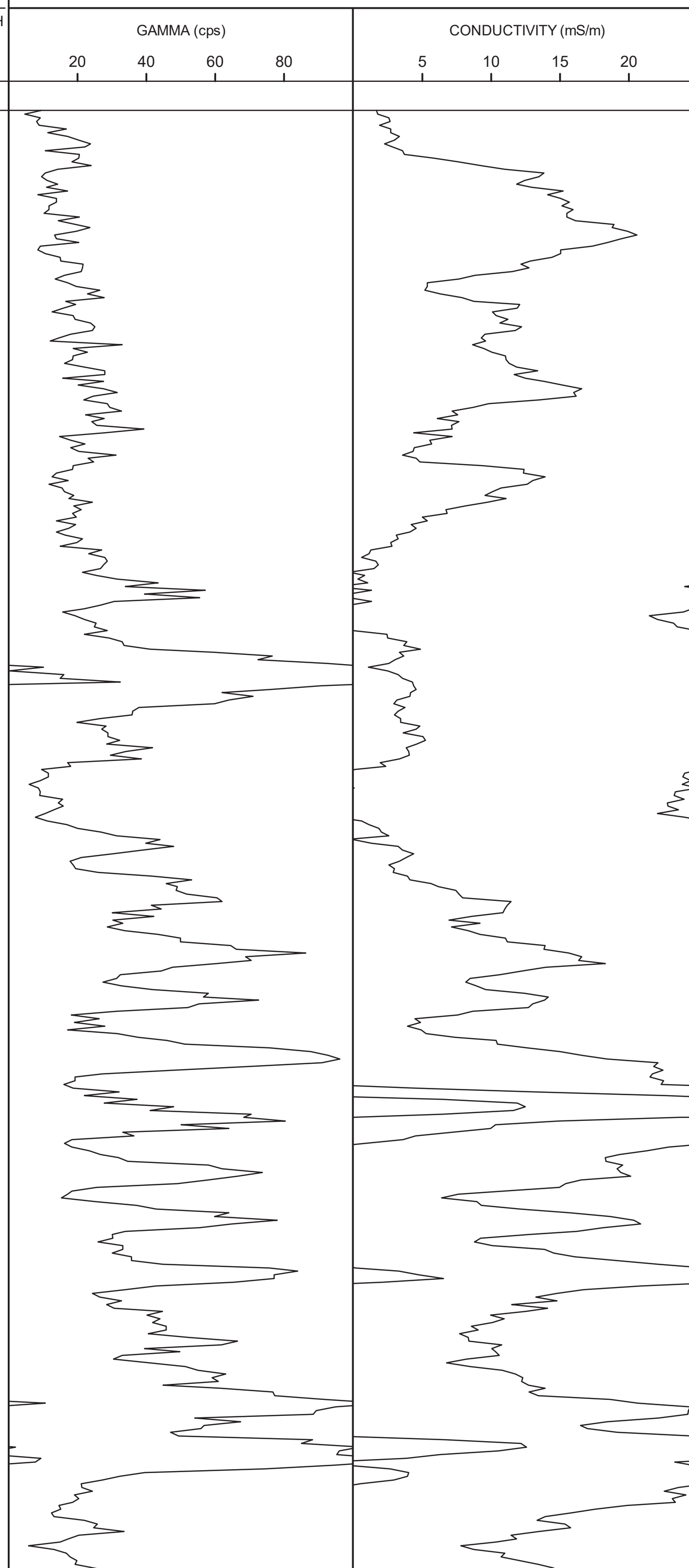
GEOPHYSICAL LOG OF: TW09-1

PROJECT: 18111853
LOCATION: N 5009914.0 ;E 423238.0
INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: September 21, 2009
DRILL RIG: Air Percussion
DRILLING CONTRACTOR: Air Rock Drilling Co. Ltd.

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---				
160		**NEPEAN FORMATION, 153.5 m to 180.7 m** Light grey, medium grained, faintly porous, medium to thickly bedded, laminar to cross bedded texture, calcareous to silica cemented QUARTZ SANDSTONE. Sequence contains widely spaced interbeds of grey shale and shaley siltstone and calcareous dolostone in beds typically 0.1 m to 1.0 m thick. The sandstone varies both vertically and laterally from calcareous cemented sandstone to silica cemented sandstone. Solution weathering of calcareous sandstone beds results in friable porous rock. Near the base of the formation occasional 1.0 m to 5.0 m thick individual beds of subangular to subrounded quartz pebbles and cobbles occur set in a coarse grained quartz sandstone matrix.				
180		CONTINUED NEXT PAGE				



DEPTH SCALE
1 : 100

WSP GOLDER

LOGGED: RB
CHECKED: KAM

PROJECT: 18111853

GEOPHYSICAL LOG OF: TW09-1

LOCATION: N 5009914.0 ;E 423238.0

DRILLING DATE: September 21, 2009

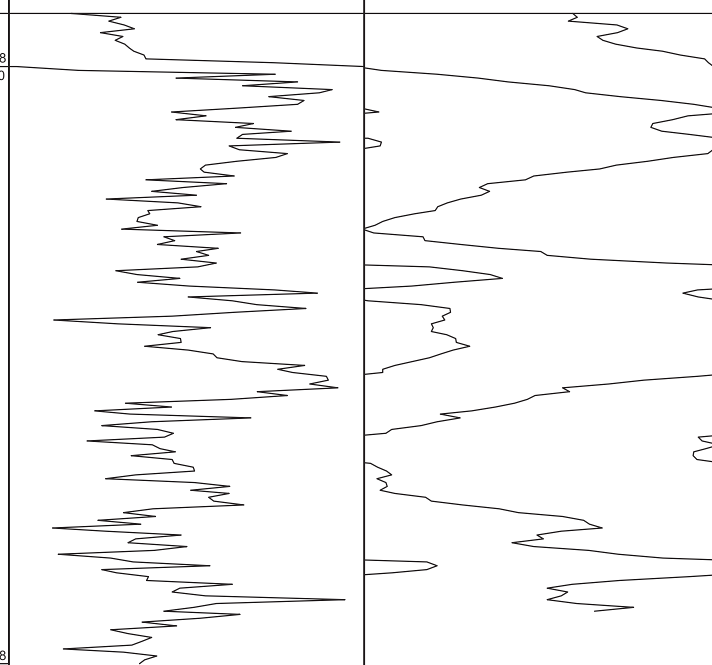
DATUM: Geodetic

DRILL RIG: Air Percussion

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: Air Rock Drilling Co. Ltd.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80	CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---					
180				-39.58 180.70			
182		**PRECAMBRIAN BASEMENT, 180.7 m to 188.6 m** Quartz feldspar biotite GNEISS or dolomitic MARBLE typically weathered near the unconformable surface with the overlying Covey Hill Formation or the Nepean Formation where the Covey Hill Formation is absent.					
184							
186							
188				-47.48 188.60			
		End of Borehole, 188.6 m					
190							
192							
194							
196							
198							
200							



DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

GEOPHYSICAL LOG OF: SQAT18-01

PROJECT: 18111853

SHEET 1 OF 2

LOCATION: N 5009261.6 ;E 422630.5

INCLINATION: -90° AZIMUTH: ---

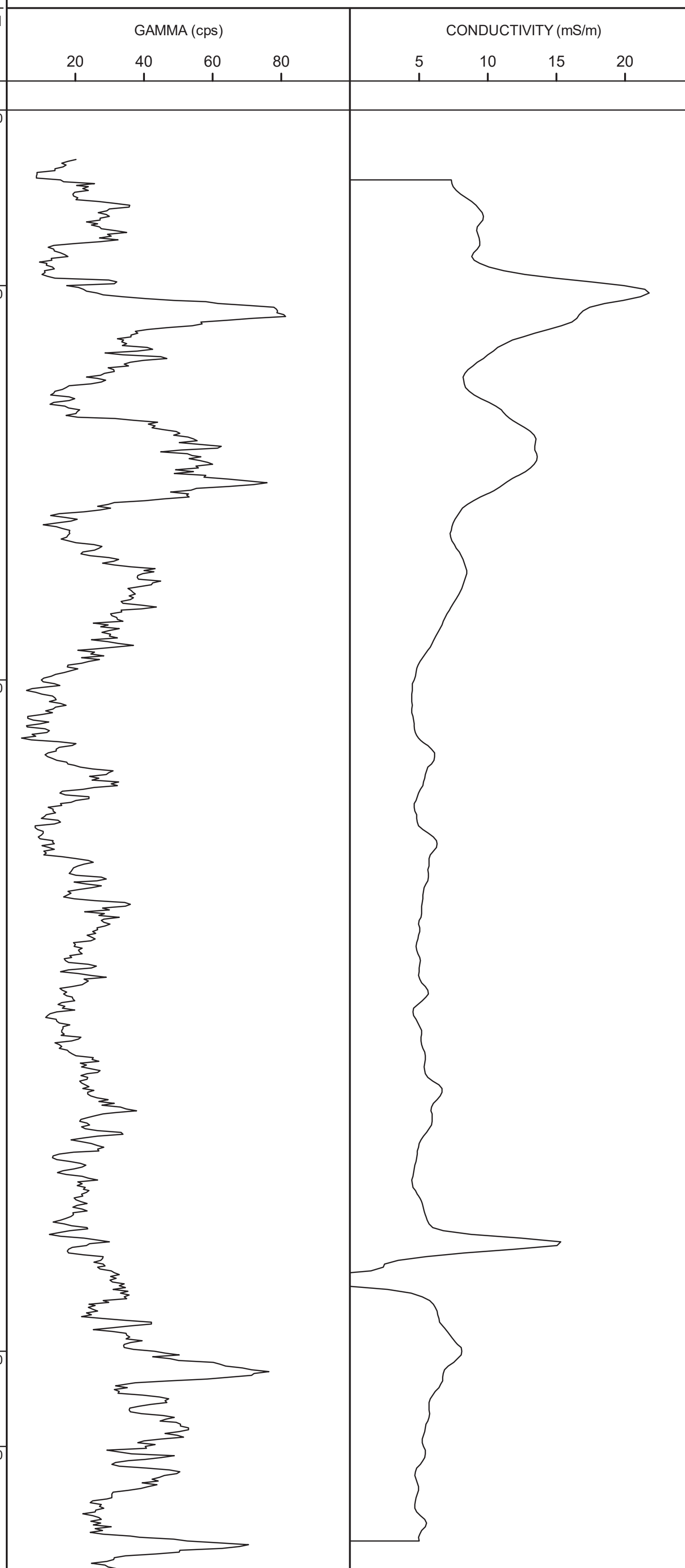
DRILLING DATE: June 2018

DRILL RIG: Air Track Drill

DRILLING CONTRACTOR: Stittsville Quarry

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE				
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 17.0 m** **UNIT 3, 0.0 m to 2.4 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00		
2		**UNIT 2, 2.4 m to 7.8 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		2.40		
8		**UNIT 1, 7.8 m to 17.0 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		7.80		
17		**UPPER GULL RIVER FORMATION, 17.0 m to 20.1 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of		17.00 / 18.30		
20		*CONTINUED NEXT PAGE*				



DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

PROJECT: 18111853

GEOPHYSICAL LOG OF: SQAT18-01

LOCATION: N 5009261.6 ;E 422630.5

DRILLING DATE: June 2018

DATUM: Geodetic

DRILL RIG: Air Track Drill

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: Stittsville Quarry

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD GAMMA (cps) 20 40 60 80	CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---					
20		the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 17.0 m to 18.3 m.		20.10			
		End of Borehole, 20.1 m					
		Note(s):					
22		1. Quarry extraction carried out in area of borehole prior to R.W. Tomlinson 2020 survey.					
24							
26							
28							
30							
32							
34							
36							
38							
40							

DEPTH SCALE

1 : 100

LOGGED: RB

CHECKED: KAM

GEOPHYSICAL LOG OF: SQAT18-02

NJDOFAT° 12130H70

: DA9TODL° L 500287H3 ;F 488H47.E

CA: C9TODL° -20Z 9UCMYTO° ---

I JC: CV I 9TF° Qune 801E

I JC: JO° 9ir Track I rill

I JC: CV ADLTJ9ATDJ° Stittsville 6uarry

SOFFT 1 DP 8

I 9TYM° Veodetic

I FNTO SA9: F MFTJFS	I JC: CV JFADJI	I FSAJ ONTODL	SGMBD: GA: DV	F: FR. I FNTO (m)
		VJDYLI SYJ P9AF		13H58
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 17.5 m** **UNIT 3, 0.0 m to 1.9 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00
8		**UNIT 2, 1.9 m to 7.2 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		134.HB 1.20
4				
H				182.38 7.80
E		**UNIT 1, 7.2 m to 17.6 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		
10				
18				
14				
1H				11E.28 17.H0
1E		**UPPER GULL RIVER FORMATION, 17.6 m to 20.0 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey		117.78 1EE0
80				11H58

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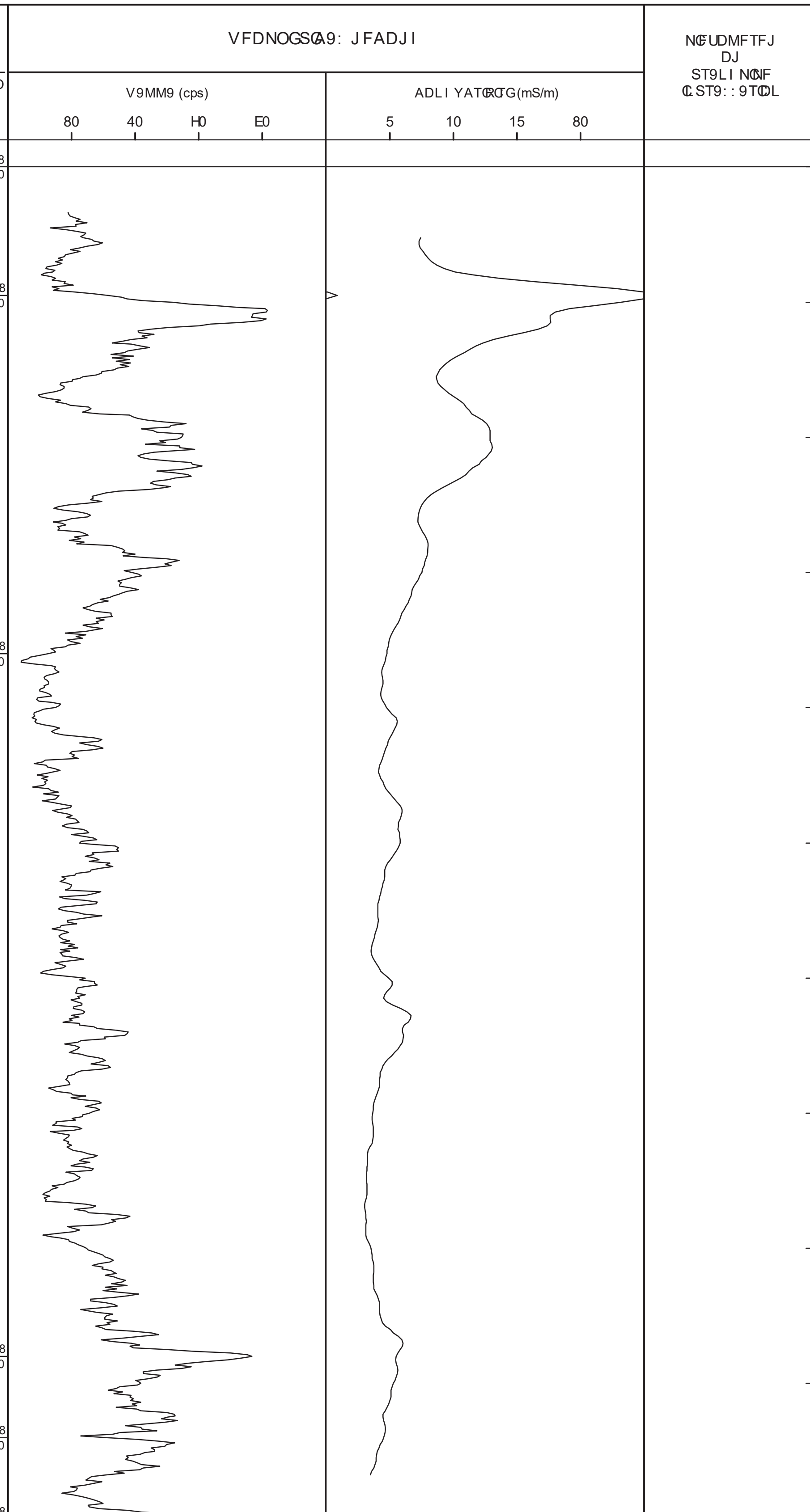


I FNTO SA9: F

1 ° 100

WSP GOLDER

: DVVFI ° JB

AOFAKFI ° K9M

DTT9W9-VFD 12130H70.VNQ V9: -VT9.VI T 11/84/88 QM

GEOPHYSICAL LOG OF: SQAT18-02

NJDQFAT° 12130H70 | SOFFT 8 DP 8

:DA9TQDL° L 500287H3 ;F 488H47.E | I JC: QLV I 9TF° Qune 801E | I 9TYM° Veodetic

QLA: QL9TQDL° -20Z 9UQMYTO° --- | I JC: JQY° 9ir Track I rill

I JC: QLV ADLTJ9ATDJ° Stittsville 6uarry

I FNTOSA9:F MFTJFS	I JC: QLV JFADJI	I FSAJQNTQDL	SGMBD:QA:DV	F:FR. I FNTO (m)	VFDNOGSQA9: JFADJI V9MM9 (cps) 80 40 H0 E0	VFDNOGSQA9: JFADJI ADLI YATQRQTG (mS/m) 5 10 15 80	NQFUDMFTFJ DJ ST9LI NQNF QLST9::9TQDL
		--- CONTINUED FROM PREVIOUS PAGE ---					
80		argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 17.Hm to 1E.Em.		80.00			
88		**End of Borehole, 20.0 m**					
		Note(s):					
		1. Borehole updated in 8081 to reflect the J.W. Tomlinson survey carried out in 8080.					
84							
8H							
8E							
30							
38							
34							
3H							
3E							
40							

GEOPHYSICAL LOG OF: SQAT18-03

NJ DQFAT° 1H111H53

: DA9TODL° L 500E348.7 ;F 422H47.E

OLA: OL9TODL° -E0Z 9UOMYTO° ---

I JC: OLV I 9TF° Qune 201H

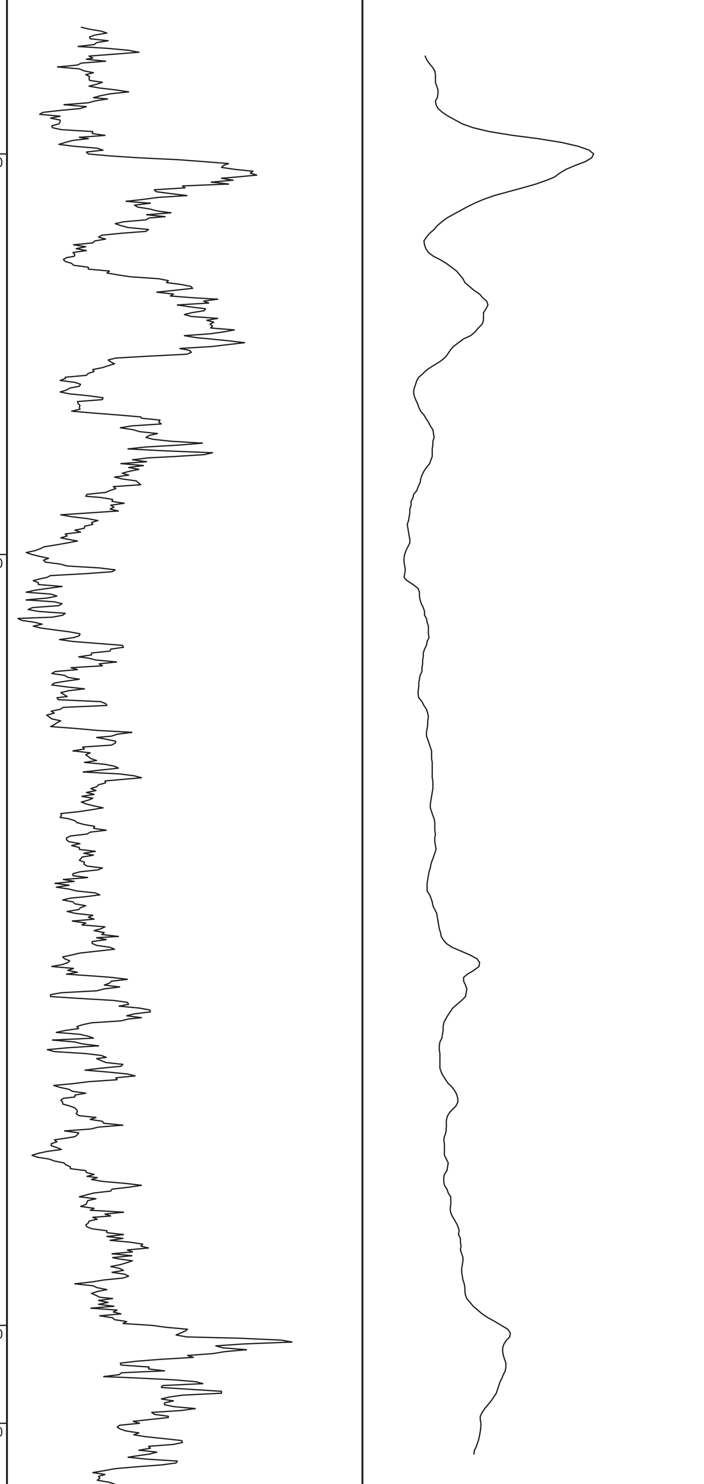
I JC: JOY° 9ir Track I rill

I JC: OLV ADLTJ9ATDJ° Stittsville 6uarry

SOFFT 1 DP 2

I 9TYM° Veodetic

I FNTOSA9: F MFTJFS	I JC: OLV JFADJI	I FSAJONTODL	SGMBD: OA: DV	F: FR. / I FNTO (m)	VFDNOGSOA9: JFADJI	NOFUDMFTFJ DJ ST9LI NONF OLST9: : 9TODL
					V9MM9 (cps): 20, 40, 80, H0 / ADLI YATOROTG (mS/m): 5, 10, 15, 20	
		VJDYLI SYJP9AF				
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 17.8 m** **UNIT 3, 0.0 m to 2.3 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00		
2		**UNIT 2, 2.3 m to 7.6 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		2.30		
4						
8						
H		**UNIT 1, 7.6 m to 17.8 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		7.80		
10						
12						
14						
18						
18						
1H		**UPPER GULL RIVER FORMATION, 17.8 m to 20.1 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic		17.H0 / 1E.10		
20						



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DTT9W9-VFD 1E130870.VNQ V9: -VT9.VI T 11/24/22 QM

WSP GOLDER

I FNTOSA9: F

1 ° 100

: DVVFI ° JB

AOFAKFI ° K9M

NJ DCFAT° 1H111H53

: DA9TODL° L 500E348.7 ;F 422H47.E

CLA: CL9TODL° -E0Z 9UCMYTO° ---

GEOPHYSICAL LOG OF: SQAT18-03

I J C: CLV I 9TF° Qune 201H

I J C: J CV° 9ir Track I rill

I J C: CLV ADL TJ9ATDJ° Stittsville 6 uarry

SOFFT 2 DP 2

I 9TYM° Veodetic

I FNTO SA9: F MFTJFS	I J C: CLV J FADJ I	I FSAJ OITODL	SGMBD: GA : DV	F: FR. I FNTO (m)	VFDNOGSGA9: J FADJ I — V9MM9 (cps) 20 40 80 H0	ADLI YATGRCTG (mS/m) 5 10 15 20	NGUDMFTFJ DJ ST9LI NGNF CLST9: : 9TODL
		--- CONTINUED FROM PREVIOUS PAGE ---					
20		limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 17.Hm to 1E.1 m.		20.10			
22		**End of Borehole, 20.1 m**					
		Note(s):					
		1. 6 uarry extraction carried out in area of borehole prior to J.W. Tomlinson 2020 survey.					
24							
28							
2H							
30							
32							
34							
38							
3H							
40							

DTT9W9-VFD 1E130870.VNQ V9: -VT9.VI T 11/24/22 CM

I FNTO SA9: F

1 ° 100

WSP GOLDER

: DVVFI ° JB

AOFAKFI ° K9M

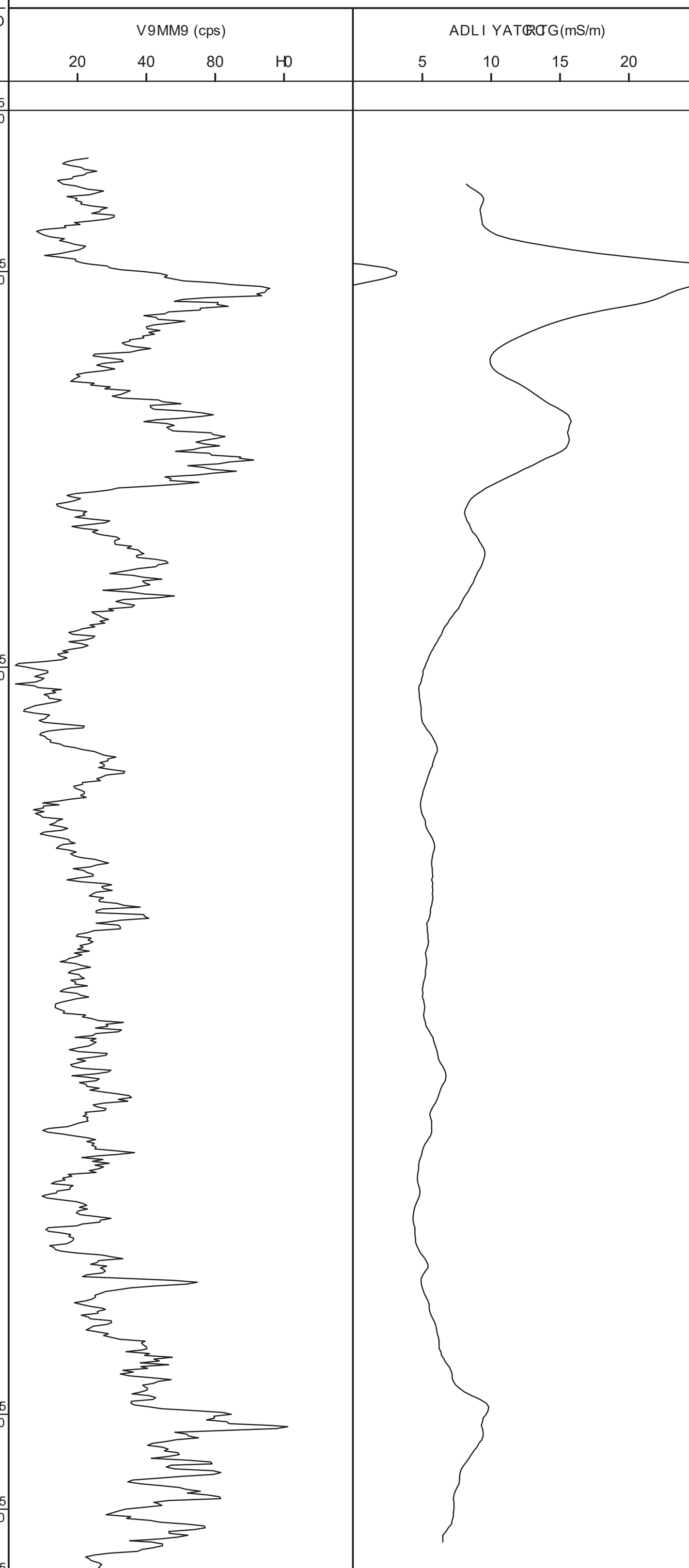
GEOPHYSICAL LOG OF: SQAT18-04

NJ DGFAT° 1E130870
: DA9TODL° L 500E377.1 ;F 422582.3
CA: C9TODL° -E0Z 9UCMYTO° ---

I JC: CV I 9TF° Qune 201H
I JC: JCY° 9ir Track I rill
I JC: CV ADLTJ9ATDJ° Stittsville 6uarry

SOFFT 1 DP 2
I 9TYM° Veodetic

I FNTOSA9: F MFTJFS	I JC: CV JFADJI	I FSAJ ONTODL	SGMBD: GA: DV	F: FR. I FNTO (m)	VFDNOGSCA9: JFADJI	NGUDMFTFJ DJ ST9LI NONF CST9: : 9TODL
		VJDYLI SYJP9AF		135.85		
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 17.8 m** **UNIT 3, 0.0 m to 2.2 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00		
2		**UNIT 2, 2.2 m to 7.6 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		133.45 2.20		
4						
8		**UNIT 1, 7.6 m to 17.8 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		12H05 7.80		
H						
10						
12						
14						
18		**UPPER GULL RIVER FORMATION, 17.8 m to 20.0 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic		117.H5 17.H0		
1H				118.55 1E.10		
20				115.85		



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: DA9TODL° L 500E377.1 ;F 422582.3

OA: O9TODL° -E0Z 9UOMYTO° ---

I JC: OV I 9TF° Oune 201H

I JC: JOV° 9ir Track I rill

I JC: OV ADLTJ9ATDJ° Stittsville 6uarry

I 9TYM° Veodetic

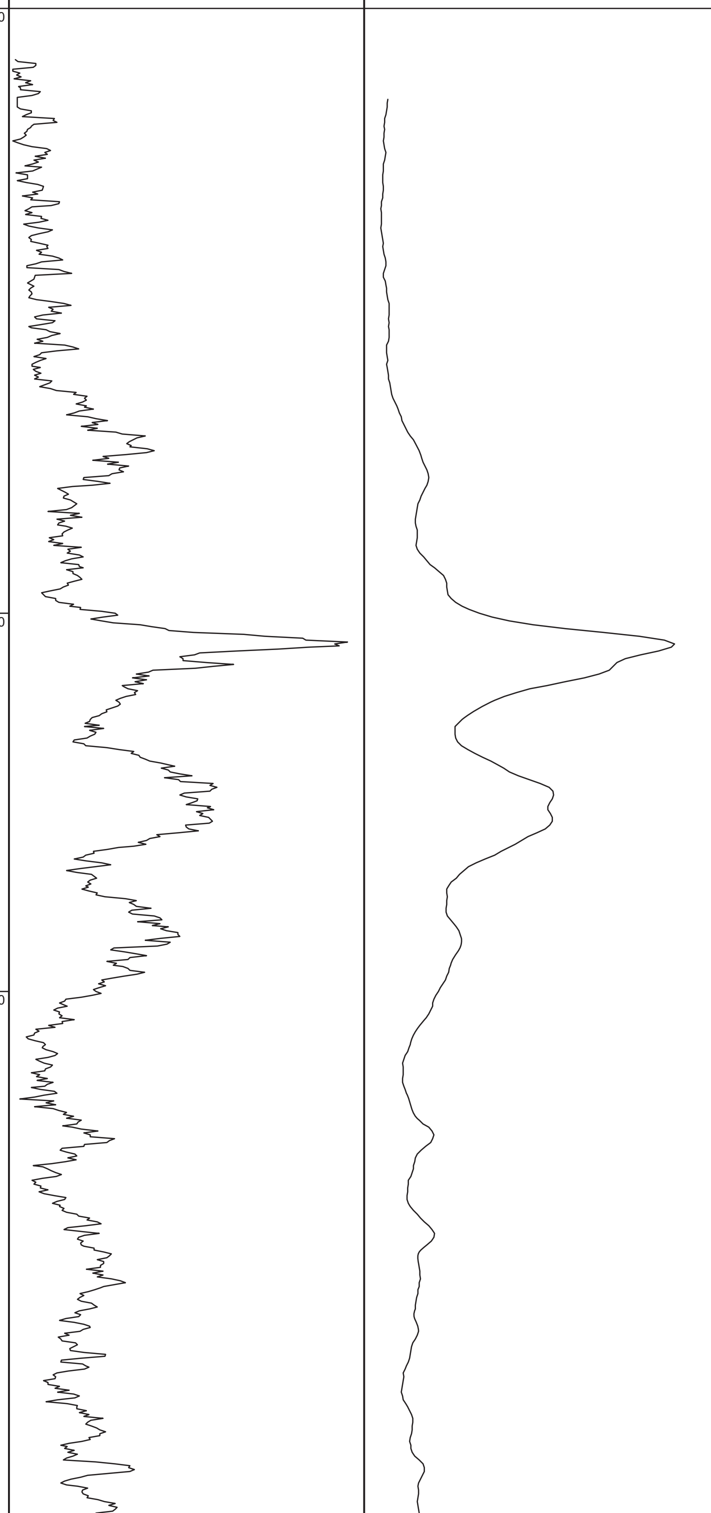
I FNTOSA9:F MFTJFS	I JC:OV JFADJI	I FSAJONTODL	SGMBD:OA:DV	F:FR. I FNTO (m)	VFDNOGSOA9: JFADJI V9MM9 (cps) 20 40 80 H0	ADLI YATOROG (mS/m) 5 10 15 20	NOFUDMFTFJ DJ ST9LI NONF OST9::9TODL
		--- CONTINUED FROM PREVIOUS PAGE ---					
20		limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed"**, at 17.Hm to 1E.1 m.		20.00			
22		**End of Borehole, 20.0 m**					
		Note(s):					
		1. Borehole updated in 2021 to reflect the J.W. Tomlinson survey carried out in 2020.					
24							
28							
2H							
30							
32							
34							
38							
3H							
40							

GEOPHYSICAL LOG OF: SQAT18-05

FV8 R7I TL 1M11M53 | S277T 1 8H E
N8 I CTB PL P 500A34A 1 K7 4EE4AQ3 | OVDNDPY OCT7L Ruly E01M | OCTZ° L Yeodetic
DPI NDPCTB PL -A0: C9D ZT2 L --- | OVDNVDYL Cir Track Orill
OVDNDPY I 8 PTVCI T8 VL Stittsville J uarry

O7 FT2 SI CN7 ° 7TV7S	OVDNDPY V7I 8 VO	O7SI VDFTB P	SU° B8 ND N8 Y	7N7G. O7 FT2 (m)	Y78 F2 USD CNV7I 8 VO: YC° ° C (cps) E0 40 Q0 M0	I 8 POZI TDGDTU (mS;m) 5 10 15 E0	FD98° 7T7V 8V STCPOFDF7 DPSTCNNCTB P
		YV8 ZPO SZVHCI 7					
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 20.4 m** **UNIT 3, 0.0 m to 8.0 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00			
M		**UNIT 2, 8.0 m to 13.0 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		M00			
13		**UNIT 1 13.0 m to 20.4 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		13.00			

Depth scale (m): 0, E, 4, Q, M, 10, 1E, 14, 1Q, 1M, E0



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FV8R7I TL 1M11M53

N8I CTB PL P 500A34A.1 K7 4EE4AQ3

BPI NBPCTB PL -A0: C9D ZT2L ---

GEOPHYSICAL LOG OF: SQAT18-05

OVDNDPY OCT7L Ruly E01M

OVDN VDYL Cir Track Orill

OVDNDPY I 8PTVCI T8VL Stittsville J uarry

S277T E 8H E

OCTZ° L Yeodetic

O7FT2 SI CN7 ° 7TV7S	OVDNDPY V7I 8VO	O7SI VDFTB P	SU° B8ND N8Y	7N7G. O7FT2 (m)	Y78F2USD CNV7I 8VO: YC° ° C (cps) 20 40 Q0 M0	I 8POZI TDGDTU (mS;m) 5 10 15 20	FD98° 7T7V 8V STCPOFDF7 BPSTCNNCTB P
		--- CONTINUED FROM PREVIOUS PAGE ---					
E0							
		End of Borehole, 20.4 m		E0.40			
		Note(s):					
		1. J uarry extraction carried out in area of borehole prior to V./ . Tomlinson E0E0 survey.					
EE							
E4							
EQ							
EM							
30							
3E							
34							
3Q							
3M							
40							

GEOPHYSICAL LOG OF: SQAT18-06

PREJHCT: 17111753

LECATIEN: N 500MF27.0 KH 4FF55F.;

INCLINATIEN: -M09 A° IZ UT8: ---

DRILLING DATH: July F017

DRILL RIG: Air Track Drill

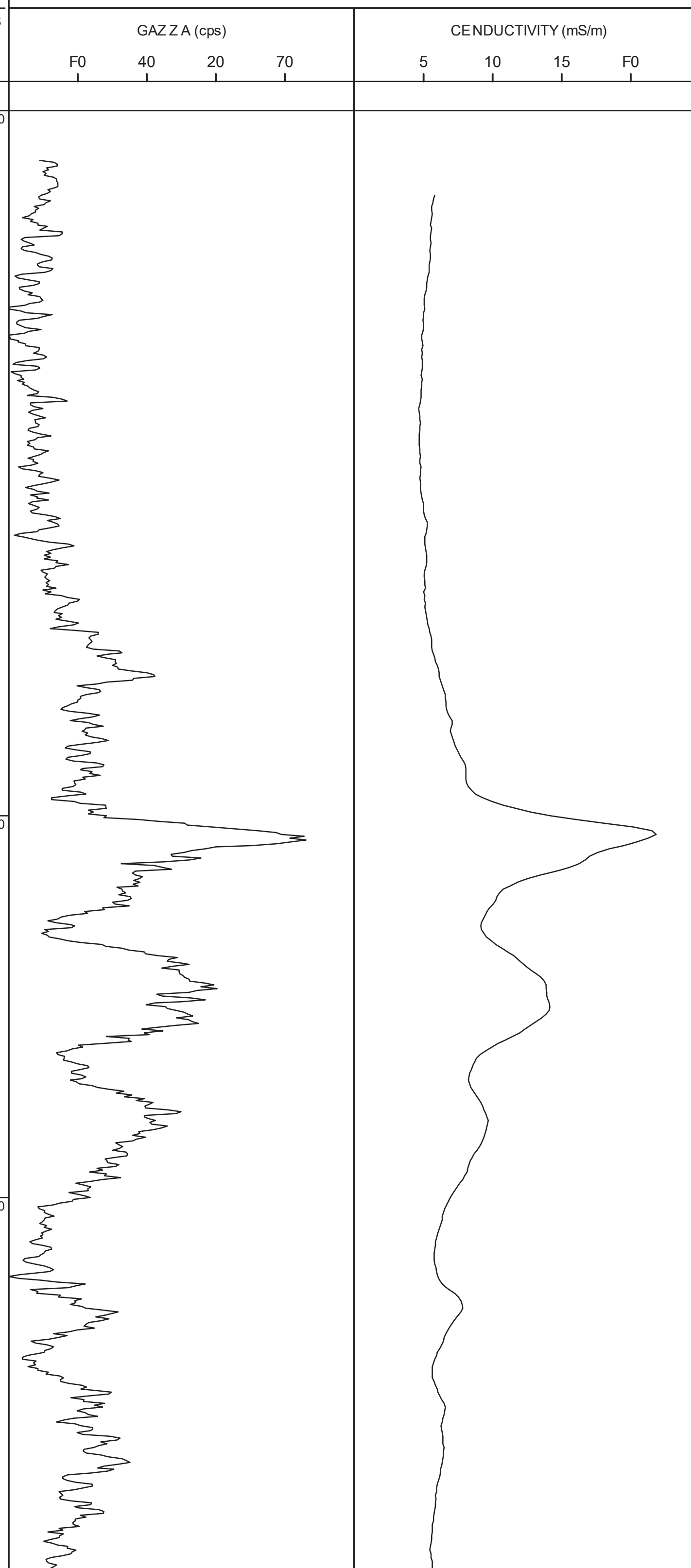
DRILLING CENTRACTER: Stittsville Quarry

DATUZ: Geodetic

DHPT8 SCALH Z HTRHS	DRILLING RHCERD	DHSCRIPTIEN	SYZBELIC LEG	HLHV. DHPT8 (m)
		GREUND SURQACH		
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 20.4 m** **UNIT 3, 0.0 m to 9.6 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00
10		**UNIT 2, 9.6 m to 14.8 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		M20
		UNIT 1, 14.8 m to 20.4 m medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		14.70
F0				

Depth scale: 0, F, 4, 2, 7, 10, 1F, 14, 12, 17, F0

GHEP8YSICAL RHCERD



PIH° EZ HTHR ER STANDPIPH INSTALLATIEN

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DHPT8 SCALH

1 : 100

WSP GOLDER

LEGGHD: RB

C8HC6HD: 6AZ

GEOPHYSICAL LOG OF: SQAT18-06

PREJHCT: 17111753
LECATIEN: N 500MF27.0 ;KH 4FF55F.;
INCLINATIEN: -M09   A° IZ UT8: ---

DRILLING DATH: July F017
DRILL RIG: Air Track Drill
DRILLING CENTRACTER: Stittsville Quarry

S8HHT F EO F
DATUZ: Geodetic

DHPT8 SCALH Z HTRHS	DRILLING RHCERD	DHSCRIPTIEN	SYZBELIC LEG	HLHV. DHPT8 (m)	GHEP8YSICAL RHCERD GAZZA (cps) F0 40 20 70	CENDUCTIVITY (mS/m) 5 10 15 F0	PIH°EZHTHR ER STANDPIPH INSTALLATIEN
		--- CONTINUED FROM PREVIOUS PAGE ---					
F0							
		End of Borehole, 20.4 m **Note(s):** 1. Quarry extraction carried out in area of borehole prior to R.W. Tomlinson F0F0 survey.		F0.40			
FF							
F4							
F2							
F7							
30							
3F							
34							
32							
37							
40							

DHPT8 SCALH
1 : 100

WSP GOLDER

LEGGHD: RB
C8HC6HD: 6AZ

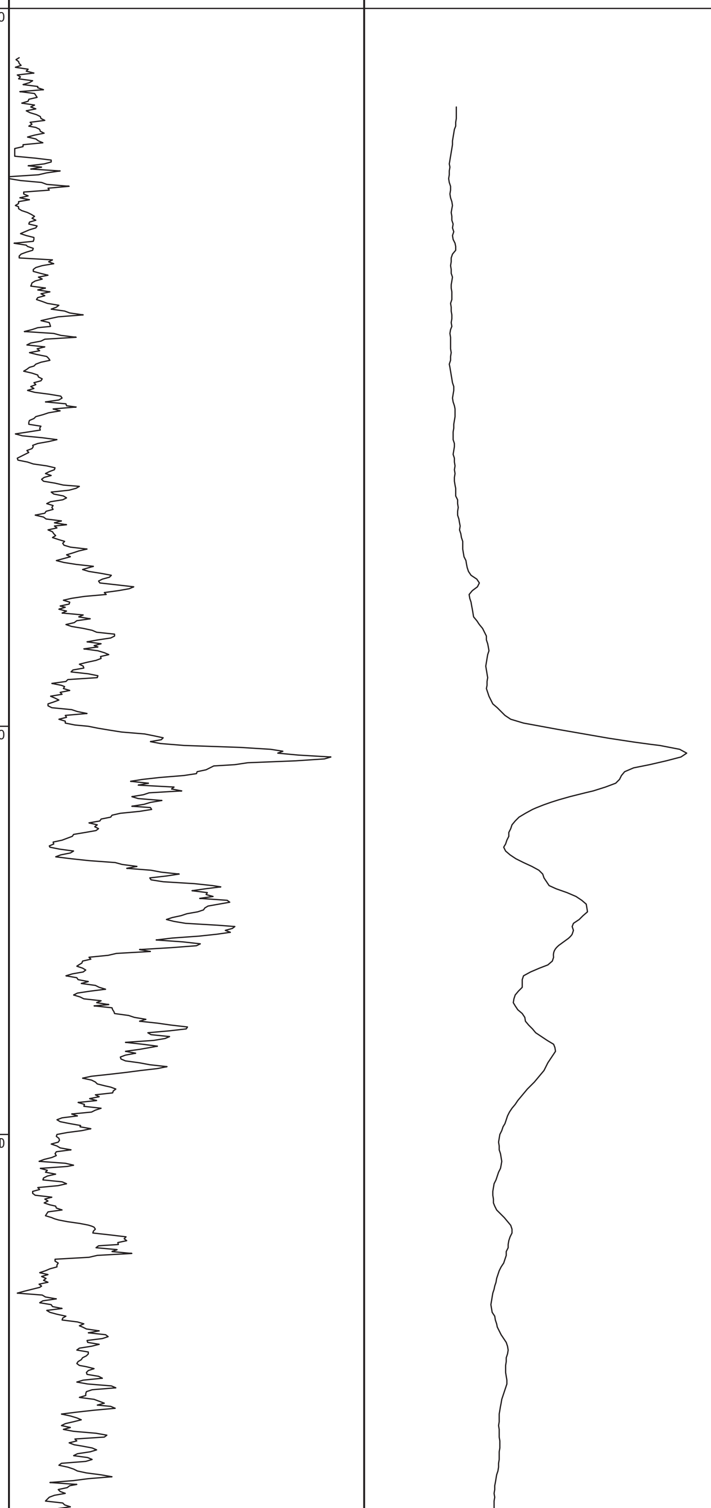
GEOPHYSICAL LOG OF: SQAT18-07

FG8 V7I TL 1R111R53
N8 I CTB PL P 500MKK.R;7 4EEQ84.E
DI NDCTB PL -M0A C: D° T2L ---

OGDNDPU OCT7L Vuly E01R
OGDN GDL Cir Track Orill
OGDNDPU I 8 PTGCI T8 GL Stittsville J uarry

S277T 1 8H E
OCT° 9 L Ueodetic

O7 FT2 SI CN7 9 7 TG7 S	OGDNDPU G7 I 8 GO	O7 SI GDFTB P	SZ 9 B8 ND N8 U	7 N7Y. O7 FT2 (m)	U78 F2 ZSD CN G7 I 8 GO: UC9 9 C (cps) E0 40 Q0 R0	I 8 PO° I TDYDTZ (mS/m) 5 10 15 E0	FD: 8 9 7 T7 G 8 G STCPOFDF7 DPSTCNNCTB P
		UG8 ° PO S° GHCI 7					
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 20.4 m** **UNIT 3, 0.0 m to 9.5 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00			
E							
4							
Q							
R							
10		**UNIT 2, 9.5 m to 14.9 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		M50			
1E							
14							
1Q		**UNIT 1, 14.9 m to 20.4 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		14.M0			
1R							
E0							



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GEOPHYSICAL LOG OF: SQAT18-07

FG8 V7I TL 1R11R53 | S277T E 8H E
N8 I CTB PL P 500MIKK.R;7 4EEQ84.E | OGDNDPU OCT7L Vuly E01R | OCT° 9 L Ueodetic
DPI NDPCTB PL -M0A C: D ° T2 L --- | OGDNGDJL Cir Track Orill
OGDNDPU I 8 PTGCI T8 GL Stittsville J uarry

O7 FT2 SI CN7 9 7 TG7 S	OGDNDPU G7 I 8 GO	O7 SI GDFTB P	SZ 9 B8 ND N8 U	7 N7 Y. O7 FT2 (m)	U78 F2 ZSD CN G7 I 8 GO: UC9 9 C (cps) E0 40 Q0 R0	I 8 PO° I TDYDZ (mS/m) 5 10 15 E0	FD7: 8 9 7 T7 G 8 G STCPOFDF7 DPSTCNNCTB P
		--- CONTINUED FROM PREVIOUS PAGE ---					
E0							
		End of Borehole, 20.4 m **Note(s):** 1. J uarry extraction carried out in area of borehole prior to G.W. Tomlinson E0E0 survey.		E0.40			
EE							
E4							
EQ							
ER							
30							
3E							
34							
3Q							
3R							
40							

: DA9TODL° L 500H213.3 ;F 422E47.2

I 9TYM° Veodetic

CA: C9TODL° -H0Z   9UCMYTO° ---

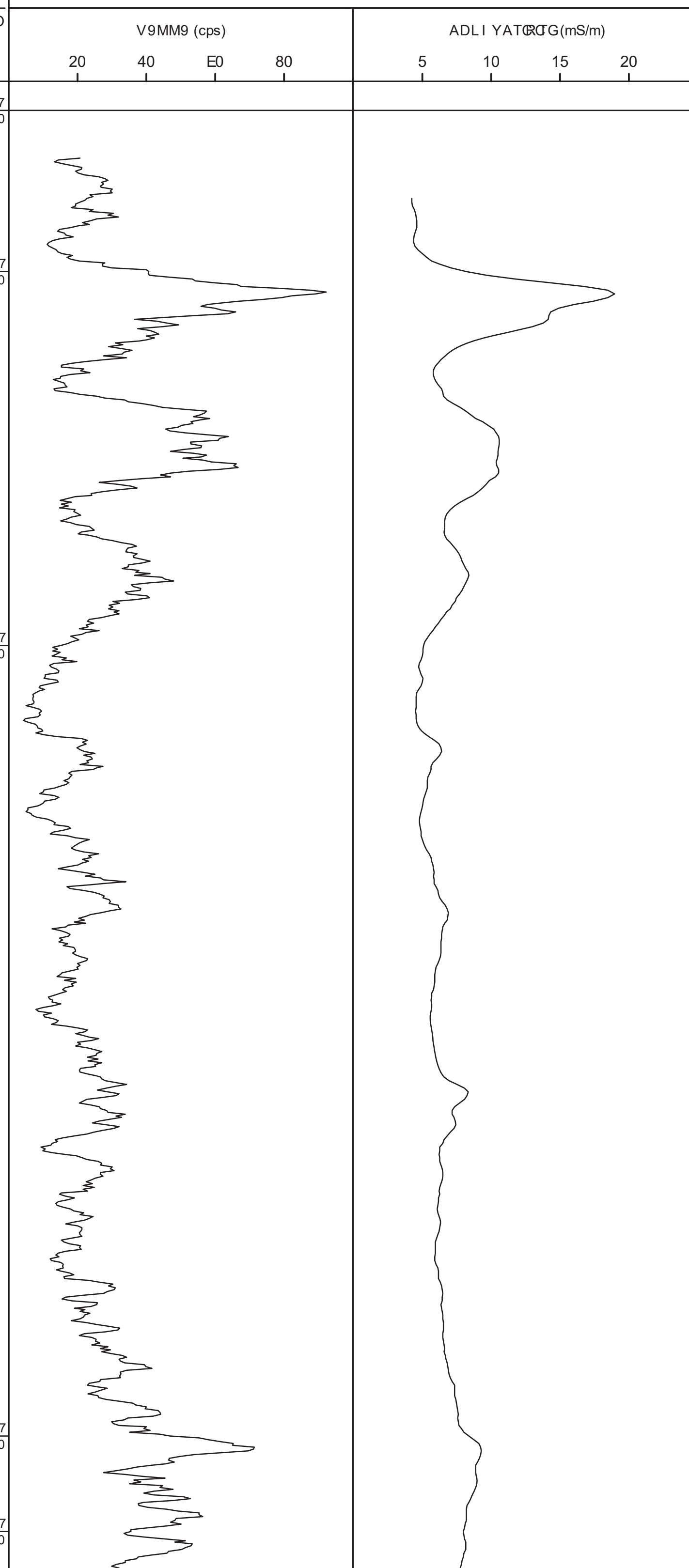
I JC: CV I 9TF° Quly 2018

I JC: JCV° 9ir Track I rill

I JC: CV ADLTJ9ATDJ° Stittsville 6 uarry

I FNTOSA9: F MFTJFS	I JC: CV JFADJI	I FSAJ ONTODL	SGMBD: CA : DV	F: FR. I FNTO (m)
		VJDYLI SYJP9AF		138.57
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 18.1 m** **UNIT 3, 0.0 m to 2.2 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00
2				13E.37 2.20
		UNIT 2, 2.2 m to 7.3 m dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		
4				
E				
				131.27 7.30
		UNIT 1, 7.3 m to 18.1 m medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		
8				
10				
12				
14				
1E				
18				120.47 18.10
		UPPER GULL RIVER FORMATION, 18.1 m to 20.3 m Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds		11H17 1H40
20				

VFDNOGSOA9: JFADJI



NCFUDMFTFJ DJ ST9LI NCNF CST9: : 9TODL

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NJ DQFAT° 1H130E70

: DA9TODL° L 500H213.3 ;F 422E47.2

CLA: CL9TODL° -H0Z 9UCMYTO° ---

GEOPHYSICAL LOG OF: SQAT18-08

I J C: CLV I 9TF° Quly 2018

I J C: J CV° 9ir Track I rill

I J C: CLV ADLTJ9ATDJ° Stittsville 6uarry

SOFFT 2 DP 2

I 9TYM° Veodetic

I FNTOSA9: F MFTJFS	I J C: CLV J FADJ I	I FSAJ ONTODL	SGMBD: CA: DV	F: FR. I FNTO (m)	VFDNOGSCA9: J FADJ I — V9MM9 (cps) 20 40 E0 80	VFDNOGSCA9: J FADJ I — ADLI YATCROTG (mS/m) 5 10 15 20	NCEUDMFTFJ DJ ST9LI NONF CLST9: : 9TODL
		--- CONTINUED FROM PREVIOUS PAGE ---					
20		of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed"**, at 18.1 m to 1H4 m.		118.27 20.30			
22		**End of Borehole, 20.3 m**					
		Note(s):					
		1. Borehole updated in 2021 to reflect the J.W. Tomlinson survey carried out in 2020.					
24							
2E							
28							
30							
32							
34							
3E							
38							
40							

I RFJOLT9 18111853

GEOPHYSICAL LOG OF: SQAT18-09

SEOOT 1 FD 2

AFL: TNFC9 C 500H282.0 ;O 42256H4

PRMAANCG P: TO9 July 2018

P: TUM9 Geodetic

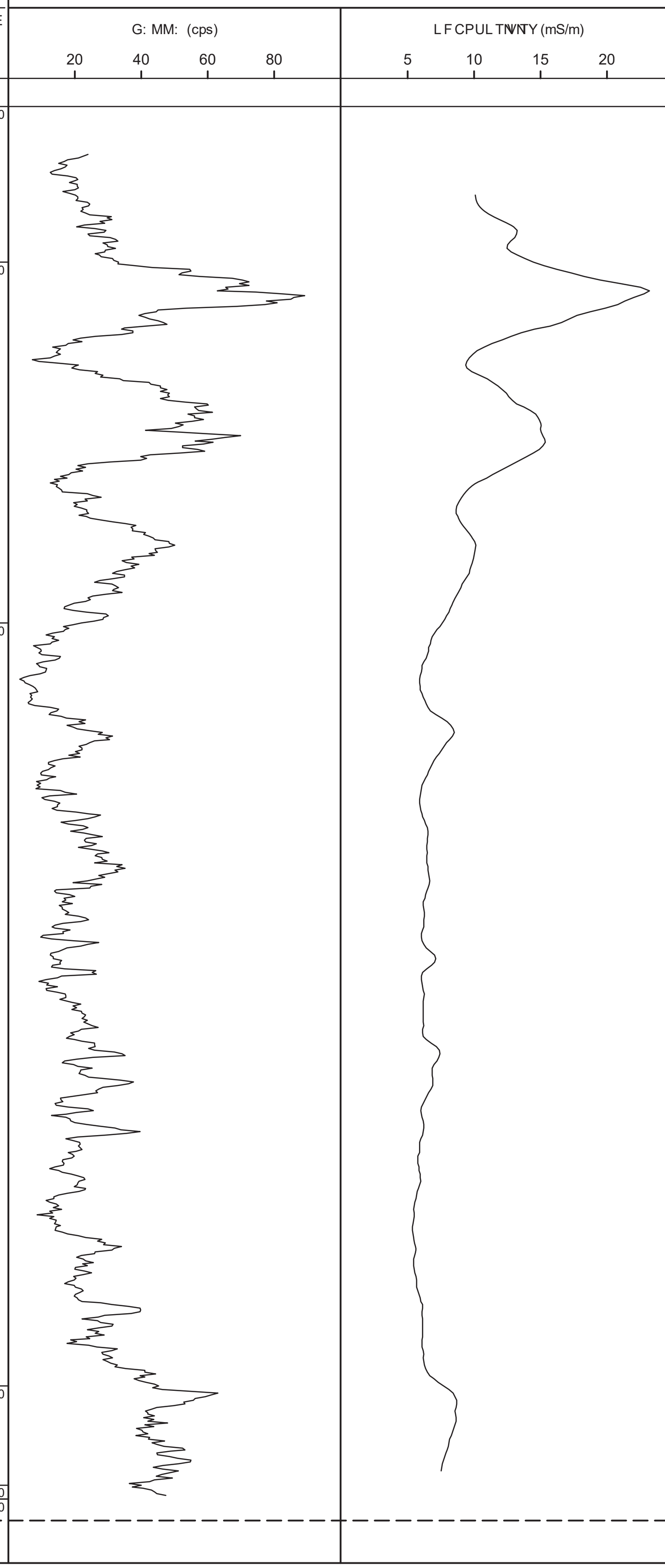
NCLANC: TNFC9 -H0°

: ZNMUTE9 ---

PRMAARNG9 : ir Track Prill

PRMAANCG LFCTR: LTFR9 Stittsville Quarry

POI TE SL: AO MOTROS	PRMAANCG ROLFRP	POSLRNI TNFC	SYMBFANL AFG	OAOV. POI TE (m)	GOFI EYSNL: AROLFRP	I NDZFMOTOR FR ST: CPI NI O NCST: AA: TNFC
		GRFUCP SURD: LO				
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 18.1 m** **UNIT 3, 0.0 m to 2.2 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00		
2		**UNIT 2, 2.2 m to 7.3 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		2.20		
4						
6						
8		**UNIT 1, 7.3 m to 18.1 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		7.30		
10						
12						
14						
16						
18		**UPPER GULL RIVER FORMATION, 18.1 m to 19.7 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds		18.10 1H50 1H70		
20						



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I RFJOLT9 18111853

GEOPHYSICAL LOG OF: SQAT18-09

SEOOT 2 FD 2

AFL: TNFC9 C 500H282.0 ;O 42256H4

PRMAANCG P: TO9 July 2018

P: TUM9 Geodetic

PRMAA RNG9 : ir Track Prill

NCLANC: TNFC9 -H0°

: ZNMUTE9 ---

PRMAANCG LFCTR: LTFR9 Stittsville Quarry

POI TE SL: AO MOTROS	PRMAANCG ROLFRP	POSLRNTNFC	SYMBF ANL AFG	OAOV. POI TE (m)	GOFI EYSNL: AROLFRP — G: MM: (cps) 20 40 60 80	LFCPULTNVNTY (mS/m) 5 10 15 20	I NOZF MOTOR FR ST: CPI NI O NCST: AA: TNFC
		--- CONTINUED FROM PREVIOUS PAGE ---					
20		of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 18.1 m to 1H5 m.					
22		**End of Borehole, 19.7 m**					
		Note(s):					
		1. Stockpile placed in area of borehole prior to R.W. Tomlinson 2020 survey.					
24							
26							
28							
30							
32							
34							
36							
38							
40							

NJ DCFAT° 18130E20

: DA9TCDL° L 5008354.7 ;F 4HH5H1.2

CA: C9TCDL° -80Z   9UCMYTO° ---

GEOPHYSICAL LOG OF: SQAT18-10

I JC: CV I 9TF° Quly H017

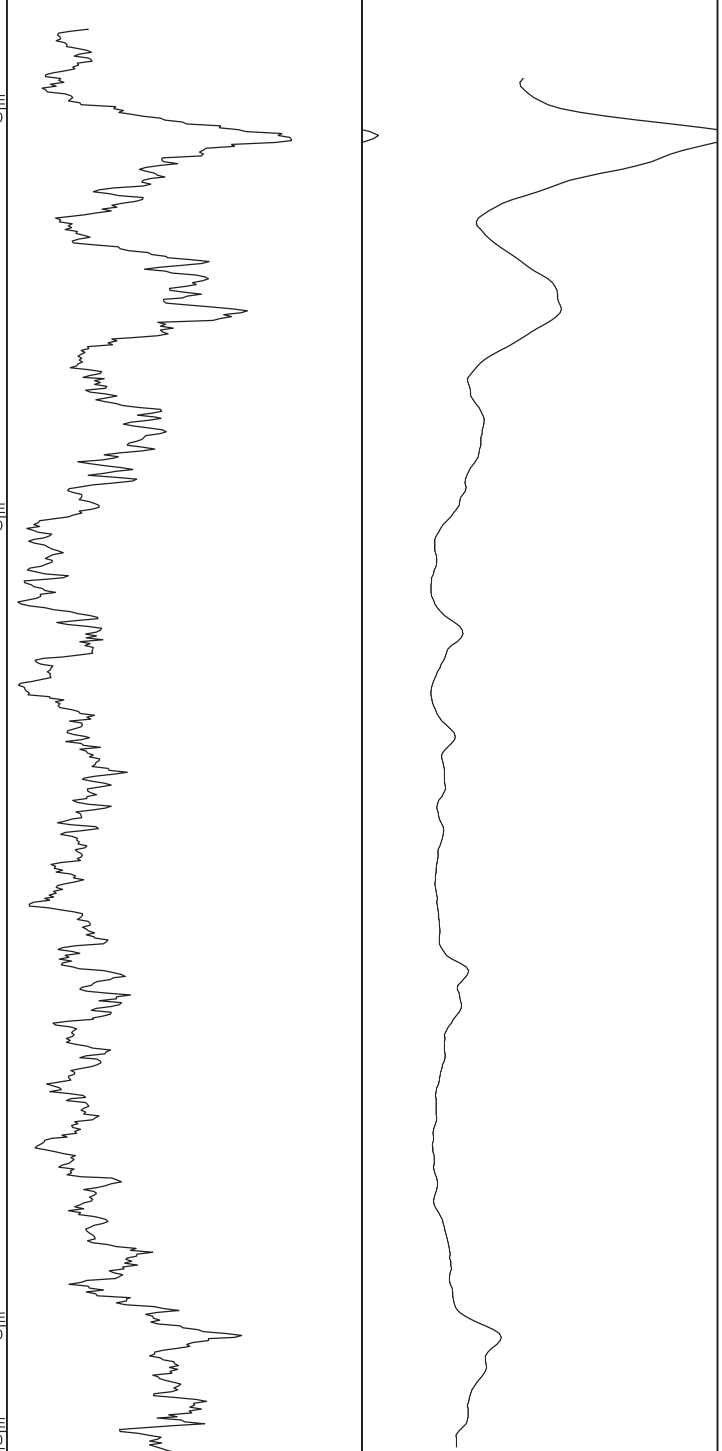
I JC: JCV° 9ir Track I rill

I JC: CV ADLTJ9ATDJ° Stittsville 6uarry

SOFFT 1 DP H

I 9TYM° Veodetic

I FNTOSA9: F MFTJFS	I JC: CV J FADJI	I FSAJ CNTCDL	SGMBD: CA: DV	F: FR. I FNTO (m)	VFDNOGSCA9: JFADJI V9MM9 (cps) H0 40 E0 70	ADLI YATCRCTG(mS/m) 5 10 15 H0	NCEUDMFTFJ DJ ST9LI NCNF CST9: : 9TCDL
		VJDYLI SYJP9AF		13E.3E			
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 17.8 m** **UNIT 3, 0.0 m to 1.7 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00			
H				134.EE 1.20			
		UNIT 2, 1.7 m to 7.1 m dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.					
4							
E				1H3.HE 2.10			
		UNIT 1, 7.1 m to 17.8 m medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.					
7							
10							
1H							
14							
1E							
17		**UPPER GULL RIVER FORMATION, 17.8 m to 19.6 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic		117.5E 12.70 112.1E 18.H0 11E.2E 18.E0			
H0							



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NJ DQFAT° 18130E20

: DA9TCDL° L 5008354.7 ;F 4HH5H1.2

CLA: CL9TCDL° -80Z 9UCMYTO° ---

GEOPHYSICAL LOG OF: SQAT18-10

I J C: CLV I 9TF° Quly H017

I J C: J CV° 9ir Track I rill

I J C: CLV ADL TJ9ATDJ° Stittsville 6 uarry

SOFFT H DP H

I 9TYM° Veodetic

I FNTO SA9: F MFTJFS	I J C: CLV J FADJ I	I FSAJ CNTCDL	SGMBD: CA : DV	F: FR. I FNTO (m)	VFDNOGSCA9: J FADJ I — V9MM9 (cps) H0 40 E0 70	ADL I YATCRCTG (mS/m) 5 10 15 H0	NCFUDMFTFJ DJ ST9L I NCNF CLST9: : 9TCDL
		--- CONTINUED FROM PREVIOUS PAGE ---					
H0		limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 12.7 m to 18.Hm.					
HH		**End of Borehole, 19.6 m**					
		Note(s):					
		1. Borehole updated in H0H1 to reflect the J .W. Tomlinson survey carried out in H0H0.					
H4							
HE							
H7							
30							
3H							
34							
3E							
37							
40							

DTT9W9-VFD 18130E20.VNQ V9: -VT9.V I T 11/H4/HH CM

I FNTO SA9: F

1 ° 100

WSP GOLDER

: DVVFI ° J B

AOFAKFI ° K9M

DREJHNTA 1: 1M02K0

GEOPHYSICAL LOG OF: SQAT18-11

S8HHT 1 EO 5

CENLTPEI A I 700: M10.5 ;H 455: 2: .:

FRPOP G FLTHA July 5013

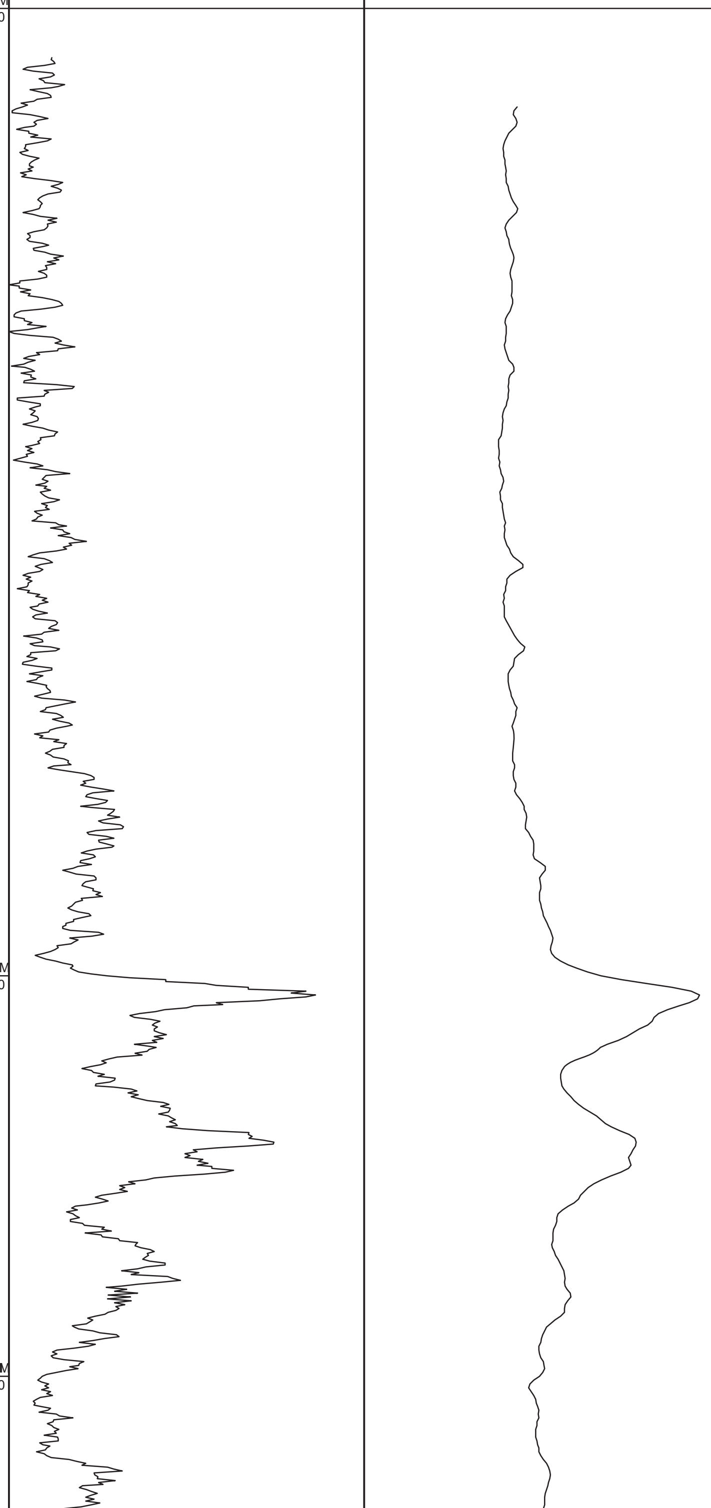
FLTUZ A Geodetic

P NOP LTPEI A-: 09 L° FZ UT8A ---

FRPOCRPGA Lir Track Frill

FRPOP G NEI TRLNTERA Stittsville Quarry

FHDT8 SNLOH ZHTRHS	FRPOP G RHNERF	FHSNRPDTPEI	SYZ BEOPN OEG	HCHV. FHDT8 (m)	GHE D8 YSPNL C RHNE RF GLZZL (cps) 50 40 20 30	NEI FUNTPVPTY (mS/m) 7 10 17 50	DPP° EZ HTHR ER STLI FDPDH P STLOOLTPEI
		GREUI F SUROLNH		14M4M 0.00			
0 5 4 2 3 10 15		**LOWER BOBCAYGEON FORMATION, 0.0 m to 20.4 m** **UNIT 3, 0.0 m to 12.8 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		1M0.2M 15.30			
14 12 13		**UNIT 2, 12.8 m to 18.1 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		157.MM 13.10			
50		**UNIT 1, 18.1 m to 20.4 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be					



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ETTLWL-GHE 1: 1M02K0.GDJ GLC-GTL.GFT 11/54/55 JZ

FHDT8 SNLOH

1 A100

CEGGHFA RB

N8HN6HFA 6LZ

GEOPHYSICAL LOG OF: SQAT18-11

DREJHNTA 1: 1M02K0

CENLTPEI A I 700: M10.5 ;H 455: 2: .:

P NOP LTPEI A-: 09 L° PZ UT8 A---

FRPOP G FLTHA July 5013

FRPOCRPGA Lir Track Frill

FRPOP G NEI TRLNTERA Stittsville Quarry

S8 HHT 5 EO 5

FLTUZ A Geodetic

FHDT8 SNLOH ZHTRHS	FRPOP G RHNERF	FHSNRPDTPEI	SYZ BEOPN CEG	HOHV. FHDT8 (m)	GHE D8 YSPNLC RHNERF: GLZZL (cps) 50 40 20 30	NEI FUNTPVPTY (mS/m) 7 10 17 50	DPH° EZ HTHR ER STLI FDPDH P STLOOL TPEI
		--- CONTINUED FROM PREVIOUS PAGE ---					
50		infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 7 to M0 mm thick.		15M0M 50.40			
55		**End of Borehole, 20.4 m**					
		Note(s):					
54		1. Borehole updated in 5051 to reflect the R.W. Tomlinson survey carried out in 5050.					
52							
53							
M0							
M5							
M4							
M2							
M8							
40							

ETTLWL-GHE 1: 1M02K0.GDJ GLC-GTL.GFT 11/54/55 JZ

FHDT8 SNLOH

1 A100

WSP GOLDER

CEGGHFA RB

N8 HN6 HFA 6 LZ

: DA9TQDL° L 500E823.E ;F 4227H5.3

I JC: CLV I 9TF° Quly 201H

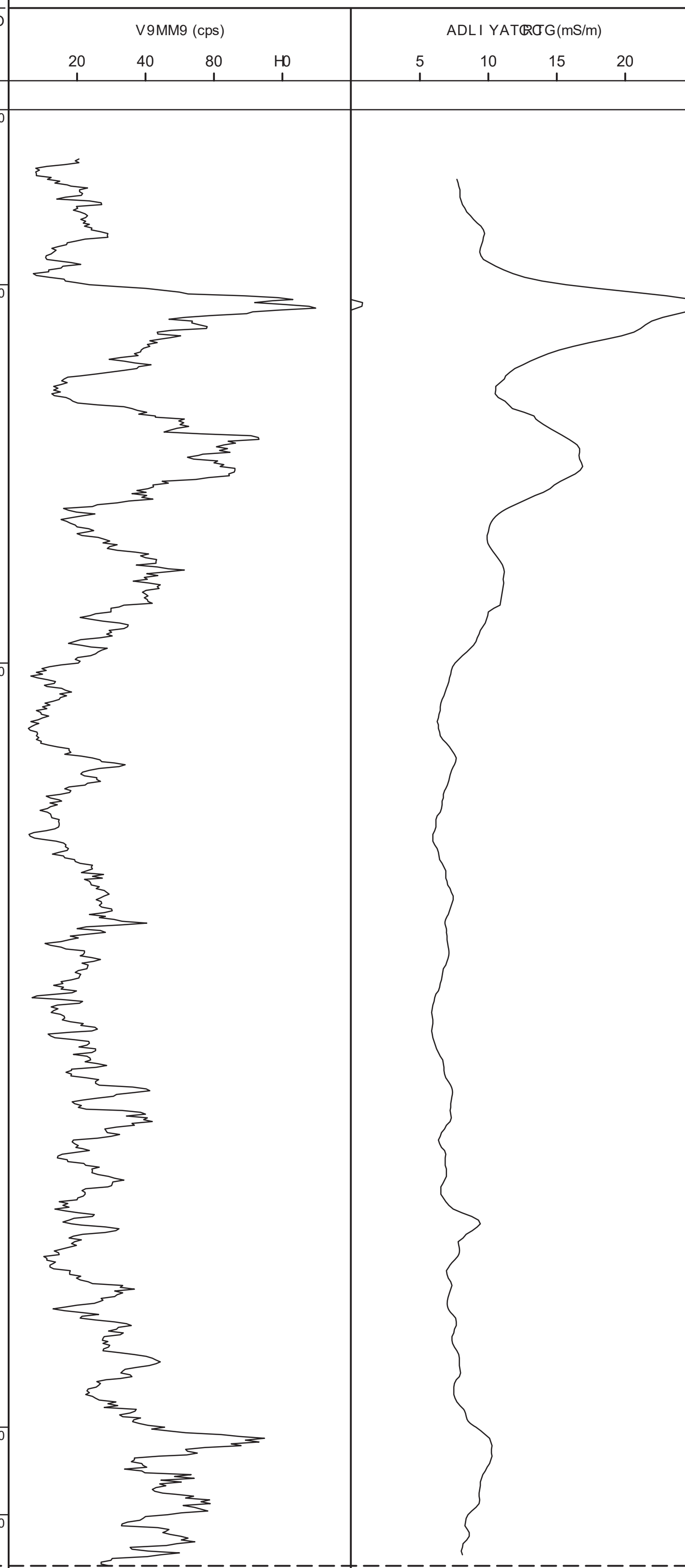
I 9TYM° Veodetic

CLA: CL9TQDL° -E0Z 9UCMYTO° ---

I JC: JCV° 9ir Track I rill

I JC: CLV ADLTJ9ATDJ° Stittsville 6uarry

I FNTOSA9: F MFTJFS	I JC: CLV J FADJI	I FSAJ ONTQDL	SGMBD: GA: DV	F: FR. I FNTO (m)	VFDNOGSGA9: JFADJI	NGFUDMFTFJ DJ ST9LI NQNF CLST9: : 9TQDL
		VJDYLI SYJP9AF				
0		**LOWER BOBCAYGEON FORMATION, 0.0 m to 17.1 m** **8NIT U, 0.0 m to 3.2 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00		
2		**8NIT 3, 3.2 m to 6.Dm** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEO8S NOa8LAR LIMESTONE ndH SPALEY NOa8LAR LIMESTONE.** Slake susceptible dark grey to black beds of **SPALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		2.40		
4						
8						
H		**8NIT 1, 6.Dm to 17.1 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEO8S NOa8LAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITPOGRAVPIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		7.80		
10						
12						
14						
18						
1H		**8VVER G8LL RI: ER FORMATION, 17.1 m to 30.3 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEO8S LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds		1H10		
				1E30		
20						



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NJ DQFAT° 1H111H53

GEOVPYSICAL LOG OFQS- AT17413

SOFFT 2 DP 2

: DA9TODL° L 500E823.E ;F 4227H5.3

I J C: CLV I 9TF° Quly 201H

I 9TYM° Veodetic

CLA: CL9TODL° -E0Z   9UCMYTO° ---

I J C: JCV° 9ir Track I rill

I J C: CLV ADL TJ 9ATDJ° Stittsville 6 uarry

I FNTO SA9: F MFTJFS	I J C: CLV J FADJ I	I FSAJ ONTODL	SGMBD: CA : DV	F: FR. / I FNTO (m)	VFDNOGSCA9: J FADJ I — V9MM9 (cps) 20 40 80 H0	VFDNOGSCA9: J FADJ I — ADL I YATCROTG (mS/m) 5 10 15 20	NCFUDMFTFJ DJ ST9L I NCNF CLST9: : 9TODL
		--- CONTINUED FROM PREVIOUS PAGE ---					
20		of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first Holostode mnrker beH',** at 1H.1 m to 1E.3 m.		20.20			
22		**EdH of Borehole, 30.3 m**					
		Note(s)Q					
		1. 6 uarry rehabilitation in area of borehole prior to J .W. Tomlinson 2020 survey.					
24							
28							
2H							
30							
32							
34							
38							
3H							
40							

PREKHCT: 1M130720

GEOPHYSICAL LOG OF: SQAT18-13

S8HHT 1 EO F

LECATIEN: N 500M0F4.M;H 4FF532.0

DRILLING DATH: December F01J

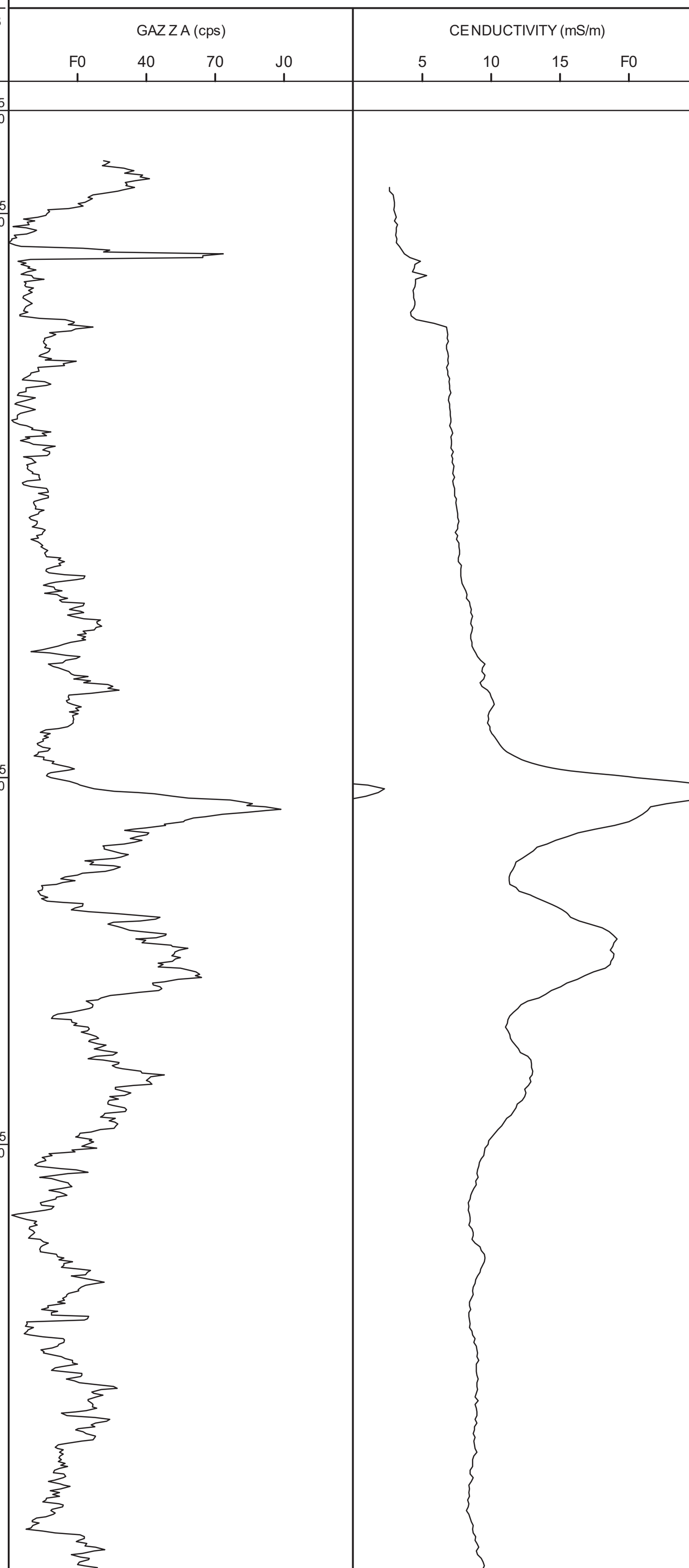
DATUZ: Geodetic

DRILL RIG: Air Track Drill

INCLINATIEN: -M09   A° IZ UT8: ---

DRILLING CENTRACTER: Stittsville Quarry

DHPT8 SCALH Z HTRHS	DRILLING RHCERD	DHSCRIPTIEN	SYZBELIC LEG	HLHV. DHPT8 (m)	GHEP8YSICAL RHCERD	PIH° EZHTHR ER STANDPIPH INSTALLATIEN
		GREUND SURΘACH		150.J5 0.00		
0		**Overburden, 0.0 m to 1.4 m** **Bedrock Surface, 1.4 m** **LOWER BOBCAYGEON FORMATION, 1.4 m to 20.5 m** **UNIT 3, 1.4 m to 9.1 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		14M45 1.40		
F						
4						
7						
J				141.25 M10		
10		**UNIT 2, 9.1 m to 14.2 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.				
1F						
14				137.25 14.10		
17		**UNIT 1, 14.2 m to 20.5 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.				
1J						
F0						



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DHPT8 SCALH

1 : 100

WSP GOLDER

LEGGHD: RB

C8HC6HD: 6AZ

PREKHCT: 1M130720

GEOPHYSICAL LOG OF: SQAT18-13

S8HHT F EO F

LECATIEN: N 500M0F4.M;H 4FF532.0

DRILLING DATH: December F01J

DATUZ: Geodetic

DRILL RIG: Air Track Drill

INCLINATIEN: -M09 A° IZ UT8: ---

DRILLING CENTRACTER: Stittsville Quarry

DHPT8 SCALH Z HTRHS	DRILLING RHCERD	DHSCRIPTIEN	SYZBELIC LEG	HLHV. DHPT8 (m)	GHEP8YSICAL RHCERD: GAZZA (cps) F0 40 70 J0	GHEP8YSICAL RHCERD: CENDUCTIVITY (mS/m) 5 10 15 F0	PIH°EZHTHR ER STANDPIPH INSTALLATIEN
		--- CONTINUED FROM PREVIOUS PAGE ---					
F0				130.35 F0.50			
		End of Borehole, 20.5 m **Note(s):** 1. Borehole updated in F0F1 to reflect the R.W. Tomlinson survey carried out in F0F0.					
FF							
F4							
F7							
FJ							
30							
3F							
34							
37							
3J							
40							

DHPT8 SCALH

1 : 100

WSP GOLDER

LEGGHD: RB

C8HC6HD: 6AZ

GEOPHYSICAL LOG OF: SQAT18-14

OG7 62PTC 13150BK0

I 7 PNTF7 DC D Q00VKKK.1 ;2 4HHB4K.K

FDPI FDNTF7 DC-30L NAF: 9TMC ---

EGFI FDU ENT2C Eecember H01V

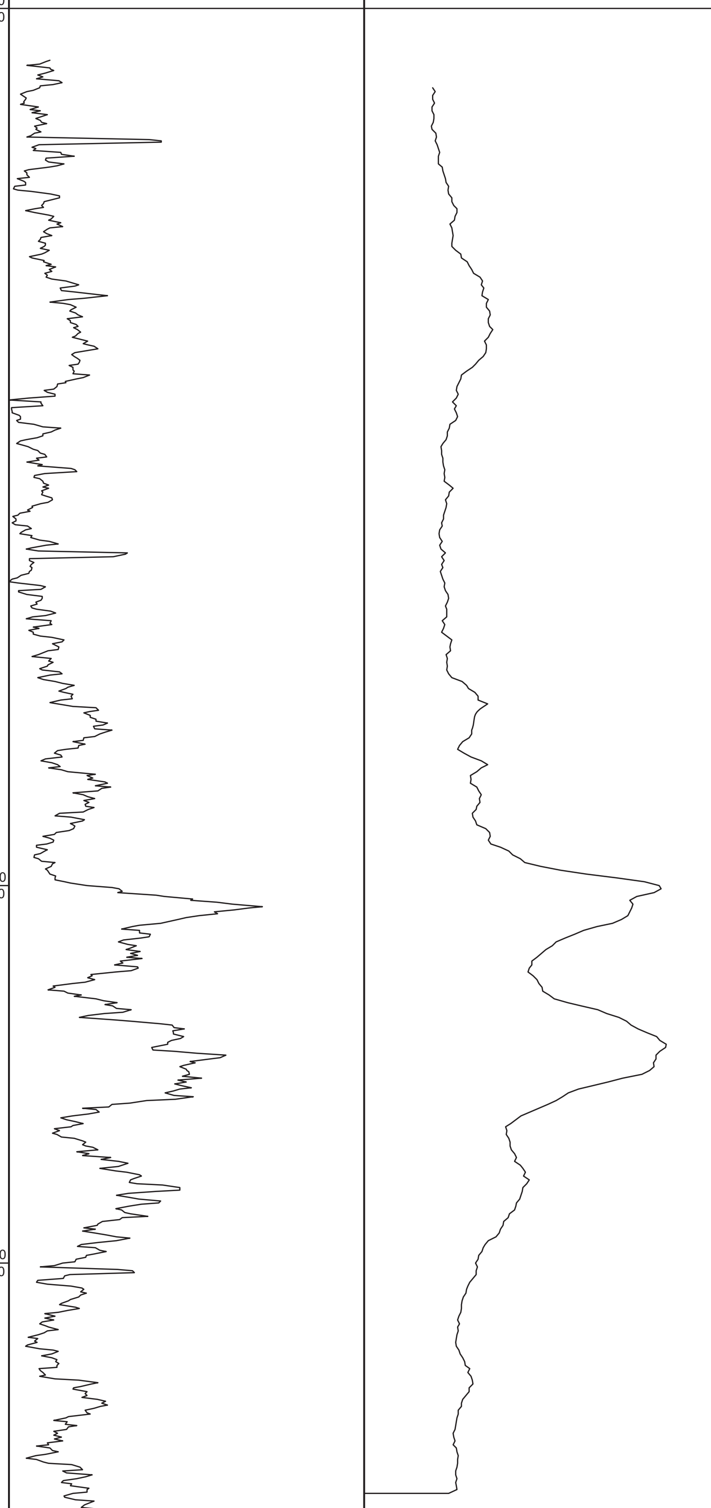
EGFI GFUC Nir Track Erill

EGFI FDU P7 DTGNPT7 GC Stittsville Ruarry

SM22T 1 7 8 H

ENT9: C Ueodetic

E2OTMSPNI 2 : 2TG2S	EGFI FDU G2P7 GE	E2SPGFOTF7 D	S°: Z7 I FP I 7 U	2I 2Y. E2OTM (m)	U27 OM° SFPNI G2P7 GE: UN: : N (cps) H0 40 B0 V0	P7 DE9 PTFYFT° (mS/m) Q 10 1Q H0	OF2A7: 2T2G 7G STNDEOFO2 FDSTNI I NTF7 D
		UG7 9DE S9G8NP2		1Q1.H0			
0		**Bedrock Surface, 0.0 m** **LOWER BOBCAYGEON FORMATION, 0.0 m to 20.3 m** **UNIT 3, 0.0 m to 11.6 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00			
H, 4, B, V, 10				153.B0			
1H		**UNIT 2, 11.6 m to 16.6 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		11.B0			
14, 1B				154.B0			
1V				1B.B0			
H0							



CONTINUED NEXT PAGE

OG7 62PTC 13150BK0

GEOPHYSICAL LOG OF: SQAT18-14

SM22T H 7 8 H

I 7 PNTF7 DC D Q00VKKK.1 ;2 4HHB4K.K

EGFI I FDU ENT2C Eecember H01V

ENT9: C Ueodetic

EGFI I GFUC Nir Track Erill

FDPI FDNTF7 DC -30L

NAF: 9 TMC ---

EGFI I FDU P7 DTGNPT7 GC Stittsville Ruarry

E2OTMSPNI 2 : 2TG2S	EGFI I FDU G2P7 GE	E2SPGFOTF7 D	S° : Z7 I FP I 7 U	2I 2Y. E2OTM (m)	U27 OM° SFPNI G2P7 GE: UN: : N (cps) H0 40 B0 V0	U27 OM° SFPNI G2P7 GE: P7 DE9 PTFYFT° (mS/m) Q 10 1Q H0	OF2A7 : 2T2G 7 G STNDEOFD2 FDSTNI I NTF7 D
		--- CONTINUED FROM PREVIOUS PAGE ---					
H0		**UNIT 1, 16.6 m to 20.3 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Zurrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings Qto 50 mm thick.		150.30 H0.50			
HH							
H4		**End of Borehole, 20.3 m**					
HB		**Note(s):** 1. Zorehole updated in H0H1 to reflect the G.W. Tomlinson survey carried out in H0H0.					
HV							
50							
5H							
54							
5B							
5V							
40							

GEOPHYSICAL LOG OF: SQAT18-15

I J F KOL T9 1H180M50 | SEOOT 1 F D 3

AF L: TNF C9 C 200H1H7.M;O 433720.5

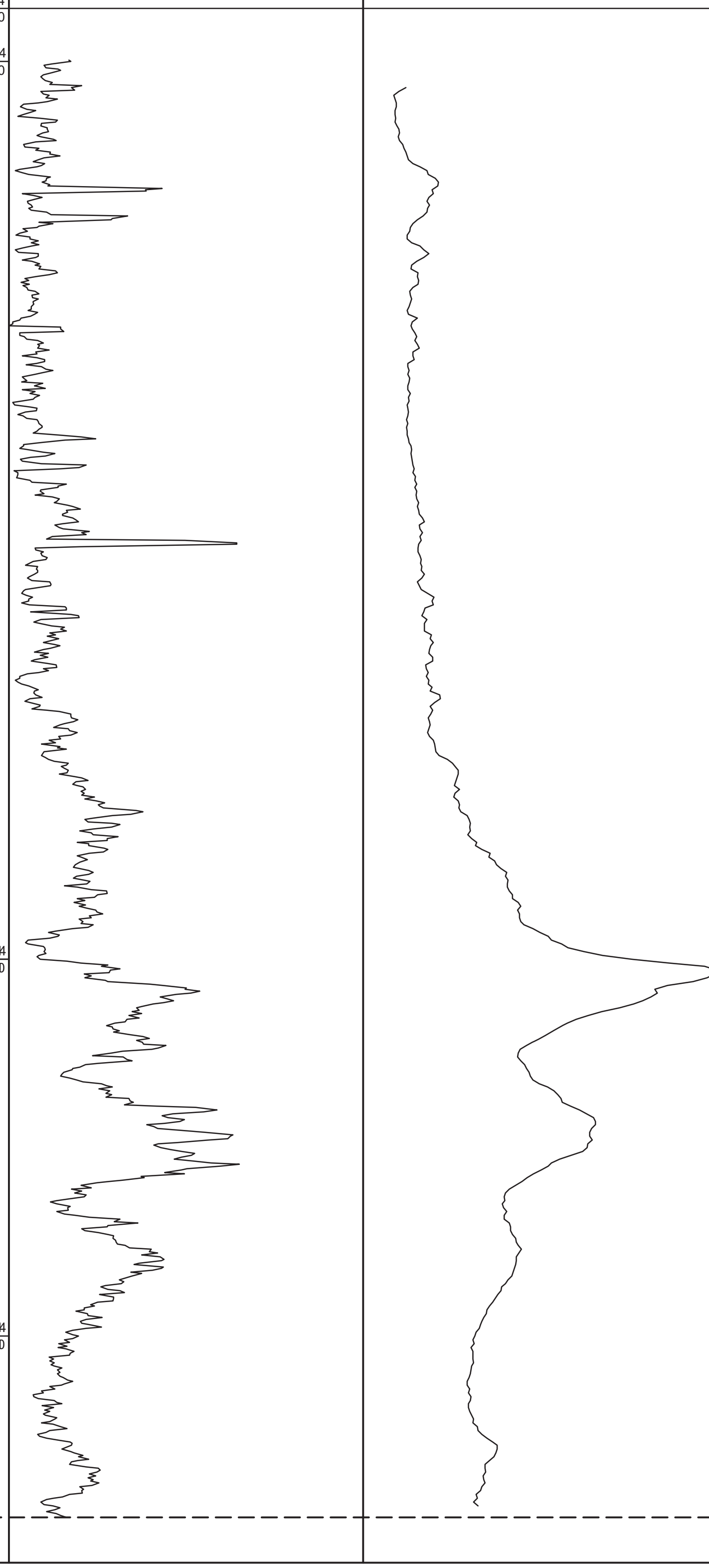
PJ MAANCV P: TO9 December 3017 | P: TYU9 Veodetic

PJ MAA J NV9 : ir Track Prill

NCL ANC: TNF C9 -H0° | : ZNIJ YTE9 ---

PJ MAANCV L F CTJ : L TF J 9 Stittsville Quarry

POI TE SL: AO UOTJ OS	PJ MAANCV J OL F J P	POSL J N TNF C	SGUBF ANL AF V	OAOR. POI TE (m)	V OF I EGSNL: A J OL F J P — V: UU: (cps) 30 40 M0 70 / L F CPYL TNRNTG (mS/m) 2 10 12 30	I NOZF UOTOJ F J ST: CPI NI O NCST: AA: TNF C
		V J F YCP SYJ D: L O		14M24		
0		**Overburden, 0.0 m to 0.3 m** **Bedrock Surface, 0.3 m** **LOWER BOBCAYGEON FORMATION, 0.3 m to 20.4 m** **UNIT 3, 0.3 m to 12.6 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00 142.74 0.50		
3						
4						
M						
7						
10						
13				188.H4 13.M0		
14		**UNIT 2, 12.6 m to 17.6 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.				
1M				137.H4 15.M0		
17		**UNIT 1, 17.6 m to 20.4 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally				
30						



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I J F KOL T9 1H180M50

GEOPHYSICAL LOG OF: SQAT18-15

AF L: TNF C9 C 200H1H7.M;O 433720.5

PJ MAANCV P: TO9 December 3017

P: TYU9 Veodetic

NCL ANC: TNF C9 -H0°　　: ZNJ YTE9 ---

PJ MAA J NV9 : ir Track Prill

PJ MAANCV L F CTJ : L TF J 9 Stittsville Quarry

POI TE SL: AO UOTJ OS	PJ MAANCV J OL F J P	POSL J NI TNF C	SGUBF ANL AFV	OAOR. POI TE (m)	VOF I EGSNL: AJ OLF J P — V: UU: (cps) 30 40 M0 70	L F CPYL TNRNTG (mS/m) 2 10 12 30	I NDZF UOTOJ F J ST: CPI NI O NCST: AA: TNF C
30		*--- CONTINUED FROM PREVIOUS PAGE ---* variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 2 to 80 mm thick.		13M14 30.40			
33		**End of Borehole, 20.4 m** **Note(s):** 1. Borehole updated in 3031 to reflect the J .W. Tomlinson survey carried out in 3030.					
34							
3M							
37							
80							
83							
84							
8M							
87							
40							

POI TE SL: AO
1 9100

WSP GOLDER

AF VVOP9 J B
LEOL6OP9 6: U

GEOPHYSICAL LOG OF: SQAT18-16

PRO6ECT: 1M1805K0

LOCATION: N 3002253.5 ;E 477KK7.8

INCLINATION: -M09   A° IZ UTH: ---

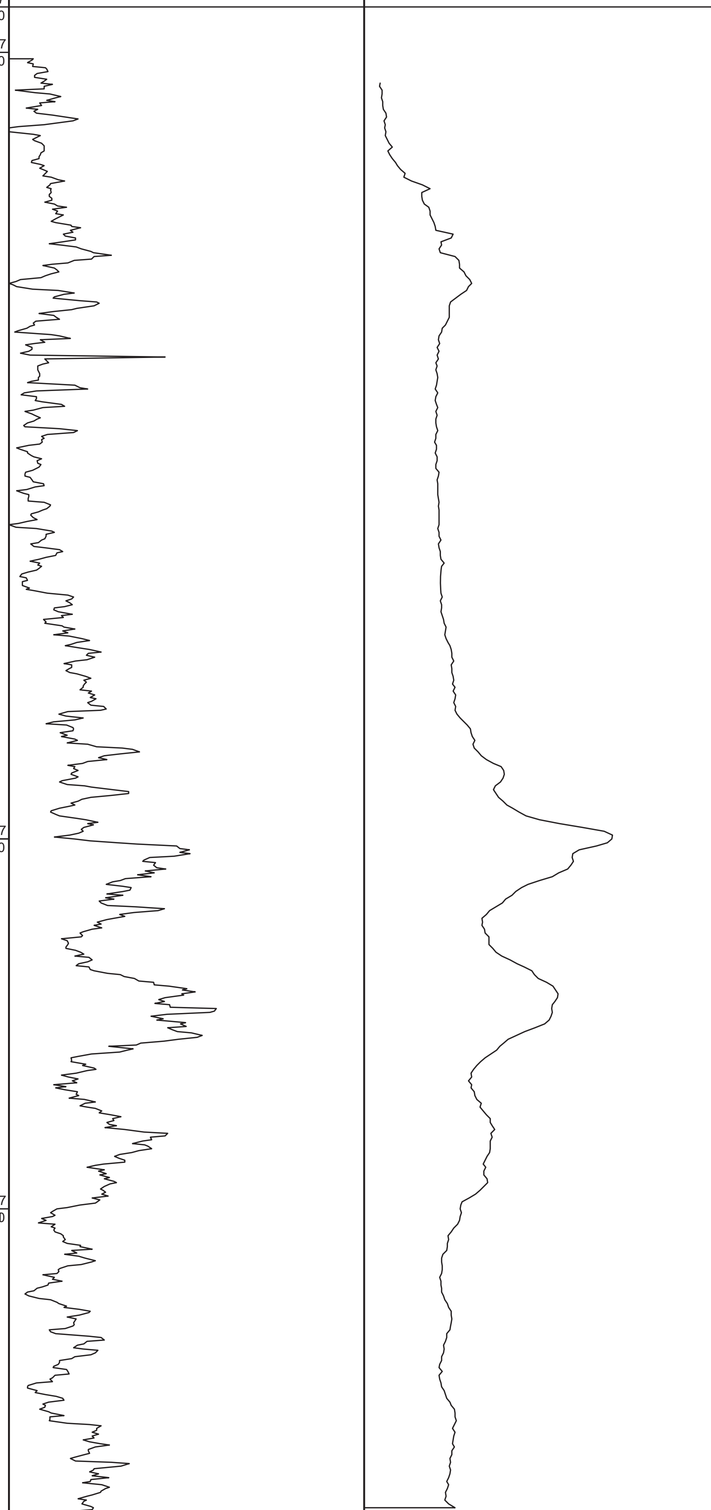
DRILLING DATE: December 7012

DRILL RIG: Air Track Drill

DRILLING CONTRACTOR: Stittsville J uarry

DATUZ : Geodetic

DEPTH SCALE Z ETRES	DRILLING RECORD	DESCRIPTION	SYZ BOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD GAZ Z A (cps) 70 40 50 20	CONDUCTIVITY (mS/m) 3 10 13 70	PIE° OZ ETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		130.47			
0		**Overburden, 0.0 m to 0.4 m**		0.00			
		Bedrock Surface, 0.4 m **LOWER BOBCAYGEON FORMATION, 0.4 m to 20.6 m** **UNIT 3, 0.4 m to 11.0 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		14M27 0.50			
7							
4							
5							
2							
10							
		UNIT 2, 11.0 m to 15.9 m dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		18M47 11.00			
17							
14							
		UNIT 1, 15.9 m to 20.6 m medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings		184.37 13.M0			
15							
12							
70							



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DEPTH SCALE

1 : 100

LOGGED: RB

CHECQED: QAZ

GEOPHYSICAL LOG OF: SQAT18-16

PRO6ECT: 1M1805K0

LOCATION: N 3002253.5 ;E 477KK7.8

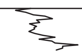
INCLINATION: -M09 A° IZ UTH: ---

DRILLING DATE: December 7012

DRILL RIG: Air Track Drill

DRILLING CONTRACTOR: Stittsville J uarry

DATUZ : Geodetic

DEPTH SCALE Z ETRES	DRILLING RECORD	DESCRIPTION	SYZ BOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAZ Z A (cps) 70 40 50 20	GEOPHYSICAL RECORD: CONDUCTIVITY (mS/m) 3 10 13 70	PIE° OZ ETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---					
70		3 to 80 mm thick.		17M27 70.50			
		End of Borehole, 20.6 m **Note(s):** 1. Borehole updated in 7071 to reflect the R.W. Tomlinson survey carried out in 7070.					
77							
74							
75							
72							
80							
87							
84							
85							
82							
40							

DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECQED: QAZ

I J F KOL T9 1H170M50

GEO: PYSICAL LOG OFQS8 AT1- 517

SEOOT 1 F D 3

AF L: TNF C9 C 200H038.1 ;O 433H28.0

PJ MAANCV P: TO9 December 3018

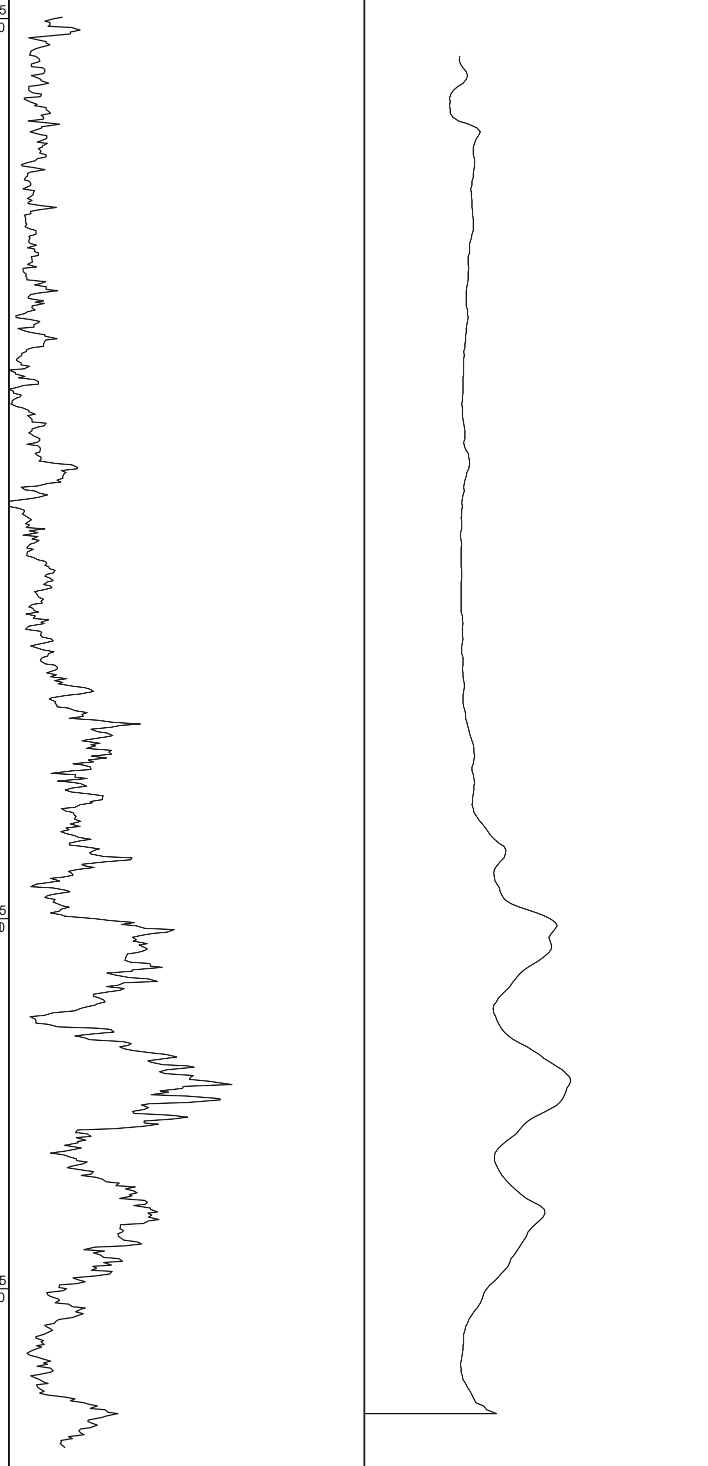
P: TYU9 Veodetic

PJ MAA J NV9 : ir Track Prill

NCL ANC: TNF C9 -H0° : ZNJ YTE9 ---

PJ MAANCV L F CTJ : L TF J 9 Stittsville Quarry

POI TE SL: AO UOTJOS	PJ MAANCV J OL F J P	POSL J NI TNF C	SGUBF ANL AF V	OAOR. POI TE (m)	VOF I EGSNL: AJ OLF J P — V: UU: (cps) 30 40 M0 80 — L F CPYL TNRNTG (mS/m) 2 10 12 30	I NOZF UOTOJ F J ST: CPI NI O NCST: AA: TNF C
		V J F YCP SYJ D: L O		148.45		
0		**Overburden, 0.0 m to 0.3 m** **Bedrock Surface, 0.3 m** **LOWER BOBCAYGEON FORMATION, 0.3 m to 20.4 m** **UNIT 3, 0.3 m to 12.6 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00 145.55 0.50		
3						
4						
M						
8						
10						
13				172.85 13.M0		
		UNIT 2, 12.6 m to 17.D m dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NOHULAR LIMESTONE and SPALEY NOHULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SPALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.				
14						
1M				170.H5 15.20		
		UNIT 1, 17.D m to 20.4 m medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NOHULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally				
18						
30		*CONTINUED NEXT PAGE*				



POI TE SL: AO

1 9100

AF VVOP9 J B

LEOL 6OP9 6: U

F TT: W: -VOF 1H170M50.VI K V: AVT: .VPT 11/34/33 KJ

I J F KOL T9 1H170M50

GEO: PYSICAL LOG OFQS8 AT1- 517

SEOOT 3 F D 3

AF L: TNF C9 C 200H038.1 ;O 433H28.0

NCL ANC: TNF C9 -H0°

: ZNJYTE9 ---

PJ MAANCV P: TO9 December 3018

PJ MAA J NV9 : ir Track Prill

PJ MAANCV L F CTJ : L TF J 9 Stittsville Quarry

P: TYU9 Veodetic

POI TE SL: AO UOTJOS	PJ MAANCV J OL F J P	POSL J NI TNF C	SGUBF ANL AF V	OAOR. POI TE (m)	VOFI EGSNL: AJOLF J P — V: UU: (cps) 30 40 M0 80	LF CPYL TNRNTG (mS/m) 2 10 12 30	I NOZF UOTOJ F J ST: CPI NI O NCST: AA: TNF C
		--- CONTINUED FROM PREVIOUS PAGE ---					
30		variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITPOGRA: PIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 2 to 70 mm thick.		138.05 30.40			
		End of Borehole, 20.4 m					
		Note(s)Q					
		1. Borehole updated in 3031 to reflect the J .W. Tomlinson survey carried out in 3030.					
33							
34							
3M							
38							
70							
73							
74							
7M							
78							
40							

I J F KOL T9 1M180520

GEOPHYSICAL LOG OF: SQAT18-18

SEOOT 1 F D 3

AF L: TNF C9 C H00M81M4 ;O 438051.H

PJ MANCV P: TO9 December 3017

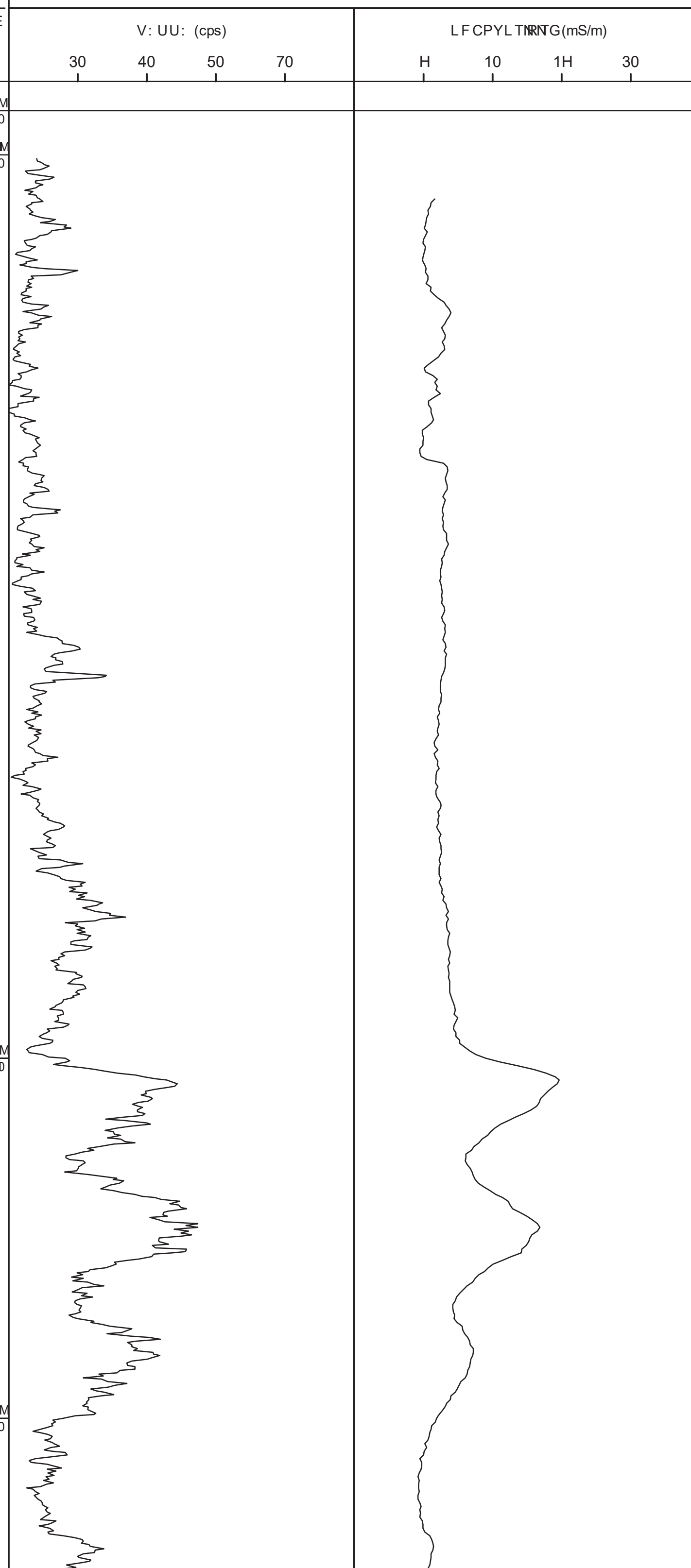
P: TYU9 Veodetic

PJ MAA J NV9 : ir Track Prill

NCL ANC: TNF C9 -M0° : ZNJ YTE9 ---

PJ MANCV L F CTJ : L TF J 9 Stittsville Quarry

POI TE SL: AO UOTJ OS	PJ MANCV J OLF J P	POSL J N TNF C	SGUBF ANL AF V	OAOR. POI TE (m)	VOF I EGSNL: A J OLF J P	I NDZF UOTOJ F J ST: CPI NI O NCST: AA: TNF C
		V J F YCP SYJ D: L O		148.HM 0.00		
0		**Overburden, 0.0 m to 0.6 m**		143.MM 0.50		
		Bedrock Surface, 0.6 m				
		LOWER BOBCAYGEON FORMATION, 0.6 m to 20.5 m				
3, 4, 5, 7, 10, 13		**UNIT 3, 0.6 m to 12.9 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		180.5M 13.M0		
14, 15		**UNIT 2, 12.9 m to 17.8 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		13H.2M 12.70		
17, 30		**UNIT 1, 17.8 m to 20.5 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline				



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GEOPHYSICAL LOG OF: SQAT18-18

I J F KOL T9 1M180520

AF L: TNF C9 C H00M81M4 ;O 438051.H

NCL ANC: TNF C9 -M0°   : ZNJ YTE9 ---

PJ MANCV P: TO9 December 3017

PJ MAA J NV9 : ir Track Prill

PJ MANCV L F CTJ : L TF J 9 Stittsville Quarry

SEOOT 3 F D 3

P: TYU9 Veodetic

POI TE SL: AO UOTJOS	PJ MANCV J OL F J P	POSL J N TNF C	SGUBF ANL AF V	OAOR. POI TE (m)	VOF I EGSNL: A J OL F J P — V: UU: (cps) 30 40 50 70	L F CPYL TNRNTG(mS/m) H 10 1H 30	I NOZF U OTOJ F J ST: CPI NI O NCST: AA: TNF C
		--- *CONTINUED FROM PREVIOUS PAGE* ---					
30		calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings H to 80 mm thick.		138.0M 30.HD			
33		**End of Borehole, 20.5 m**					
		Note(s):					
		1. Borehole updated in 3031 to reflect the J .W. Tomlinson survey carried out in 3030.					
34							
35							
37							
80							
83							
84							
85							
87							
40							

GEOPHYSICAL LOG OF: SQAT18-19

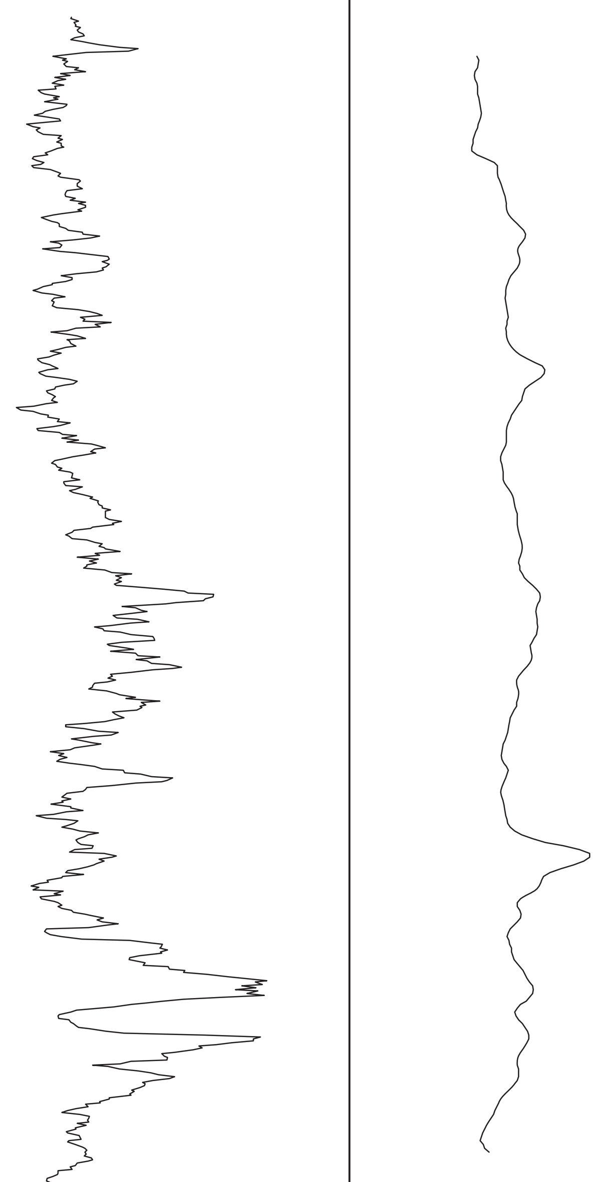
PROJECT: 19130670
SHEET 1 OF 1

LOCATION: N 5009462.1 ;E 422861.2
DRILLING DATE: December 2018
DATUM: Geodetic

INCLINATION: -90°   AZIMUTH: ---
DRILL RIG: Air Track Drill
DRILLING CONTRACTOR: Stittsville Quarry

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80; CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		122.25		
0		**Bedrock Surface, 0.0 m** **LOWER BOBCAYGEON FORMATION, 0.0 m to 8.3 m** **UNIT 1, 0.0 m to 8.3 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		0.00		
8		**UPPER GULL RIVER FORMATION, 8.3 m to 16.3 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 8.3 m to 9.4 m with a second dolostone bed at 12.9-13.7m.		113.95 / 8.30		
				112.85 / 9.40		
				109.35 / 12.90		
				108.55 / 13.70		
16		**End of Borehole, 16.3 m** **Note(s):** 1. Borehole updated in 2021 to reflect the R.W. Tomlinson survey carried out in 2020.		105.95 / 16.30		

Depth scale marks: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20



DEPTH SCALE
1 : 100

wsp GOLDER

LOGGED: RB
CHECKED: KAM

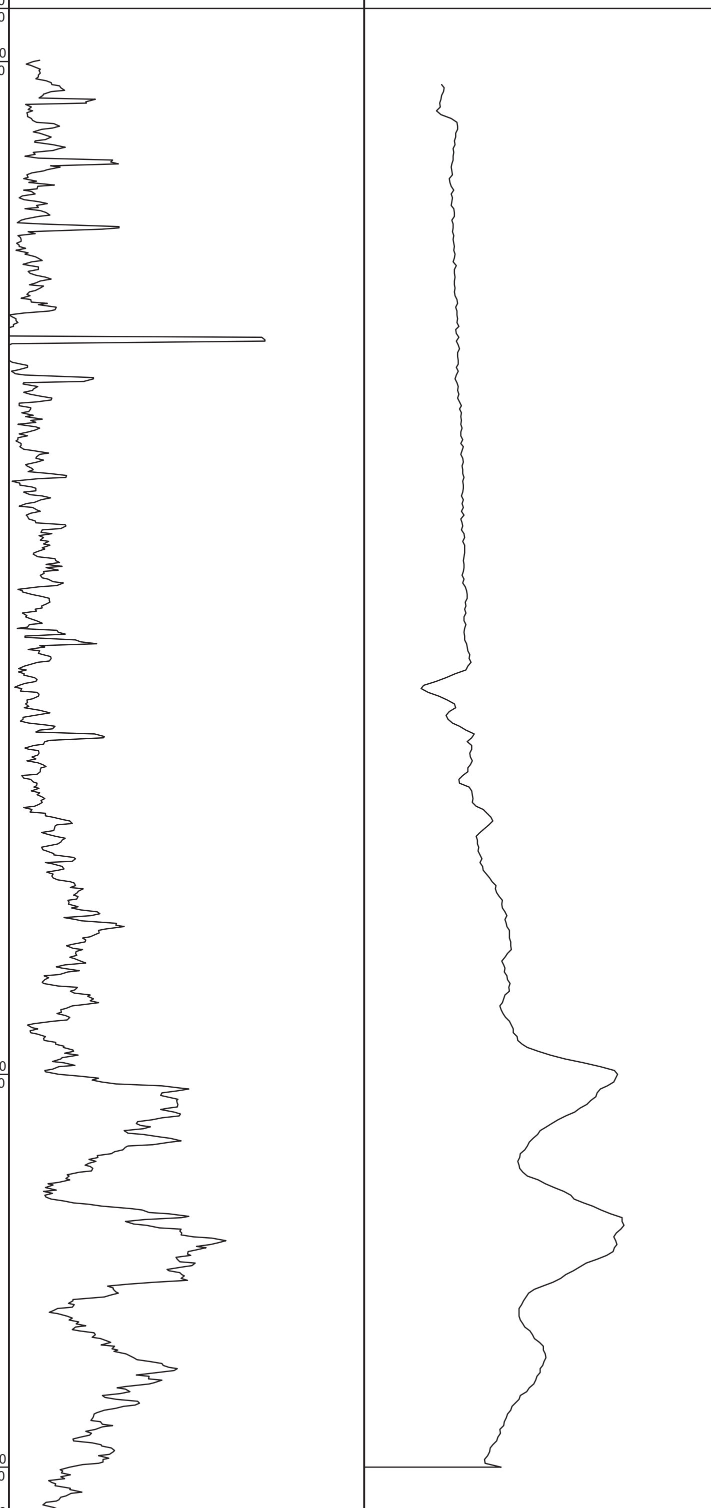
GEOPHYSICAL LOG OF: SQAT18-20

FVH68I TL 151302B0
NHI CTDHPL P K005BKK.1 ;8 4M800B.B
DPI NDPCTDHPL -50A C: D9 ° T7L ---

OVDNDPY OCT8L Oecember M01R
OVDNN VDYL Cir Track Orill
OVDNDPY I HPTVCI THVL Stittsville J uarry

S788T 1 HE M
OCT° 9 L Yeodetic

O8FT7 SI CN8 98TV8S	OVDNDPY V8I HVO	O8SI VDFTDHP	SZ9 UHND NHY	8N8G. O8FT7 (m)	Y8HF7ZSD CNV8I HVO: YC99C (cps) M0 40 20 R0	I HPO° I TDGDTZ (mS/m) K 10 1K M0	FD3: H98T8V HV STCPOFDF8 DPSTCNNCTDHP
		YVH° PO S° VECI 8		141.00			
0		**Overburden, 0.0 m to 1.0 m** **Bedrock Surface, 1.0 m** **LOWER BOBCAYGEON FORMATION, 1.0 m to 20.0 m** **UNIT 3, 1.0 m to 14.1 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		0.00 140.30 0.B0			
M 4 2 R 10 1M 14							
		UNIT 2, 14.1 m to 19.3 m dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		1M2.50 14.10			
12 1R							
		UNIT 1, 19.3 m to 20.0 m medium grey to brownish grey, fine to medium grained, micritic to partly crystalline.		1M1.B0 15.30			
M0				1M1.00			



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GEOPHYSICAL LOG OF: SQAT18-20

FVH68I TL 151302B0

NHI CTDHPL P K005BKK.1 ;8 4M800B.B

DPI NDPCTDHPL -50A C: D9 ° T7L ---

OVDNDPY OCT8L Oecember M01R

OVDN VDYL Cir Track Orill

OVDNDPY I HPTVCI THVL Stittsville J uarry

S788T M HE M

OCT° 9 L Yeodetic

O8FT7 SI CN8 98TV8S	OVDNDPY V8I HVO	O8SI VDFTDHP	SZ9 UHND NHY	8N8G. O8FT7 (m)	Y8HF7ZSD CNV8I HVO: YC99C (cps) M0 40 20 R0	I HPO° I TDGDTZ (mS/m) K 10 1K M0	FD: H98T8V HV STCPOFDF8 DPSTCNNCTDHP
		--- CONTINUED FROM PREVIOUS PAGE ---					
M0		non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Uurrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings K to 30 mm thick.		M0.00			
MM							
M4		**End of Borehole, 20.0 m**					
		Note(s):					
		1. Uorehole updated in M0M1 to reflect the V.W. Tomlinson survey carried out in M0M0.					
M2							
MR							
30							
3M							
34							
32							
3R							
40							

7U3 V5FTI S1Sx(0R(

GEOPHYSICAL LOG OF: SQAT20-21

qB55T S 3M 4

D3 FPTB3 OI O J((11x4.(G5 %4x4) S.)

2 UEDDEO° 2 PT5I L arch 4(4(

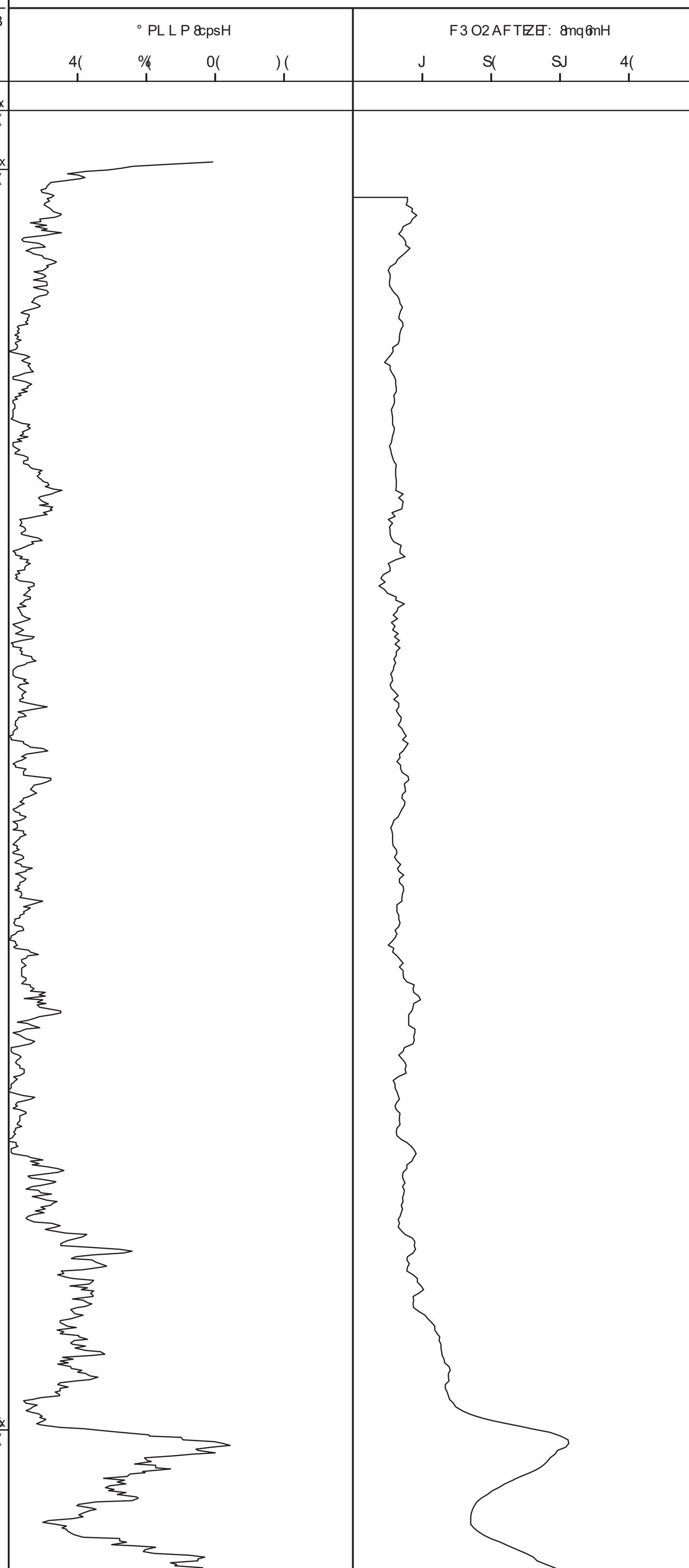
2 PTAL I ° eodetic

2 UEDD UE I Pir Track

EOF DEOPTB3 OI -1(N POE ATBI ---

2 UEDDEO° F3 OTUPFT3 UI qtittsville Yuarry

257TB qFPD5 L5TU5q	2UEDDEO° U5F3 U2	25qFUE7TB3 O	q: L 93 DEF D3°	5D5Z. 257TB 8mH	° 537B: qEPDU5F3 U2	7E5C3 L 5T5U 3U qTPO27E75 EOqTPDDPTB3 O
		° U3 AO2 qAUMPF5				
(		**Overburden, 0.0 m to 0.8 m** **LOWER BOBCAYGEON FORMATION, 0.8 m to 29.0 m** **UNIT 3, 0.8 m to 18.0 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		S%.%x (.((Sx1.0x (.)(		
4						
%						
0						
)						
S(						
S4						
S%						
S0						
S)				S44.%x S).((		
4(						



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GEOPHYSICAL LOG OF: SQAT20-21

7U3V5FTI S1Sx(0R(

D3FPTE3OI OJ((11x4.(G5 %4x4) S.)

EOFDEOPTE3OI -1(N POE ATBI ---

2UEDEO° 2PT5I Larch 4(4(

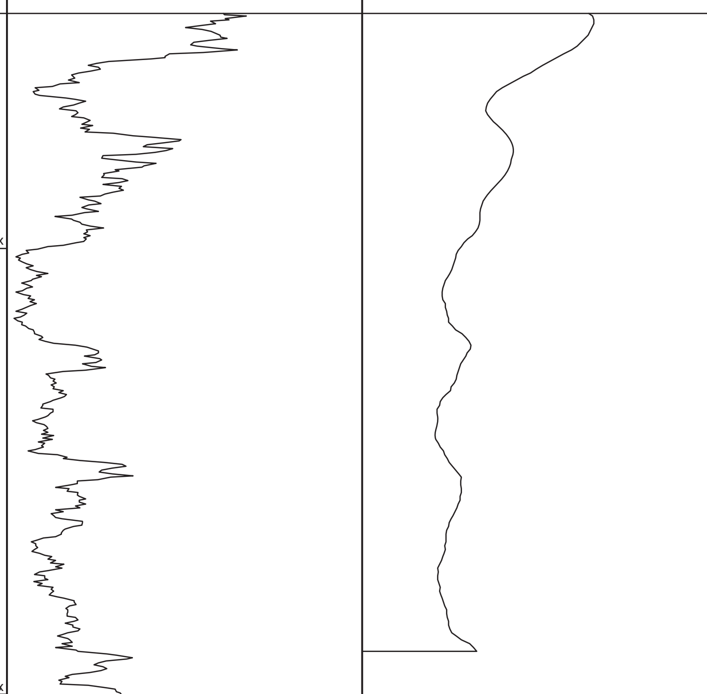
2UEDUE I Pir Track

2UEDEO° F3OTUPFT3UI qtittsville Yuarry

qB55T 4 3M4

2PTALI ° eodetic

257TB qFPD5 L5TU5q	2UEDEO° U5F3U2	25qFUE7TE3O	q:L93DEDE3°	5D5Z. 257TB 8mH	° 537B: qEPDU5F3U2 — ° PLLP 8cpsH (4(%(0( )()	F3O2AFTEZE: 8mq6mH (J S(SJ 4()	7E5C3L5T5U 3U qTPO27E5 EOqTPDDPTE3O
		--- CONTINUED FROM PREVIOUS PAGE ---					
4(		**UNIT 2, 18.0 m to 23.1 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous 8gastropod and pelecypod debrisH **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** qlake susceptible dark grey to black beds of **SHALE** comprise appro; imately S(-%(/ of seWuence. Transitional to sharp basal contact.		SSRxx 4x.S(			
44		**UNIT 1, 23.1 m to 29.0 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy te; tured argillaceous partings, e; tensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** 9urrow casts tend to be infilled with medium grained crystalline calcarenite. qection contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings J to x(mm thick.		SSS.%x 41.((			
4%		**End of Borehole, 29.0 m**					
40		**Note(s):**					
4)		S. qurvey carried out by U.K . Tomlinson in 4(4(.					
x(							
x4							
x%							
x0							
x)							
%(							



3TTPK P-° 53 S1Sx(0R(.° 7V° PD° TP.° 2T SS3%(04 VL

2Z5RBOTP S0S1(Gx(

GEOPHYSICAL LOG OF: SQAT20-22

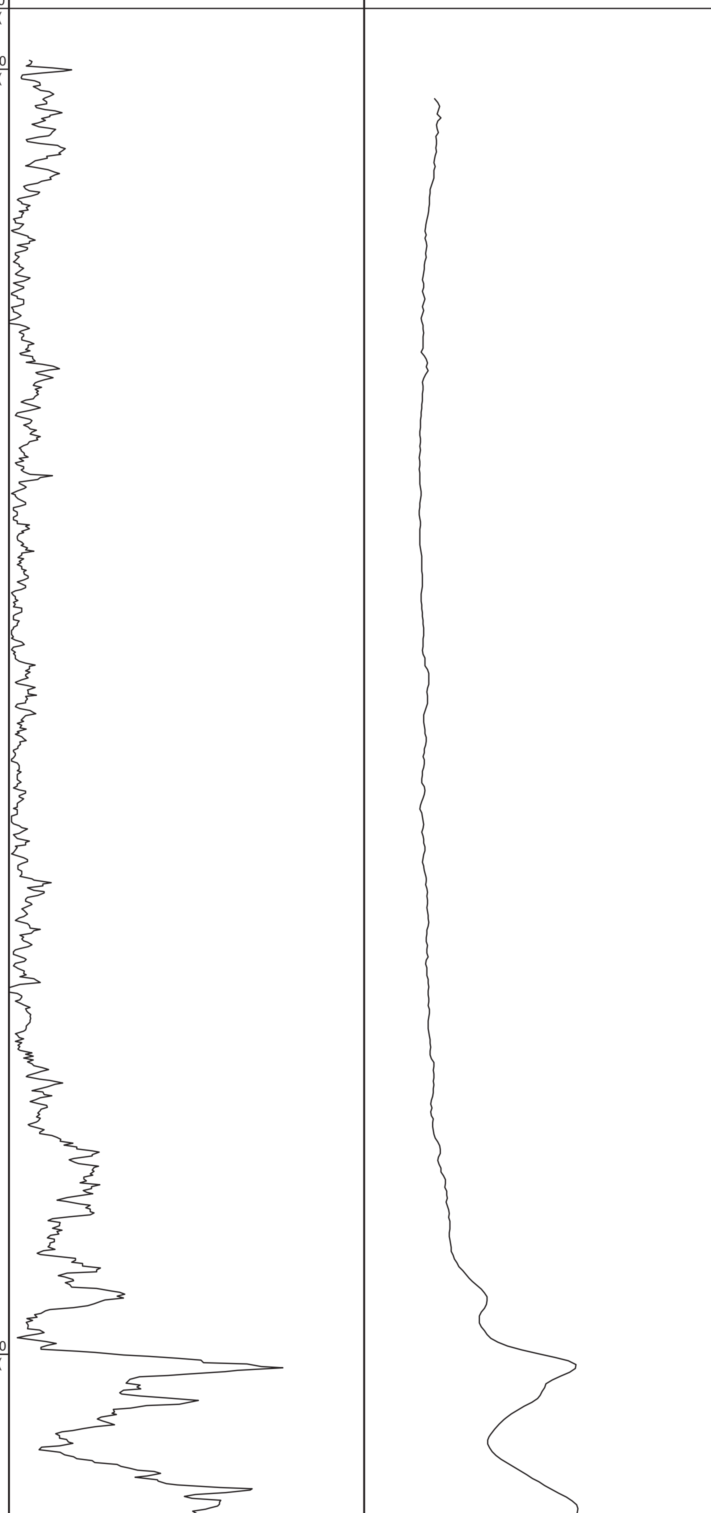
%qBBT S 53 4

F5ODTI5EP E J((000S.) GB Y411GS.0 | MZHFFHE9 MDTBP Carch 4(4(| MDTLCP 9eodetic

HEOFHEDTI5EP -0(I DNHCL TqP --- | MZHFF ZH9 P Dir Track

MZHFFHE9 O5ETZDOT5ZP %ittsville Uuarry

MB2Tq %ODFB CBTZB%	MZHFFHE9 ZBO5ZM	MB%OZH2TI5E	%AC: 5FHD F59	BFB°. MB2Tq 7m8	9B52qA%HODF ZBO5ZM: 9DCCD 7cps8 (4(Y(G( )()	O5EML OTH HTA 7m%6m8 (J S(SJ 4()	2HBN5CBTBZ 5Z %TDEM2H2B HE%TDFFDTI5E
		9Z5LEM%LZ3DOB		S1).S0 (.((			
(		**Overburden, 0.0 m to 0.8 m**					
		LOWER BOBCAYGEON FORMATION, 0.8 m to 29.0 m		S1x.10 (.)(			
4, Y, G,), S(, S4, SY, SG		**UNIT 3, 0.8 m to 17.8 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.					
S)				S4(.10 Sx.)(			
4(							



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2Z5 RBOTP S0S1(Gx(

GEOPHYSICAL LOG OF: SQAT20-22

%q BBT 4 5 3 4

F5 ODTI5 EP E J((000S.) GB Y411GS.0

MZ HFFIE9 MDTBP Carch 4(4(

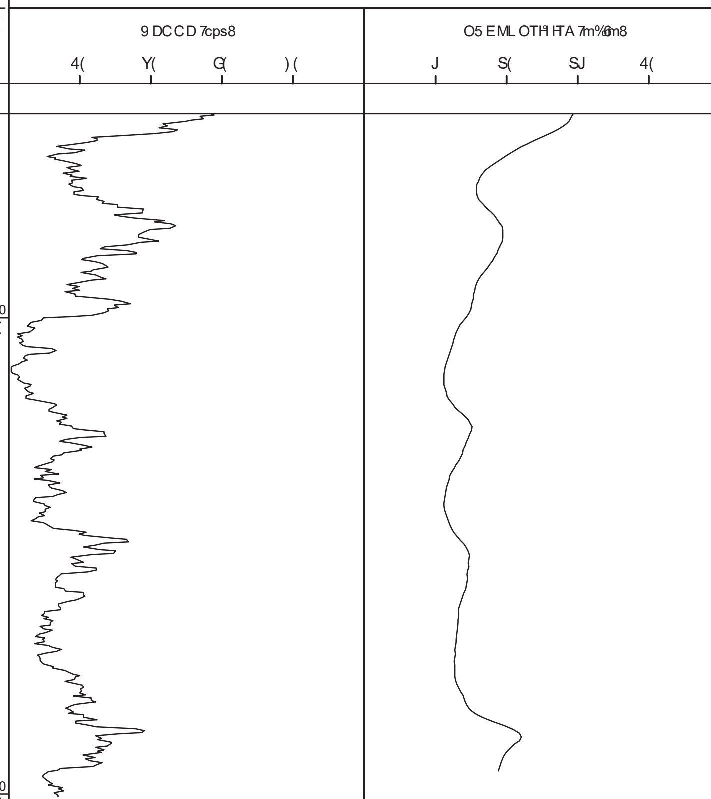
MDTLCP 9 eodetic

HE OFHE DTI5 EP -0(I DNICL Tq P ---

MZ HFF ZI9 P Dir Track

MZ HFFIE9 O5 ETZ DOT5 ZP %tittsville Uuarry

MB2Tq %ODFB CBTZB%	MZ HFFIE9 ZBO5 ZM	MB%OZ I2 TI5 E	%AC: 5 FID F5 9	BFB° . MB2Tq 7m8	9 B5 2q A%HODF ZBO5 ZM	2 IBN5 CBTBZ 5Z %TDEM2 I2 B HE %TDFFDTI5 E
		--- CONTINUED FROM PREVIOUS PAGE ---				
4(44		**UNIT 2, 17.8 m to 22.7 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous 7gastropod and pelecypod debris8 **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** %lake susceptible dark grey to black beds of **SHALE** comprise appro; imately S(-Y(/ of seWuence. Transitional to sharp basal contact.		SSJ.Y0 44.x(		
4Y 4G 4)		**UNIT 1, 22.7 m to 29.0 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy te; tured argillaceous partings, e; tensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** : urrow casts tend to be infilled with medium grained crystalline calcarenite. %ection contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings J to 1(mm thick.		S(0.S0 40.((		
1(14 1Y 1G 1) Y(		**End of Borehole, 29.0 m** **Note(s):** S. %urvey carried out by Z.K . Tomlinson in 4(4(.				



GEOPHYSICAL LOG OF: SQAT20-23

MZq V%ETD SPSx(1R(

Oq EFT8q HD H J(S((11.Y O%Y5xYxR(

8HEO8HFT8q HD-P(I FN8CLT4D---

04%%T S qB 5

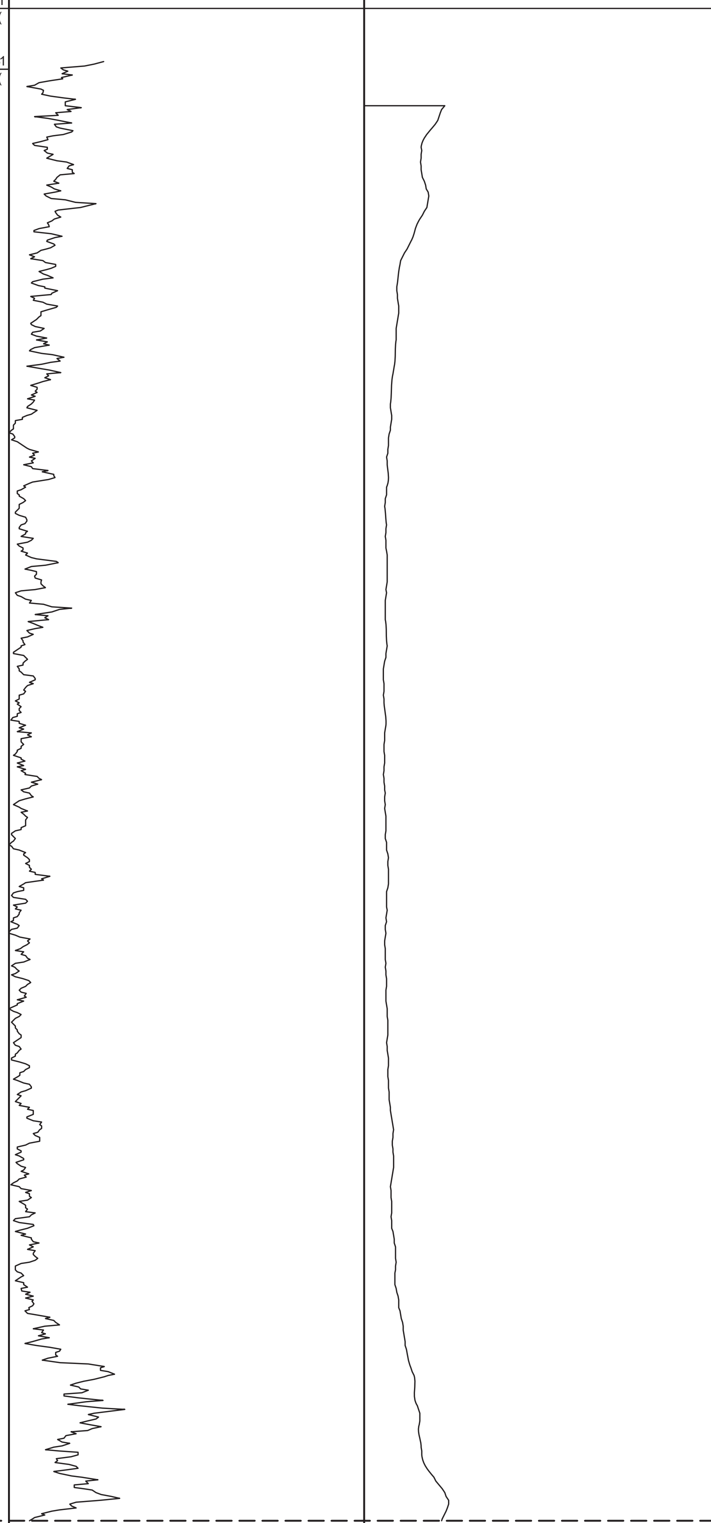
3Z8OO8H9 3FT%D Carch 5(5(

3Z8OOZ89 DFir Track

3Z8OO8H9 Eq HTZFETq ZD0tittsville Uuarry

3FTLCD 9eodetic

3%MT4 0EFO% C%TZ%0	3Z8OO8H9 Z%Eq Z3	3%0EZ8MT8q H	0AC: q OE Oq 9	%O%' . 3%MT4 2m7	9%q M4 A08EFOZ%Eq Z3: 9FCCF 2cps7 (5(Y(1( )( )	9%q M4 A08EFOZ%Eq Z3: Eq H3LET8' 8TA 2m06m7 (J S(SJ 5()	M8%Nq C%T%Z qZ 0TFH3M8M%8H0TFOOFT8q H
		9Zq LH3 0LZBFE%		Sx1.P1			
(		**Overburden, 0.0 m to 0.8 m**		(.((			
		LOWER BOBCAYGEON FORMATION, 0.8 m to 27.8 m		Sx1.S1 (.)(			
5		**UNIT 3, 0.8 m to 20.6 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.					
Y							
1							
)							
S(							
S5							
SY							
S1							
S)							
5(							



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MZq V%ETD SPSx(1R(

Oq EFT8q HD H J(S((11.Y O% Y5xYxR(

8HEO8HFT8q HD -P(I FN8CL T4 D---

GEOPHYSICAL LOG OF: SQAT20-23

3Z8OO8H9 3FT%D Carch 5(5(

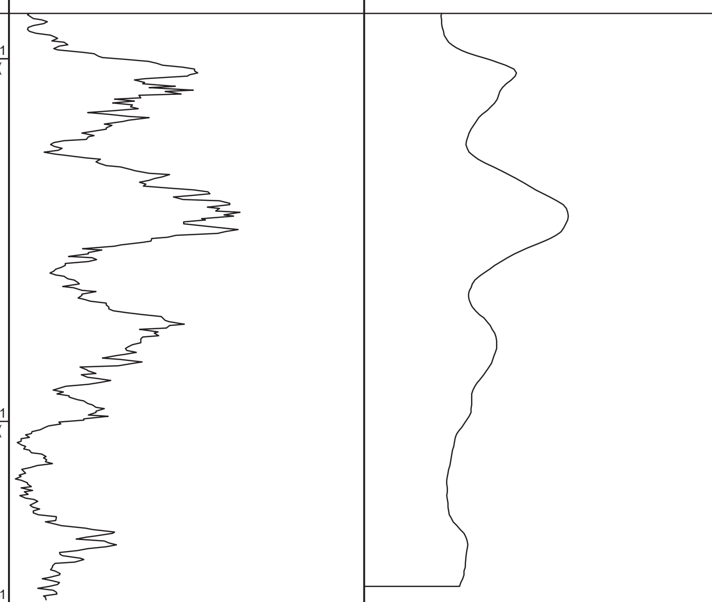
3Z8OOZ89 DFir Track

3Z8OO8H9 Eq HTZFETq ZD 0tittsville Uuarry

04%%T 5 qB 5

3FTLCD 9eodetic

3%MT4 0EFO% C%TZ%0	3Z8OO8H9 Z%Eq Z3	3%0EZ8MT8q H	0AC: q OE Oq 9	%O%' . 3%MT4 2m7	9%q M4 A08EFOZ%Eq Z3: 9FCCF 2cps7 (5(Y(1( )()	9%q M4 A08EFOZ%Eq Z3: Eq H3LET8 8TA 2m06m7 (J S(SJ 5()	M8%Nq C%T%Z qZ 0TFH3 M8M% 8H0TFOOFT8q H
		--- CONTINUED FROM PREVIOUS PAGE ---					
5(				SS1.x1 5(.1(			
55		**UNIT 2, 20.6 m to 25.4 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous 2gastropod and pelecypod debris7 **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** 0lake susceptible dark grey to black beds of **SHALE** comprise appro; imately S(-Y(/ of seWuence. Transitional to sharp basal contact.					
5Y							
51		**UNIT 1, 25.4 m to 27.8 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy te; tured argillaceous partings, e; tensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** : urrow casts tend to be infilled with medium grained crystalline calcarenite. 0ection contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings J to x(mm thick.		SSS.J1 5J.Y(			
5)		**End of Borehole, 27.8 m**		S(P.S1 5R)(			
x(		**Note(s):**					
		S. 0urvey carried out by Z.K . Tomlinson in 5(5(.					
x5							
xY							
x1							
x)							
Y(							



3%MT4 0EFO%

S DS((

GOLDER

Oq 9 9%3 D Z:

E4 %EG%3 D GFC

q TTFK F-9%q SPSx(1R(.9 M/ 9 FO9 TF.9 3T SS5Y65 VC

FRH68I TL 1A1K0530

GEO45YPICAL LOG OFDPa AT2012:

S788T 1 HE M

NHI CTDHPL P 200A521.5 ;8 4MK1B3.1

DPI NDPCTDHPL -A0: C9D ZT7L ---

ORDNDPG OCT8L ° arch M0M0

ORDN RDGL Cir Track

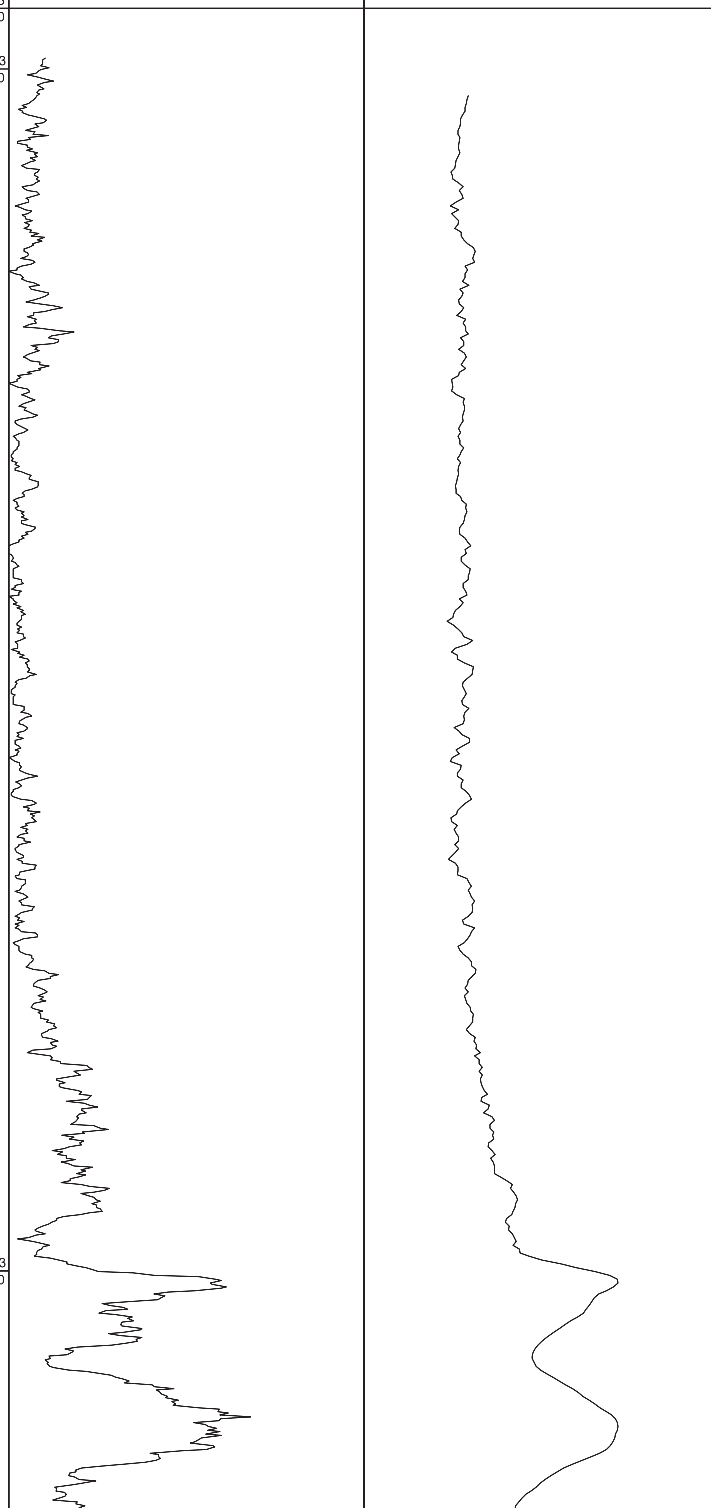
ORDNDPG I HPTRCI THRL Stittsville J uarry

OCTZ° L Geodetic

O8FT7 SI CN8 ° 8TR8S	ORDNDPG R8I HRO	O8SI RDFTDHP	SU° YHND NHG	8N8V. O8FT7 (m)	G8HF7USD CNR8I HRO	FB9H° 8T8R HR STCPOFDF8 DPSTCNNCTDHP
		GRHZPO SZRECI 8		14M43		
0		**Overburden, 0.0 m to 0.8 m**		0.00		
		LOWER BOBCAYGEON FORMATION, 0.8 m to 28.7 m		141.53 0.B0		
		UNIT 7, 0.8 m to 36.S m interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMEPTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.				
M						
4						
5						
B						
10						
1M						
14						
15				1M2.33 15.30		
		UNIT 2, 36.S m to 2H: m dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUP NOQULAR LIMEPTONE - nd P5ALEY NOQULAR LIMEPTONE.** Slake susceptible dark grey to black beds of **P5ALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.				
1B						
M0						

GC° ° C (cps): M0 40 50 B0

I HPOZI TDVDTU (mS/m): 2 10 12 M0



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FRH68I TL 1A1K0530

GEO45YPICAL LOG OFDPa AT2012:

S788T MHE M

NHI CTDHPL P 200A521.5 ;8 4MK1B3.1

ORDNDPG OCT8L ° arch M0M0

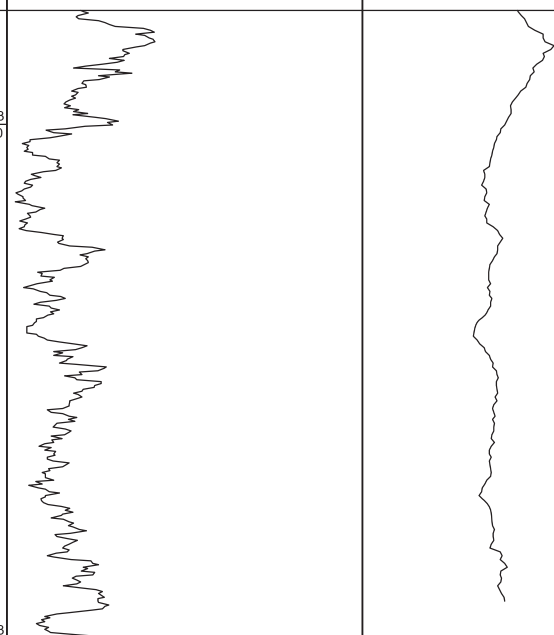
OCTZ° L Geodetic

ORDN RDGL Cir Track

DPI NDPCTDHPL -A0: C9D ZT7L ---

ORDNDPG I HPTRCI THRL Stittsville J uarry

O8FT7 SI CN8 ° 8TR8S	ORDNDPG R8I HRO	O8SI RDFTDHP	SU° YHND NHG	8N8V. / O8FT7 (m)	G8HF7USD CNR8I HRO: GC° ° C (cps) 10 40 50 B0	I HPOZI TDVDTU (mS/m) 2 10 12 M0	FD9H° 8T8R HR STCPOFDF8 DPSTCNNCTDHP
		--- CONTINUED FROM PREVIOUS PAGE ---					
M0				1M0.A3 / M1.20			
MM / M4 / M5 / MB		**UNIT 3, 2H: m to 28.7 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUP NOQULAR LIMEPTONE.** Yurrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMEPTONE, CALCARENITIC LIMEPTONE** occasional very fine grained thin to medium beds of **LIT5OGRA45IC LIMEPTONE,** medium grained beds of **OOLITIC LIMEPTONE** and widely spaced black shaley partings 2 to K0 mm thick.		114.13 / MB.K0			
K0 / KM / K4 / K5 / KB / 40		**End of Borehole, 28.7 m** **Note(s)D** 1. Survey carried out by R.W. Tomlinson in M0M0.					



HTTCWC-G8H 1A1K0530.GF6 GCN-GTC.GOT 11/M4/MM 6°

O8FT7 SI CN8

1 L100

WSP GOLDER

NHGG8OL RY

I 78I Q8OL QC°

GEOPHYSICAL LOG OF: SQAT20-25

OVi 68P) C 4L42%7K%

Ii PN) F DC D M%L7MK(J ;8 q32qMJ(%

FDPI FDN) F DC vL%A N: F9 °) r Cww

EVFI I FDY EN) 8C 9 prkw3%3%

EVFI I VFYCNIh) hpk.

EVFI I FDY Pi D) VNP) i VC1gggTldl Ryphla

1r 88) 4 i H 3

EN) ° 9 C Yt bmt gk

YVi ° DE 1° VHNP8

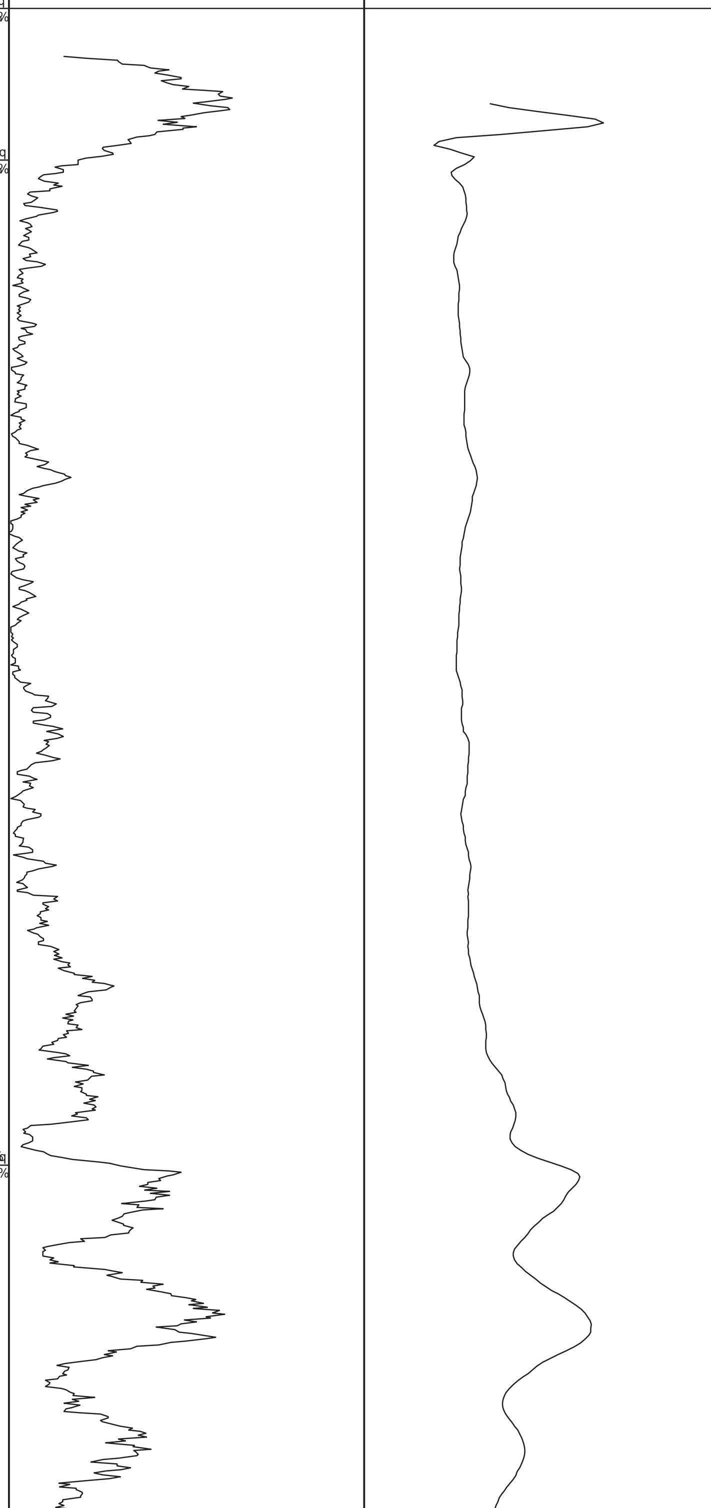
Overburden, 0.0 m to 2.0 m

LOWER BOBCAYGEON FORMATION, 2.0 m to 28.4 m

UNIT 3, 2.0 m to 15.3 m leg hot mmt m duwgdp s t mlys olb, elf wult ac-let gb s t mlys ulplet mkhaf godlet c ebevnblbyf c-let da f gadodgkcs t mlys ot mmt m **CALCARENITIC LIMESTONE**, lgwolbgyhopg mft kglbef pf f bklpg m, lgws bdyf. oylhb, kpf gf ot kbs leu s blt t Tlmt eg, lgwle db, t hwpd b- f t kglbe( ) hpef lgbepdgb f wplm opf pdkbegpkg(

UNIT 2, 15.3 m to 20.1 m mph ult ac -let ulplet mcebevnblbyf cgwleda ot mmt mc nphgla olbgyhopg mpem-bf f ld-t hbyf Supf gbnbmpemnt d kanbmmt olf x **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** 1 qb. t f yf kt ngbd mph ult a gb oqbk. ot mf b- **SHALE** kbs nlf t pnnlb0ls pg da 4%q%B b- f t 5yt ekt ( ) hpef lgbepdgb f wplm opf pdkbegpkg(

Depth		Y8i Or Z1FPNI V8Pi VE: YN9 9 N Sknf x (3% q% 7% J%)	Pi DE° P) FGF Z Ss 1/s x (M 4% 4M 3%)	OF: i 98) 8V iV 1) NDEOFD8 FD1) NI I N) F D
42J(2q %(%% / 427(2q 3(%% / 432(%q 4M2%				interbd



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E8O) r 1PNI 8

4 C4%%

Ii YY8EC VU

Pr 8PQ8EC QN9

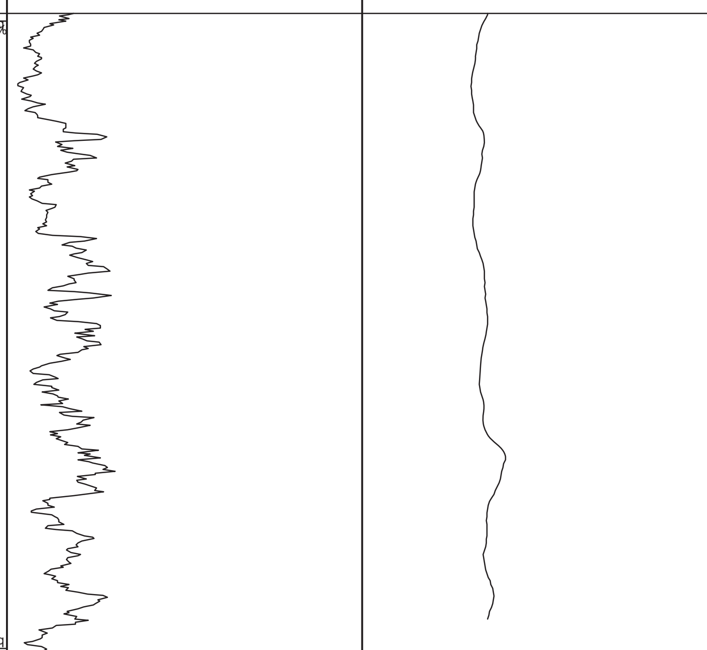
GEOPHYSICAL LOG OF: SQAT20-25

OVi 68P) C 4L42%7K%
Ii PN) F DC D M%L7MK(J ;8 q32qMJ(%
FDPI FDN) F DC vL%A N: F9 °) r Cww

EVFF I FDY EN) 8C 9 pHkw3%3%
EVFF I VFYCNIh) hpk.
EVFF I FDY Pi D) VNP) i VC1 ggf Tdd Ryphha

1r 88) 3 i H 3
EN) ° 9 C Yt bmt gk

E8O) r 1PNI 8 98) V81	EVFF I FDY V8Pi VE	E81PVFO) F D	1Z9 Ui IFP Ii Y	8I 8G(E8O) r Ss x	Y8i Or Z1FPNI V8Pi VE: YN9 9 N Sknf x (3% q% 7% J%)	Pi DE° P) FGF) Z Ss 1/s x (M 4% 4M 3%)	OFB: i 98) 8V i V 1) NDEOFO8 FD1) NII N) F D
		--- CONTINUED FROM PREVIOUS PAGE ---					
3%		**UNIT 1, 20.1 m to 28.4 m** s t mlys ulrt a gb olrb, elf wulrt ac-let gb s t mlys ulrplet mcs lkHgk gb nphgla khaf godlet c ebevnbfrbyf cgwleda ot mmt m, lgwebmyqbh gb, pTa g 0gylt mphuldbkt byf nphgleuf c t 0g ef lTt da olbgyhopg m **ARGILLACEOUS NODULAR LIMESTONE.** UyHb, kpf gf gl emgb ot le-ldl m, lgws t mlys ulrplet mkhaf godlet kpdkpht elg (1t kglbe kbegolef dbg hpda TpHpod gwlk. et f f t f b- **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** bkkpf lbepdTt ha -let ulrplet mgwle gb s t mlys ot mf b- **LITHOGRAPHIC LIMESTONE,** s t mlys ulrplet mot mf b- **OOLITIC LIMESTONE** pem, lmt da f npkt moqbk. f wpdl a nphgleuf Mgb 2%s s gwlk. (		44J(3q 3%(4%			i nter bd
33							
3q							
37							
3J				4%L(Lq			
		End of Borehole, 28.4 m		3J(q%			
		Note(s):					
		4(1yhTt a kpHt mbygoa V(W( ) bs def be le 3%3%(					
2%							
23							
2q							
27							
2J							
q%							



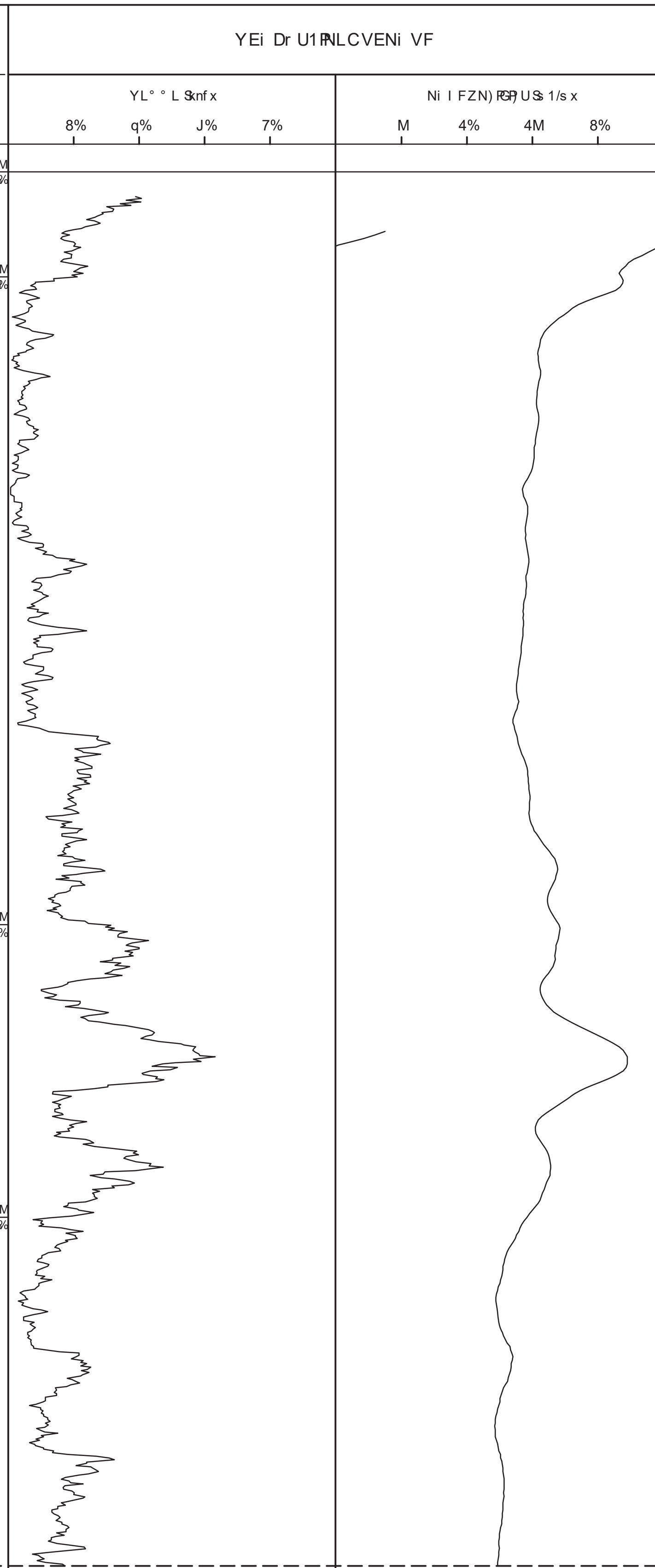
GEOPHYSICAL LOG OF: SQAT20-26

DVi 6EN) A 4H42%JK%
C NL) P I A I M%%HqH2(7 ;E q82J7H(K
P NCP L) P I A vH%   L9P Z) r A ww

FVPCP Y FL) EA ° plkw 8%8%
FVPC VPY A LIh) hpk.
FVPCP Y Ni I) VLN) i VA 1 ggf Tldl Ryplha

1r EE) 4 i O 8
FL) Z° A Yt bmt gk

FED) r 1NLCE ° E) VE1	FVPCP Y VENi VF	FE1NVPD) P I	1U° 3i CPN CI Y	ECEG(FED) r Ss x	YEi Dr U1PNLCVENi VF	DPE9i ° E) EV i V 1) LI FDPDE P 1) LCCL) P I
		YVi ZI F 1ZVOLNE		42M(HM		
%		**Overburden, 0.0 m to 1.5 m**		%(%%		
		LOWER BOBCAYGEON FORMATION, 1.5 m to 25.6 m **UNIT 3, 1.5 m to 10.8 m** leg hot mmt m duwgdp s t mlys olb, elf wuh ac-let gp s t mlys uhplet mkhaf gpdlet c ebevnbhbyf c-let da f gadbdgkcs t mlys ot mmt m **CALCARENITIC LIMESTONE** , lgwolbgyhopg mf t kgbef pf f bklpg m , lgws bdyf . oyHb, kpf gf ot kbs leu s bht t Tlmt eg, lgwle db, t hwpd b- f t kgbe( ) hpef lgbepdgp f wpm opf pdkbegpkg(		42q(qM 4(M%		
4%						i nter bd
		UNIT 2, 10.8 m to 15.0 m mph uht ac -let uhplet mcebevnbhbyf cgwleda ot mmt mc nphgda olbgyhopg mpem-bf f ld-t hbyf Supf gbnbmpemnt d kanbmmt ohf x **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** 1 qb. t f yf kt ngod mph uht a gp oqbk. ot mf b- **SHALE** kbs nhf t pnnhb0ls pg da 4%sq%B b- f t 5yt ekt ( ) hpef lgbepdgp f wpm opf pdkbegpkg(		48M(4M 4%(7%		
		UNIT 1, 15.0 m to 25.6 m s t mlys uht a gp olb, elf wuh ac-let gp s t mlys uhplet mcs lkHgk gp nphgda khaf gpdlet c ebevnbhbyf cgwleda ot mmt m, lgwebmygph gp , pTa gf 0gyht mphuldpkt byf nphgleuf c t 0g ef lTt da olbgyhopg m **ARGILLACEOUS NODULAR LIMESTONE.** 3 yHb, kpf gf gl emgp ot le-ldl m, lgws t mlys uhplet mkhaf gpdlet kpdkpht elg (1 t kgbe kbegplef pbg hpda TpHpod gwk. et f f t f b- **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** bkkpf lbepdTt ha-let uhplet mgwle gp s t mlys ot mf b- **LITHOGRAPHIC LIMESTONE,** s t mlys uhplet mot mf b- **OOLITIC LIMESTONE** pem, lmt da f npkt moqbk. f wpd a nphgleuf Mgp 2%s s gwk. (		48%(HM 4M(%%		
8%						



Depth scale: % 8 q J 7 4% 48 4q 4J 47 8%

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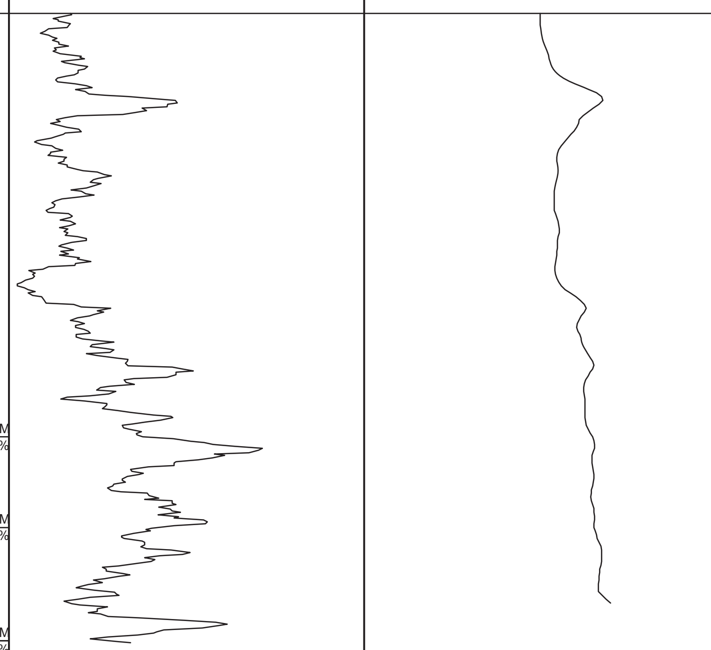
GEOPHYSICAL LOG OF: SQAT20-26

DVi 6EN) A 4H42%JK%
Cl NL) P I A I M%%HqH2(7 ;E q82J7H(K
P NOP L) P I A vH% L9P Z) r A ww

FVPOP Y FL) EA ° pHkw8%8%
FVPCVPYALIh) hpk.
FVPOP Y Ni I) VLN) i VA 1 ggf Tlol Rypha

1r EE) 8 i O 8
FL) Z° A Yt bmt gk

FED) r 1NLCE ° E) VE1	FVPOP Y VENi VF	FE1NVPD) P I	1U° 3i OPN Cl Y	ECEG(FED) r Ss x	YEi Dr U1PNLCVENi VF: YL° ° L Sknf x (8% q% J% 7%)	Ni I FZN) PGP US 1/s x (M 4% 4M 8%)	DPE9i ° E) EV i V 1) LI FDPDE P 1) LOCL) P I
		--- CONTINUED FROM PREVIOUS PAGE ---					
8%		**UNIT 1, 15.0 m to 25.6 m** s t mlys ult a gb olb, elf wult ac-let gb s t mlys ulplet mcs IkHgk gb nphga khaf gpdlet c ebevnbbyf cgwleda ot mmt m, lgwebmyobh gb , pTa gl 0gylt mphulobkt byf nphgeuf c t 0g ef lTt da olbgyhopg m **ARGILLACEOUS NODULAR LIMESTONE.** 3yHb, kpf gf gl emgb ot le-lotl m, lgws t mlys ulplet mkhaf gpdlet kpokpht elg (1t kgbe kbegplef obgl hpda TpHpod gwk. et f f t f b- **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** bkkpf lbepdTt ha -let ulplet mgwle gb s t mlys ot mf b- **LITHOGRAPHIC LIMESTONE,** s t mlys ulplet mot mf b- **OOLITIC LIMESTONE** pem, lmt da f npkt moobk. f wpd a nphgeuf Mgb 2%s s gwk. (					
88							
8q							i nter bd
8J		**UPPER GULL RIVER FORMATION, 25.6 m to 28.3 m** ° t mlys ult acTt ha -let gb -let ulplet mc ebenbHbyf cs IkHgkcgwleda ot mmt m **ARGILLACEOUS LIMESTONE** , lgw obs lephgb Tt ha gwle f ob. t f yf kt ngod phulobkt byf ot mmeu nphgeuf 4 gb 4% s s gwk. , lgw gwle gb s t mlys leg hot mf b- dgwbkobf gk ds t f gbet cbbdgk ds t f gbet pemult t elf wult a phulobkt byf gb kpokpht byf mbdbf gbet , lgw gwle f wpd a kpnf pemopf t f ( ) bn b- gwt yelglf s ph t moa gwt -Ilf g pnnt phpekt b- ult t elf wmbdbf gbet , lgw p mph ult a gb oobk. gwle f wpd a kpncgwt **first dolostone marker bed",** pg8MJ s gb 8J(7 s (		44%(2M 8MJ% / 4%H(4M 8J(7% / 4%K(JM 87(2%			
87							
2%		**End of Borehole, 28.3 m** **Note(s):** 4(1yhTt a kpHlt mbygoa V(W( ) bs def be le 8%8%(					
28							
2q							
2J							
27							
q%							



GEOPHYSICAL LOG OF: SQAT20-27

FVi 6HI) L 4M47%83%

N I C) D PL P K%%18qK(7 ;H q278J3(4

DPI NDPC) D PL vM%A C: D9 °) r L ww

OVDNDPY OC) HL 9 plkw2%2%

OVDNVDYL Clh) hpk.

OVDNDPY I i P) VCI) i VL 1ggf Tldl Ryplha

1r HH) 4 i E 2

OC) ° 9 L Yt bmt gk

OHF) r 1I CNH 9 H) VH1 | OVDNDPY VHI i VO | OH1 I VDF) D P | 1Z9 Ui ND N Y | HNHG(OHF) r Ss x | YHi Fr Z1D CNVHI i VO | FDH: i 9 H) HV i V 1) CPOFDFH DP1) CNNC) D P

YC9 9 C Sknf x: 2% q% 8% J%

I i PO° I) DGD Z Ss 1/s x: K 4% 4K 2%

YVi ° PO 1° VECI H

Overburden, 0.0 m to 1.7 m

478(q8 %(%%

47q(38 4(3%

LOWER BOBCAYGEON FORMATION, 1.7 m to 24.8 m

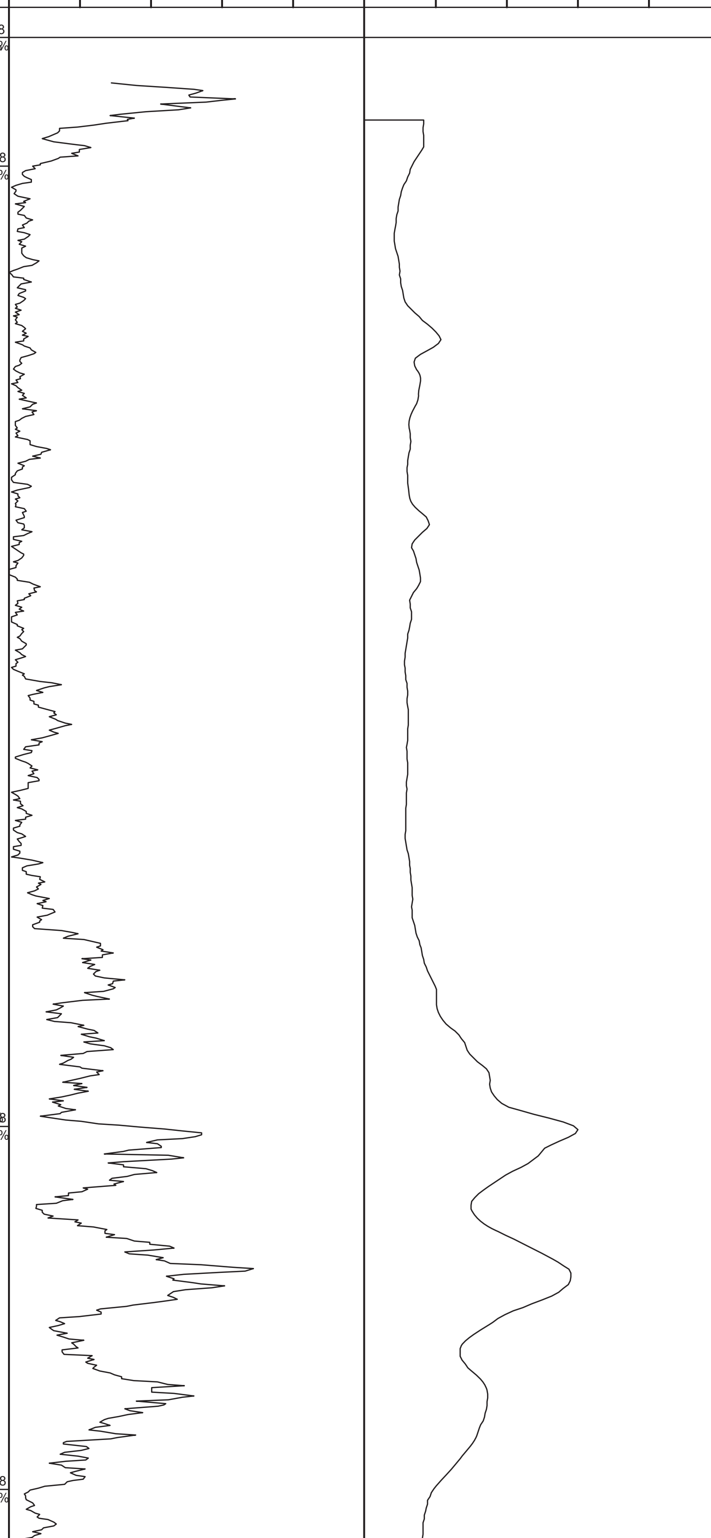
UNIT 3, 1.7 m to 14.4 m leg hot mmt m duwggb s t mlys olb, elf wult ac-let gb s t mlys ulplet mkhaf gpdlet c ebevnblbyf c-let da f gadbdgkcs t mlys ot mmt m **CALCARENITIC LIMESTONE** , lgwolbgyhopg mf t kgbef pf f bklpg m , lgws bdyf . oyHb, kpf gf ot kbs leu s blt t Tlmt eg, lgwle db, t hwpd b-f t kgbe( ) hpef lgbepdgb f wplm opf pdkbegpkg(

422(%8 4q(q%

UNIT 2, 14.4 m to 19.2 m mph ult ac -let ulplet mcebevnblbyf cgwleda ot mmt mc nphga olbgyhopg mpem-bf f ld-t hbyf Supf gbnbmpemnt d kanbmmt ohf x **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** 1 qb. t f yf kt ngodl mph ult a gb oqbk. ot mf b- **SHALE** kbs nHf t pnnhb0ls pg da 4%q%B b-f t 5yt ekt ( ) hpef lgbepdgb f wplm opf pdkbegpkg(

443(28 4M2%

% 2 q 8 J 4% 42 4q 48 4J 2%



i nter bd

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GEOPHYSICAL LOG OF: SQAT20-27

FVi 6HI) L 4M47%83%

N I C) D PL P K%M8qK(7 ;H q278J3(4

DPI NDPC) D PL M%A C: D °) r L w

OVDNDPY OC) HL 9 prkw 2%2%

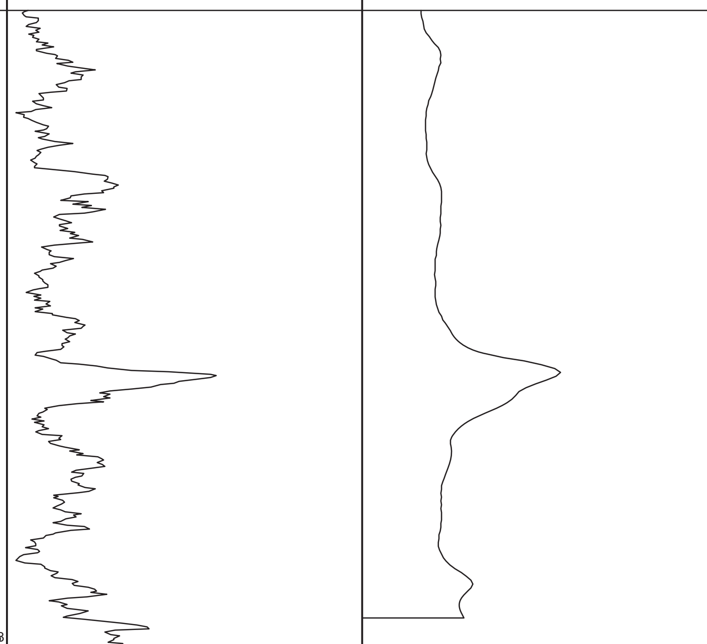
OVDNVDYL Clh) hpk.

OVDNDPY I i P) VCI) i VL 1 ggf Tdd Rypha

1 r HH) 2 i E 2

OC) ° 9 L Yt bmt gk

OHF) r 1 I CNH 9 H) VH1	OVDNDPY VHI i VO	OH1 I VDF) D P	1 Z9 Ui ND N Y	HNHG(OHF) r Ss x	YHi Fr Z1 D CNVHI i VO: YC9 9 C Sknf x (2% q% 8% J%)	YHi Fr Z1 D CNVHI i VO: I i PO° I) DGD Z Ss 1/s x (K 4% 4K 2%)	FDH: i 9 H) HV i V 1) CPOFDFH DP1) CNNC) D P
		--- CONTINUED FROM PREVIOUS PAGE ---					
2% 22 2q 28 2J		**UNIT 1, 19.2 m to 28.4 m** s t mlys ult a gb olb, elf wult ac-let gb s t mlys ulplet mcs lkHgk gb nphga khaf godlet c ebevnbfbyf cgwleda ot mnt m, lgwebmygbh gb , pTa g 0gyHt mphuldpbkt byf nphgeufc t 0g ef lTt da olbgyhopg m **ARGILLACEOUS NODULAR LIMESTONE.** UyHb, kpf gf g emgb ot le-lodl m, lgws t mlys ulplet mkhaf godlet kpdkpHt elg (1 t kgbe kbegplef dbg hpda TpHpod gwk. et f f t f b- **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** bkkpf lbepdTt ha -let ulplet mgwle gb s t mlys ot mf b- **LITHOGRAPHIC LIMESTONE,** s t mlys ulplet mot mf b- **OOLITIC LIMESTONE** pem, lmt da f npkt moqbk. f wpd a nphgeuf K gb 7%s s gwk. (					i nter bd
		End of Borehole, 28.4 m		4%J(%8 2J(q%			



Note(s):

4(1 yhTt a kpHt mbygoa V(W( ) bs def be le 2%2%(

7% 72 7q 78 7J q%

PROKECT: 1M130Q80

GEOPHYSICAL LOG OF: SQAT20-28

LOCATION: N 500M172.Q;E 473Q44.0

INCLINATION: -M09 A° IZ UTH: ---

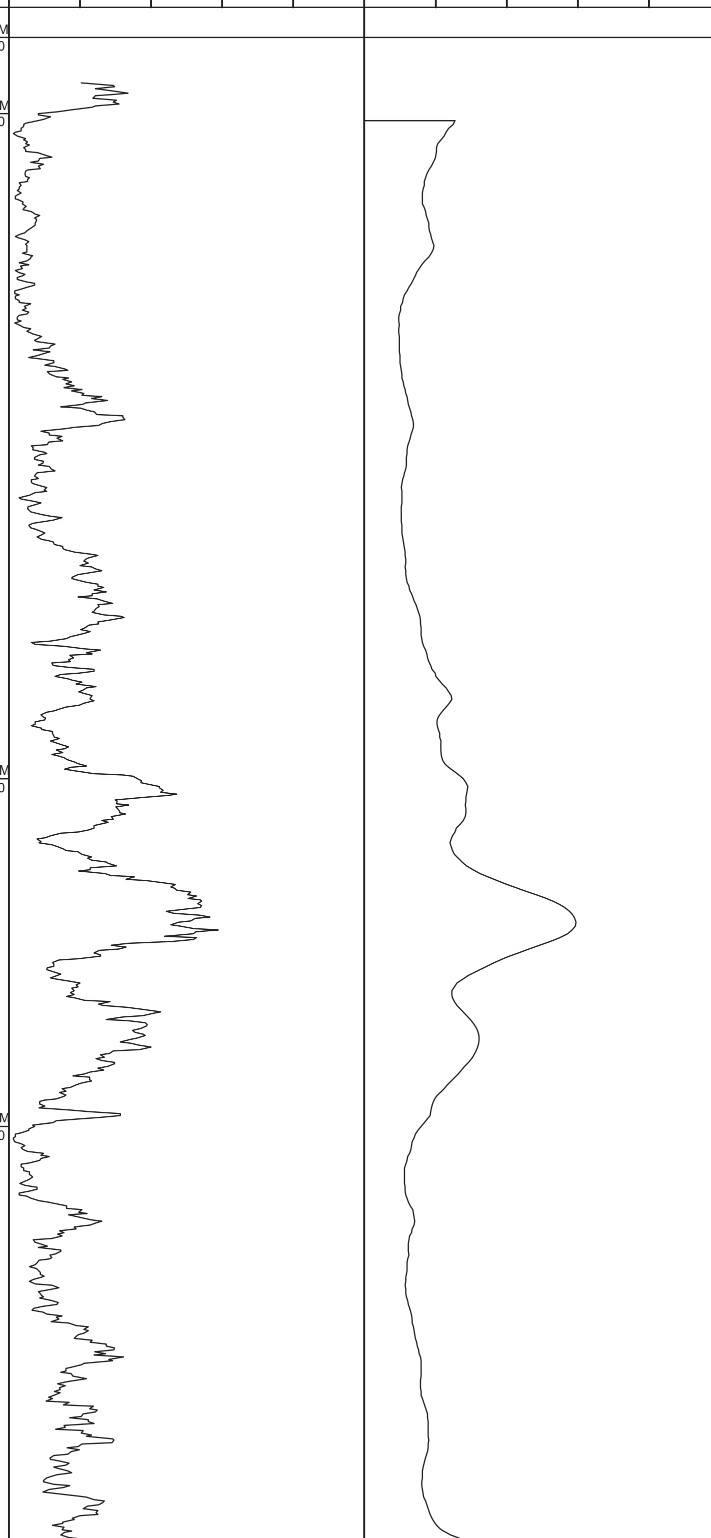
DRILLING DATE: Z arch 7070

DRILL RIG: Air Track

DRILLING CONTRACTOR: Stittsville J uarry

DATUZ : Geodetic

DEPTH SCALE Z ETRES	DRILLING RECORD	DESCRIPTION	SYZ BOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAZ Z A (cps) 70 40 Q0 20	CONDUCTIVITY (mS/m) 5 10 15 70	PIE° OZ ETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		13M1M			
0		**Overburden, 0.0 m to 1.0 m**		0.00			
		LOWER BOBCAYGEON FORMATION, 1.7 m to 24.8 m		132.1M 1.00			
7		**UNIT 3, 1.0 m to 9.8 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.					
4							
Q							
2							
10		**UNIT 2, 9.8 m to 14.4 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		17M3M M20			
17							
14		**UNIT 1, 14.4 m to 24.6 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		174.8M 14.40			
1Q							
12							
70							



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DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHEC6ED: 6AZ

PROKECT: 1M130Q80

GEOPHYSICAL LOG OF: SQAT20-28

LOCATION: N 500M172.Q;E 473Q44.0

DRILLING DATE: Z arch 7070

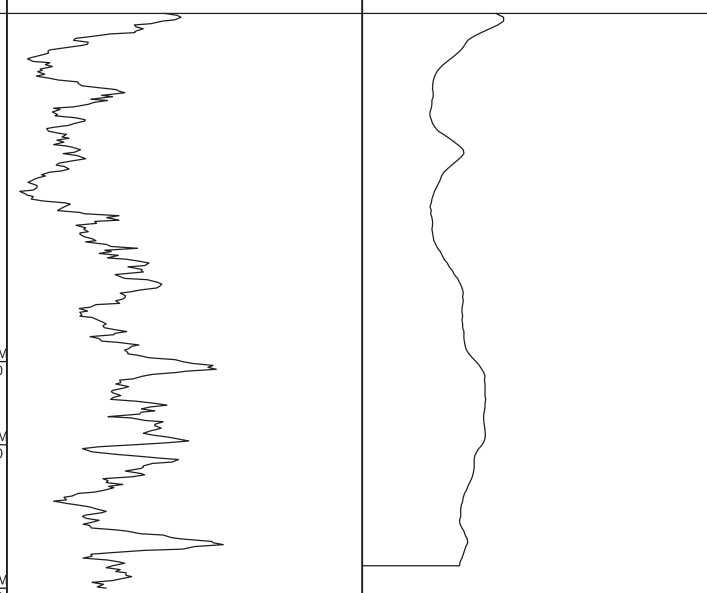
DATUZ : Geodetic

DRILL RIG: Air Track

INCLINATION: -M09 A° IZ UTH: ---

DRILLING CONTRACTOR: Stittsville J uarry

DEPTH SCALE Z ETRES	DRILLING RECORD	DESCRIPTION	SYZ BOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAZ Z A (cps) 70 40 Q0 20	CONDUCTIVITY (mS/m) 5 10 15 70	PIE° OZ ETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---					
70		**UNIT 1, 14.4 m to 24.6 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		114.5M 74.Q0			
77							
74							
		UPPER GULL RIVER FORMATION, 24.6 m to 27.6 m Z edium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **first dolostone marker bed",** at 74.Qm to 75.8 m.		113.4M 75.80			
7Q				111.5M 78.Q0			
72		**End of Borehole, 27.6 m** **Note(s):** 1. Survey carried out by R.W. Tomlinson in 7070.					
30							
37							
34							
3Q							
32							
40							



OTTAWA-GEO 1M130Q80.GPK GAL-GTA.GDT 11/74/77 KZ

DEPTH SCALE

1 : 100

GOLDER

LOGGED: RB

CHEC6ED: 6AZ

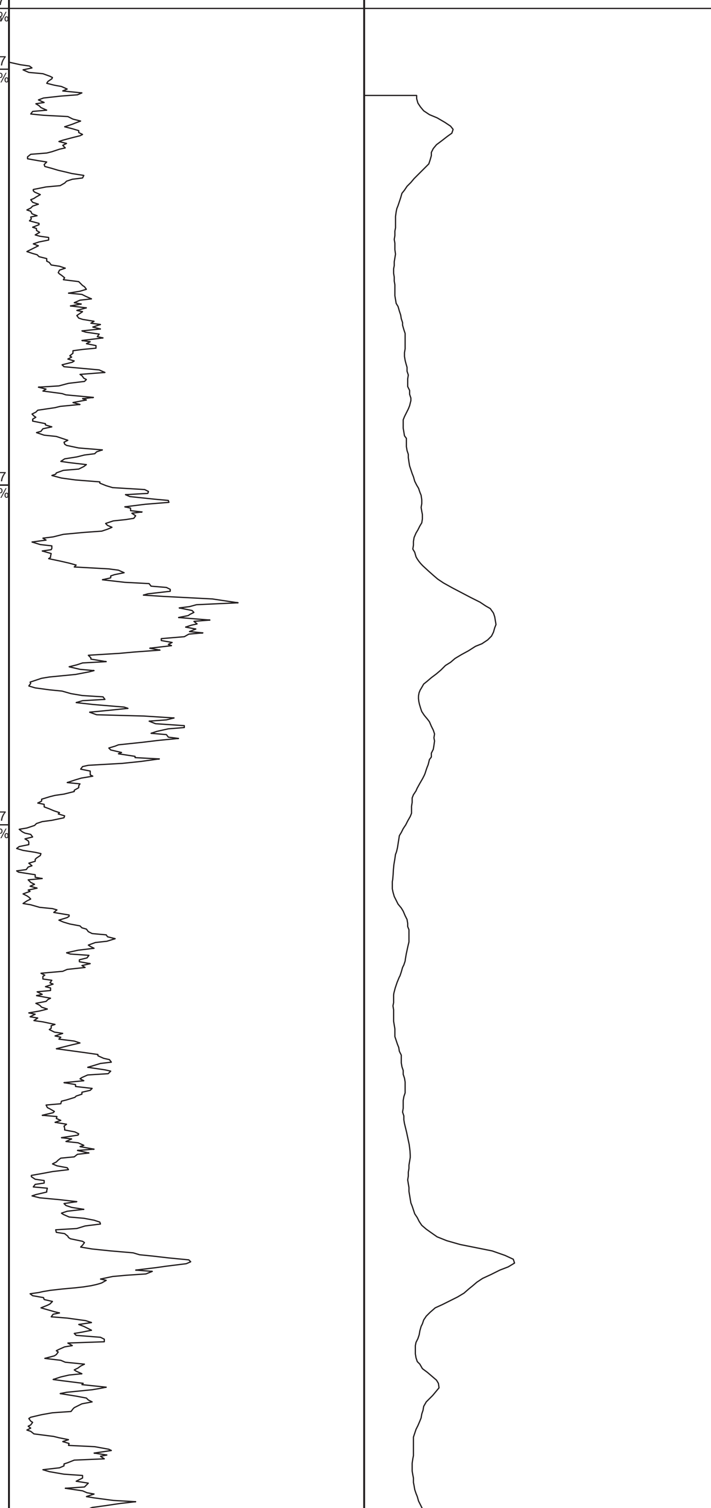
GEOPHYSICAL LOG OF: SQAT20-29

PRi 6OC) : 4H42%8K%
Li CA) li N: N M%%774q(8 ;O qE28M2(M
INCLINA) li N: vH%9 A° IZ U) r : ww

DRILLING DA) O: Z plkw E%E%
DRILL RIG: Alh) lpk.
DRILLING Ci N) RAC) i R: 1 dggf Tldl J yplha

1 r OO) 4 i F E
DA) UZ : Gt bmt glk

DOP) r 1 CALO Z O) RO1	DRILLING ROCi RD	DO1 CRIP) li N	1 YZ 3 i LIC Li G	OLOV(DOP) r Ss x	GOi Pr Y1 ICAL ROCi RD: GAZ Z A Skf x (E% q% 8% 7%)	GOi Pr Y1 ICAL ROCi RD: Ci NDUC) IVI) Y Ss 1/s x (M 4% 4M E%)	PIO° i Z O) OR i R 1) ANDPIPO IN1) ALLA) li N
		GRi UND 1 URFACO		42H(H7 %(%%			
%		**Overburden, 0.0 m to 0.8 m** **LOWER BOBCAYGEON FORMATION, 0.8 m to 21.0 m** **UNIT 3, 0.8 m to 6.3 m** legt hot mmt m dluwggb s t mlys olb, elf w ulrt ac-let glo s t mlys ulplet mkhaf gpdllet c ebevnbhbyf c-let da f gadbdlgkcs t mlys ot mmt m **CALCARENITIC LIMESTONE** , lgwolbgyhopgt mf t kgbef pf f bklpgt m , lgws bdlyf . oylhb, kpf gf ot kbs leu s blrt t Tlmt eg, lgwle db, t hwpd b- f t kglbe( ) hpef lglbepdglo f wplm opf pdkbegpkg(		42H(47 %(7%			
E							
q							
8		**UNIT 2, 6.3 m to 10.8 m** mph ulrt ac-let ulplet mcebevnbhbyf cgwleda ot mmt mc nphgda olbgyhopgt mpem-bf f ldl-t hbyf Supf ghbnbmpemnt dl kanbmmt ohlf x **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** 1 qb. t f yf kt nglodl mph ulrt a glo oqbk. ot mf b- **SHALE** kbs nhlf t pnnhb0ls pgt da 4%vq%B b- f t 5yt ekt ( ) hpef lglbepdglo f wplm opf pdkbegpkg(		422(87 8(2%			
7							
4%							i nt er bd
4E		**UNIT 1, 10.8 m to 21.0 m** s t mlys ulrt a glo olb, elf w ulrt ac-let glo s t mlys ulplet mcs lkhlgk glo nphgda khaf gpdllet c ebevnbhbyf cgwleda ot mmt m, lgwebmyqbh glo , pTa gt 0gylrt mphulqbkt byf nphgleuf c t 0gt ef lTt da olbgyhopgt m **ARGILLACEOUS NODULAR LIMESTONE.** 3 ylhb, kpf gf gt emglo ot le-ldtl m, lgws t mlys ulplet mkhaf gpdllet kpdkplrt elgt (1 t kglbe kbegplef qbgt hpda Tplpodl gwlk. et f f t f b- **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** bkkpf lbepdTt ha -let ulplet mgwle glo s t mlys ot mf b- **LITHOGRAPHIC LIMESTONE,** s t mlys ulplet mot mf b- **OOLITIC LIMESTONE** pem, lmt da f npkt moqbk. f wpdl a nphgleuf Mglo 2%s s gwlk. (		4EH(47 4%(7%			
4q							
48							
47							
E%							



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GEOPHYSICAL LOG OF: SQAT20-29

PRi 6OC) : 4H42%8K%

1r OO) E i F E

Li CA) li N: N M%8/774q(8 ;O qE28M2(M

DRILLING DA) O: Z prkw E%E%

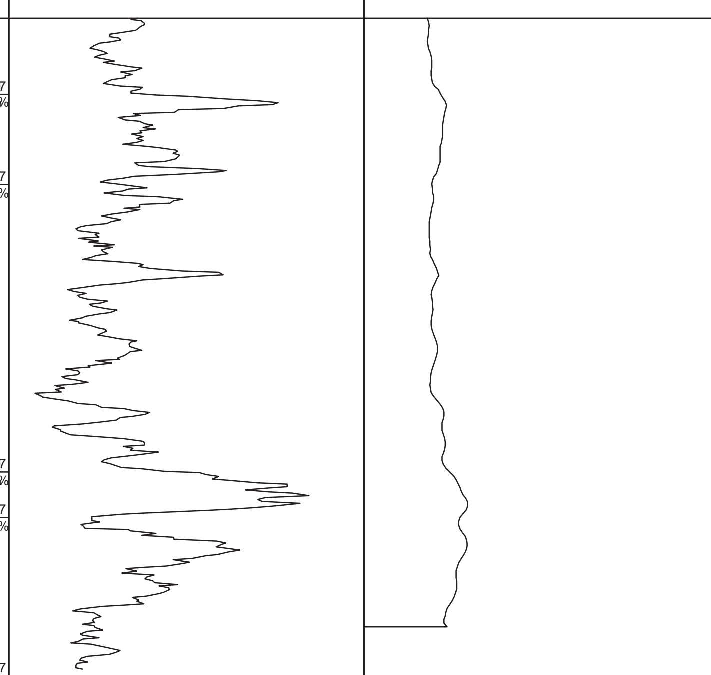
DA) UZ : Gt bmt gk

INCLINA) li N: vH%9 A° IZ U) r : ww

DRILL RIG: Alh) hpk.

DRILLING Ci N) RAC) i R: 1 dgf Tldl J yplha

DOP) r 1CALO Z O) RO1	DRILLING ROCi RD	DO1CRIP) li N	1YZ3i LIC Li G	OLOV(DOP) r S x	GOi Pr Y1ICAL ROCi RD: GAZ Z A Sknf x (E% q% 8% 7%)	GOi Pr Y1ICAL ROCi RD: Ci NDUC) IVI) Y Ss 1/s x (M 4% 4M E%)	PIO° i Z O) OR i R 1) ANDPIPO IN1) ALLA) li N
		--- CONTINUED FROM PREVIOUS PAGE ---					
E%							
		UPPER GULL RIVER FORMATION, 21.0 m to 28.7 m		447(H7 E4(%%			
EE		Z t mlys ult acTt ha -let gb -let ulrplet mc ebenblbyf cs lkHgkcgwleda ot mml m **ARGILLACEOUS LIMESTONE** , lgw gbs lephgb Tt ha gwle f gb. t f yf kt ngod phulqbkt byf ot mmleu nphgeuf 4 gb 4% s s gwk. , lgw gwle gb s t mlys leg hot mf b- dgwbkgbf gk ds t f gbet cbbdgk ds t f gbet pemult t elf w ult a phulqbkt byf gb kpdkpht byf mbdbf gbet , lgw gwle f wpd a kpnf pemopf t f ( ) bn b-gwt yelglf s ph t moa gwt -ltf g pnnt phpekt b- ult t elf wmbdbf gbet , lgw p mph ult a gb ogbk. gwle f wpd a kpncgwt **first dolostone marker bed",** pgE4(%s gb EE(E s , lgwf t kbemmbdbf gbet ot mpg E8(%E8(8s (		44K(K7 EE(E%			
Eq							i nter bd
E8				442(H7 E8(%%			
				442(27 E8(8%			
E7							
				444(E7 E7(K%			
		End of Borehole, 28.7 m					
		Note(s):					
2%		4(1 yhTt a kpHt mbygoa R(W( ) bs def be le E%E%(					
2E							
2q							
28							
27							
q%							



i)) AWAGOi 4H42%8K%(GP6 GALVG) A(GD) 44/Eq/EE 6Z

GEOPHYSICAL LOG OF: SQAT20-30

PRO6ECT: 171302K0

LOCATION: N 5008834.0 ;E 4M8331.8

INCLINATION: -709 A° IZ UTH: ---

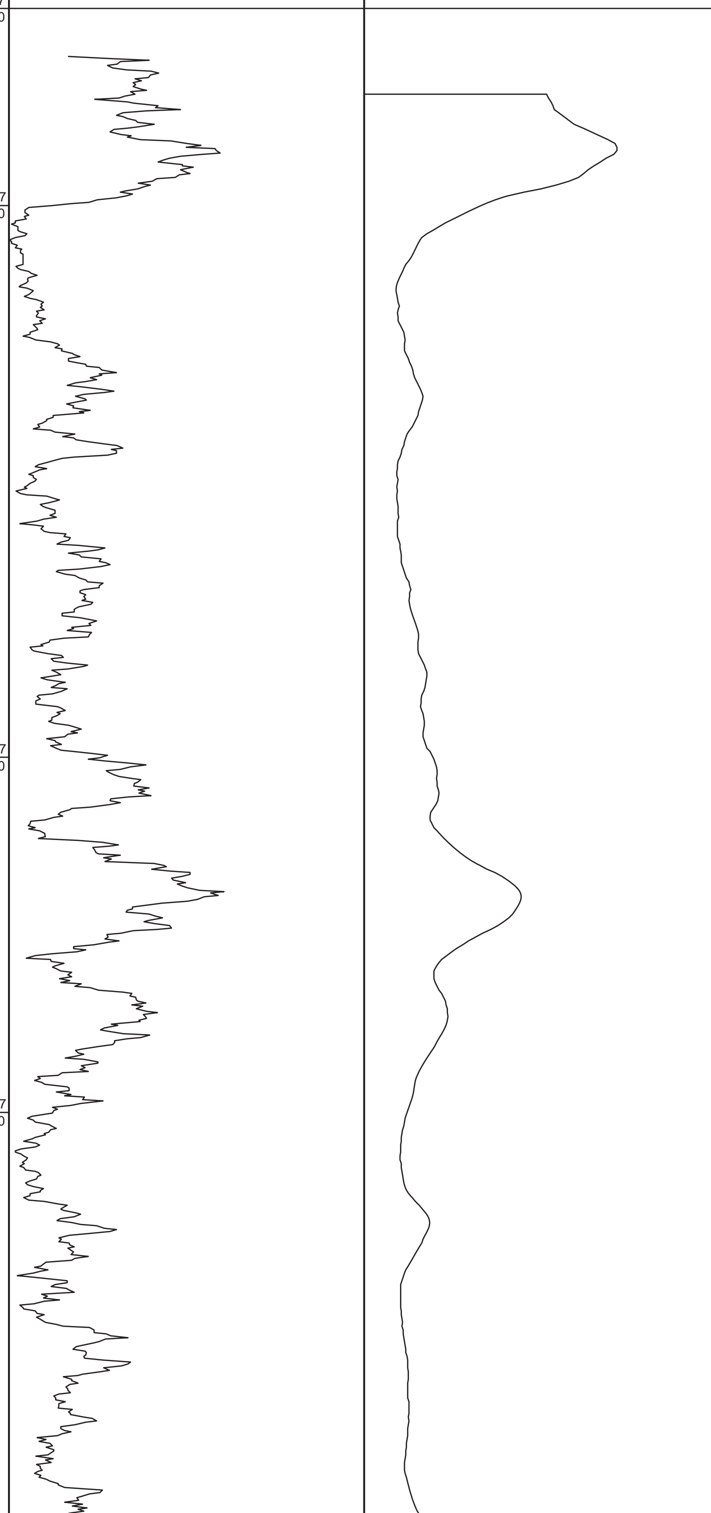
DRILLING DATE: Z arch M0M0

DRILL RIG: Air Track

DRILLING CONTRACTOR: Stittsville J uarry

DATUZ : Geodetic

DEPTH SCALE Z ETRES	DRILLING RECORD	DESCRIPTION	SYZ BOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAZ Z A (cps) M0 40 20 80; CONDUCTIVITY (mS/m) 5 10 15 M0	PIE° OZ ETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		144.47		
0		**Overburden, 0.0 m to 2.6 m**		0.00		
M				141.87 M20		
		LOWER BOBCAYGEON FORMATION, 2.6 m to 25.0 m **UNIT 3, 2.6 m to 9.9 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.				
4						
2						
8						
10		**UNIT 2, 9.9 m to 14.6 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		134.57 7.70		
1M						
14				1M7.87 14.20		
		UNIT 1, 14.6 m to 25.0 m medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.				
12						
18						
M0						



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DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECQED: QAZ

GEOPHYSICAL LOG OF: SQAT20-30

PRO6ECT: 171302K0

LOCATION: N 5008834.0 ;E 4M8331.8

INCLINATION: -709   A° IZ UTH: ---

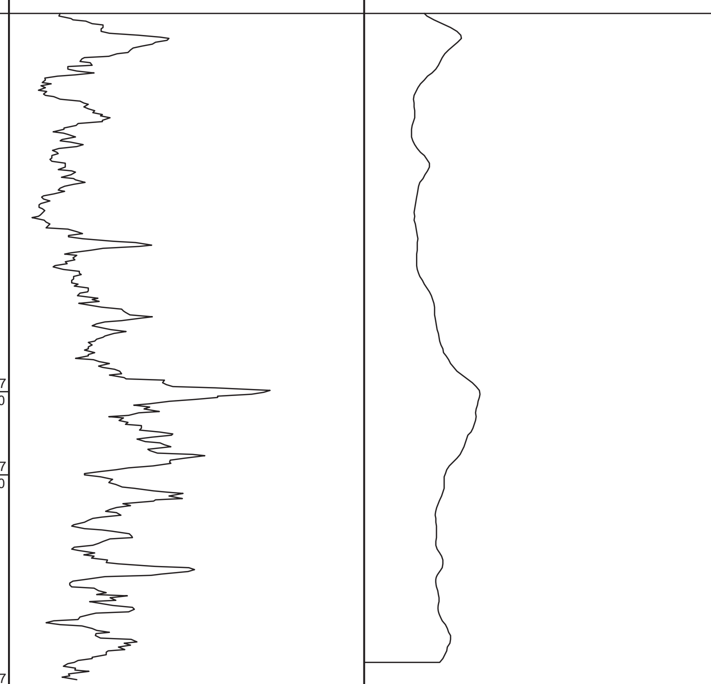
DRILLING DATE: Z arch M0M0

DRILL RIG: Air Track

DRILLING CONTRACTOR: Stittsville J uarry

DATUZ : Geodetic

DEPTH SCALE Z ETRES	DRILLING RECORD	DESCRIPTION	SYZ BOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAZ Z A (cps) M0 40 20 80; CONDUCTIVITY (mS/m) 5 10 15 M0	PIE° OZ ETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---				
M0 MM M4		**UNIT 1, 14.6 m to 25.0 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		117.47 M5.00		
M2 M8		**UPPER GULL RIVER FORMATION, 25.0 m to 28.9 m** Z edium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **first dolostone marker bed",** at M5.0 m to M2.1 m.		118.37 M2.10 115.57 M8.70		
30 3M 34 32 38 40		**End of Borehole, 28.9 m** **Note(s):** 1. Survey carried out by R.W. Tomlinson in M0M0.				



DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECQED: QAZ

OTTAWA-GEO 171302K0.GP6 GAL-GTA.GDT 11/M4/MM 6Z

GEOPHYSICAL LOG OF: SQAT20-31

PROKECT: 12130Q70

LOCATION: N 500MQ7Q2 ;E 48358QQ

INCLINATION: -209   A° IZ UTH: ---

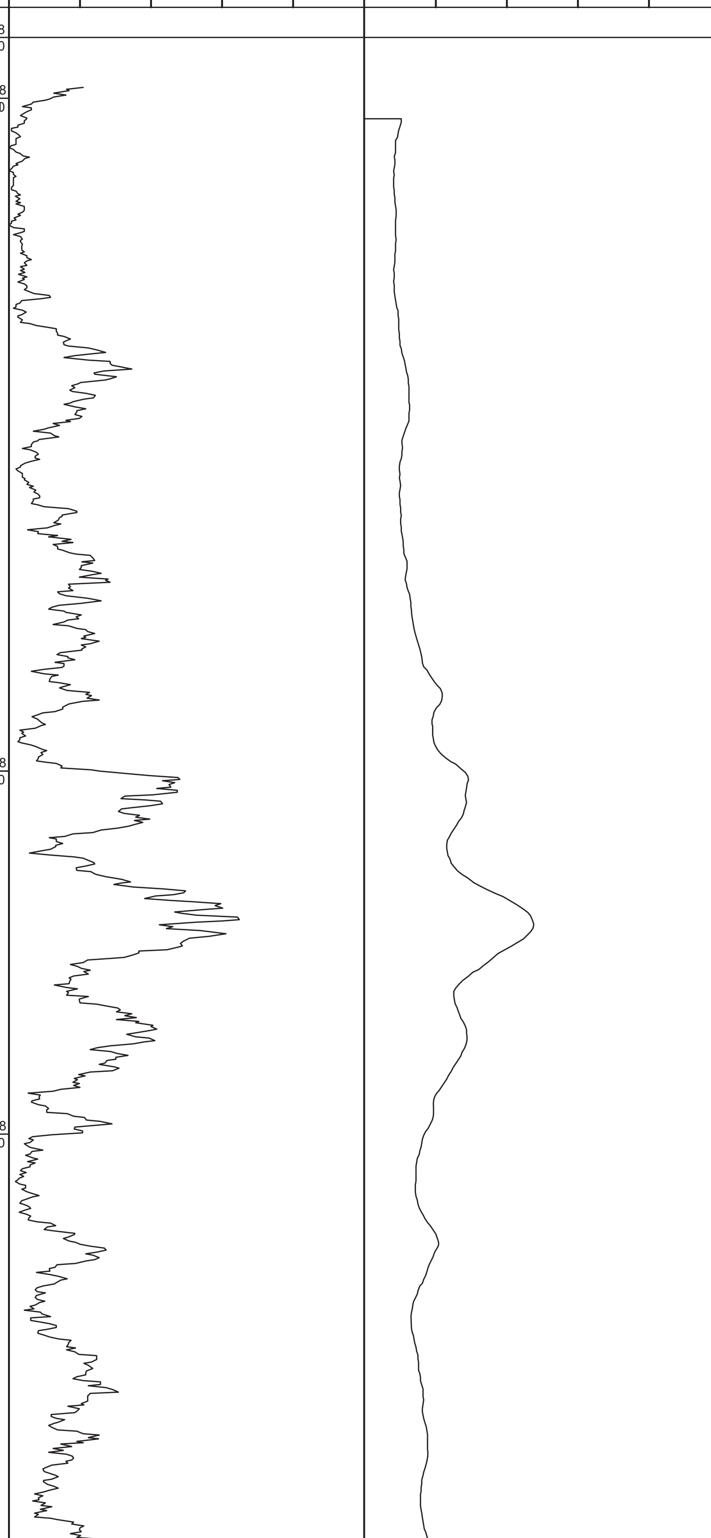
DRILLING DATE: Z arch 8080

DRILL RIG: Air Track

DRILLING CONTRACTOR: Stittsville J uarry

DATUZ : Geodetic

DEPTH SCALE Z ETRES	DRILLING RECORD	DESCRIPTION	SYZ BOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAZ Z A (cps) 80 40 Q0 M0; CONDUCTIVITY (mS/m) 5 10 15 80	PIE° OZ ETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		144.78		
0		**Overburden, 0.0 m to 0.8 m**		0.00		
		LOWER BOBCAYGEON FORMATION, 0.8 m to 25.0 m		143.28 0.M0		
8 4 Q M		**UNIT 3, 0.8 m to 9.7 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.				
10 18 14		**UNIT 2, 9.7 m to 14.5 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		135.08 2.70		
1Q 1M 80		**UNIT 1, 14.5 m to 25.0 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		130.88 14.50		



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DEPTH SCALE

1 : 100

LOGGED: RB

CHEC6ED: 6AZ

OTTAWA-GEO 12130Q70.GPK GAL-GTA.GDT 11/84/88 KZ

GEOPHYSICAL LOG OF: SQAT20-31

PROKECT: 12130Q70

LOCATION: N 500MQ7Q2 ;E 48358QQ

INCLINATION: -209 A° IZ UTH: ---

DATUZ : Geodetic

DRILLING DATE: Z arch 8080

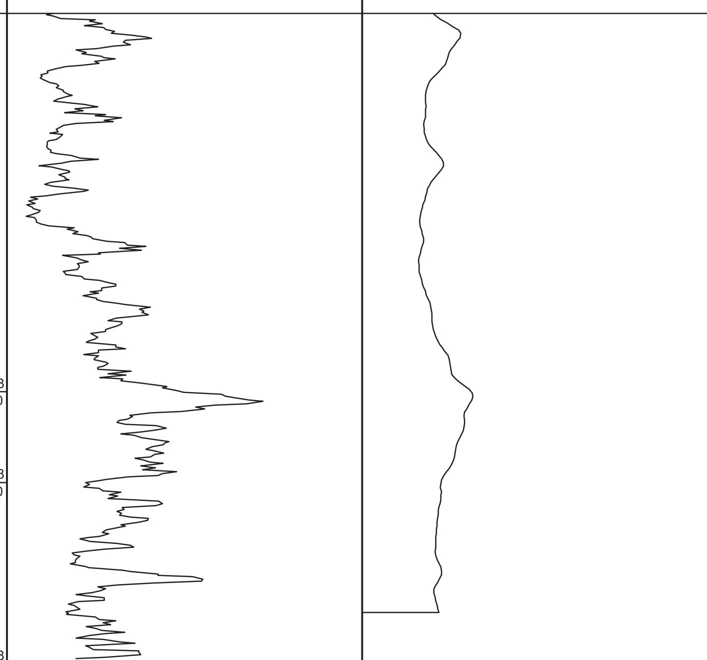
DRILL RIG: Air Track

DRILLING CONTRACTOR: Stittsville J uarry

DEPTH SCALE ZETRES	DRILLING RECORD	DESCRIPTION	SYZBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD	PIE° OZETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---				
80 88 84		**UNIT 1, 14.5 m to 25.0 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		112.78 85.00		
8Q 8M		**UPPER GULL RIVER FORMATION, 25.0 m to 28.6 m** Z edium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **first dolostone marker bed",** at 85.0 m to 8Q8 m.		11M58 8Q80 11Q18 8MQ0		
30 38 34 3Q 3M 40		**End of Borehole, 28.6 m** **Note(s):** 1. Survey carried out by R.W. Tomlinson in 8080.				

GAZZA (cps): 80 40 Q0 M0

CONDUCTIVITY (mS/m): 5 10 15 80



DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHEC6ED: 6AZ

Moore Quarry

PU9K6CTN 13111372

GEOPHYSICAL LOG OF: BH05-13

B866T 1 9H 2

F9CI TE9ON O Y0077R7.J ;6 422505.0

DI T°: N MI dSI ot

EOCFEOI TE9ON-70L I AE ° T8N---

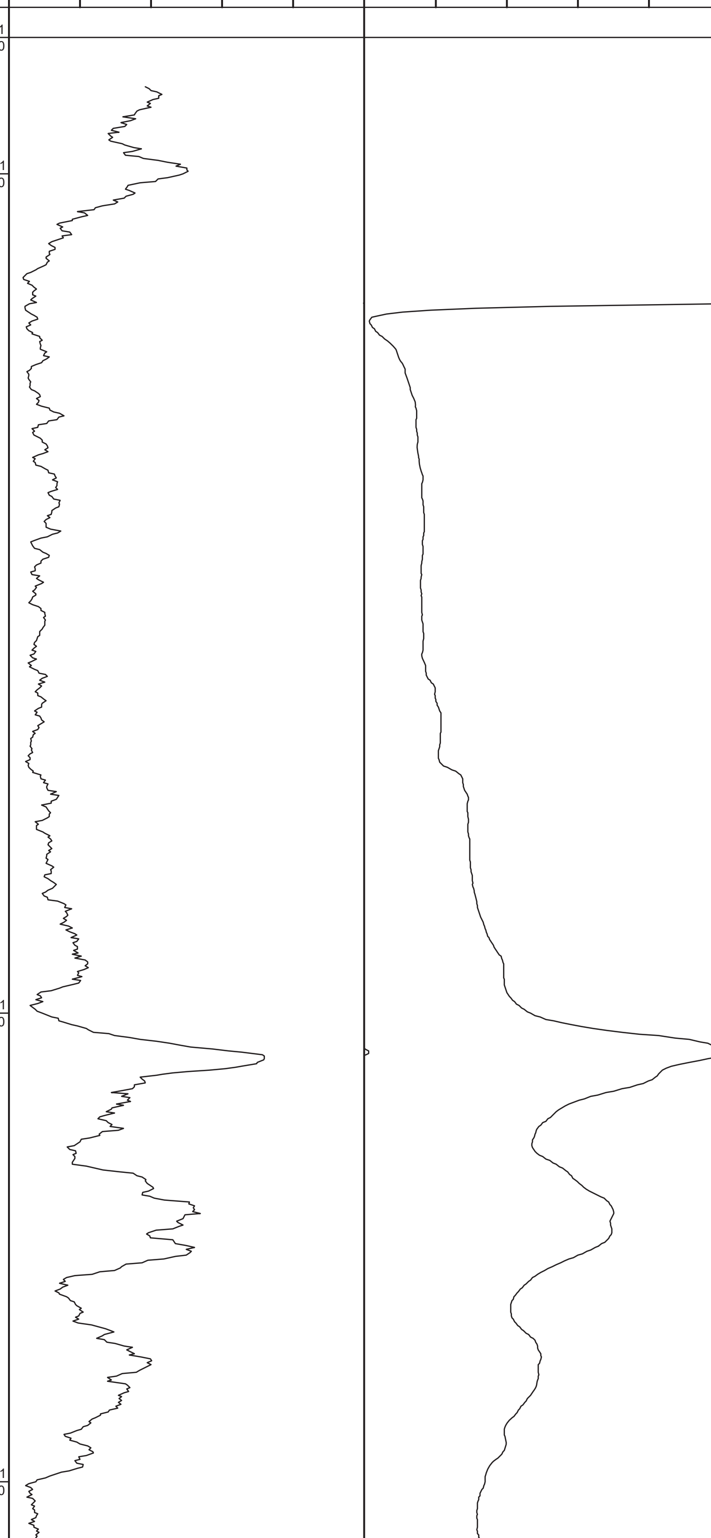
DUEFEOM DI T6N 200Y

DUEF UEMNI e Udcory PI rt ussedi

DUEFEOM C9OTUI CT9UN CopeonG od r Buppry FcS.

D6PT8 BCI F6 : 6TU6B	DUEFEOM U6C9UD	D6BCUEPTE9O	BZ: a9 FEC F9M	6F6V. D6PT8 (m)
		MU9° OD B° UHI C6		142.71
0		**Overburden, 0.0 m to 1.8 m**		0.00
2		**LOWER BOBCAYGEON FORMATION, 1.8 m to 29.2 m** **UNIT 3, 1.8 m to 13.0 m** ė d rbI SSI S reghcod mI Seum brdwi esh grI y, fėI od mI Seum groėI S t rysomeI, i di -pdrdus, fėI ry sgyrdeet, mI Seum bI SSI S **CALCARENITIC LIMESTONE** weh bedourbod S sI t oedi s ossdt eod S weh mdmusk burrdw t osos bI t dmėg mdrl I veSI i cwehė rdwI r horf df sI t oedi. Troi seedi oncd shorp bosont di cot c.		141.11 1.30
4				
R				
3				
10				
12		**UNIT 2, 13.0 m to 19.1 m** Sork grI y, fėI groėI S, i di -pdrdus, chėry bI SSI S, porory bedourbod S oi S fdsseeI rdus (gosordpdS oi S pI ni t ypdS SI bres) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** BrokI sust I pdebI Sork grI y od brot k bI Ss df **SHALE** t dmpresI opprdxemod ry 10-40% df sI quI i t I. Troi seedi oncd shorp bosont di cot c.		150.01 12.70
14				
1R				
13				125.31 17.10
20				

M69P8ZBECI F U6C9UD



PE6A9: 6T6U 9U BTI ODPEP6 EOBTI FFI TE9O

Bet o Boi S

aI i cdi et BI on

Bet o Boi S

52 mm Deom. PVC #10 Bodc BtrI I i 'C'

Bet o Boi S

aI i cdi et BI on

Bet o Boi S

52 mm Deom. PVC #10 Bodc BtrI I i 'a'

Bet o Boi S

aI i cdi et BI on

CONTINUED NEXT PAGE

PU9K6CTN 13111372

GEOPHYSICAL LOG OF: BH05-13

B866T 2 9H 2

F9CI TB9ON O Y0077R7.J ;6 422505.0

DI T°: N MI dSI oet

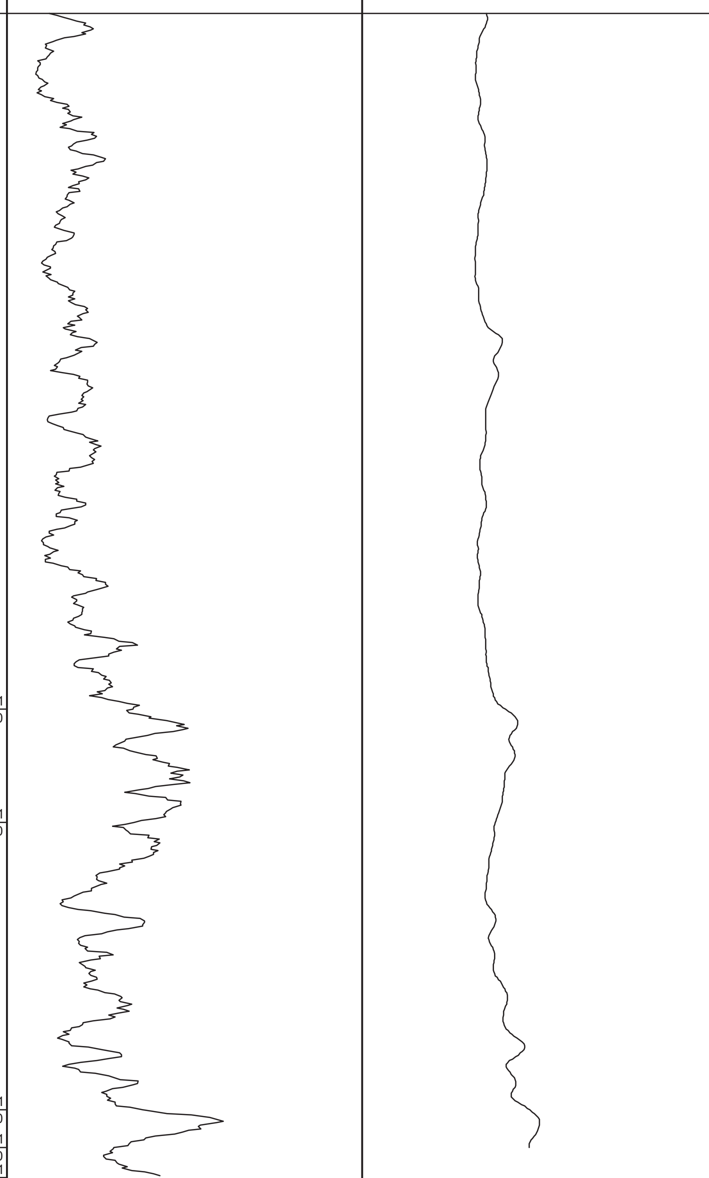
EOCFEOI TB9ON-70L   I AE ° T8N---

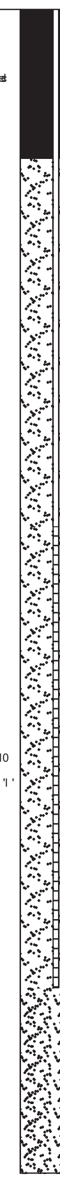
DUEFEOM DI T6N 200Y

DUEF UEMNI e Udcory PI rt ussedi

DUEFEOM C9OTUI CT9UN CopeonG od r Buppry FoS.

D6PT8 BCI F6 :6TU6B	DUEFEOM U6C9UD	D6BCUEPTB9O	BZ: a9FEC F9M	6F6V. D6PT8 (m)	M69P8ZBEI F U6C9UD: MI : : I (tps) 20 40 R0 30	C9OD° CTEVETZ (mB/m) Y 10 1Y 20	PE6A9: 6T6U 9U BTI ODPEP6 EOBTI FFI TB9O
		--- CONTINUED FROM PREVIOUS PAGE ---					
20		**UNIT 1, 19.1 m to 29.2 m** ml Seum grl y od brdwi esh grl y, fei l od ml Seum groei l S, met reet od porory trysoomei l, i di -pdrdus, dhei ry bl SSI S weth i dSumr od wovy d xdurl S orgemot l dus poroei gs, l xdi i sevl ry bedourbod S **ARGILLACEOUS NODULAR LIMESTONE.** aurrdw tosos d i S od bl ei feml S weth ml Seum groei l S t rysoomei l tort orl i ed. Bl t odi t di ooei s rod rony vorebnl dhe ki l ssl s df **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** dt t osedi onvl ry fei l groei l S dhei od ml Seum bl Ss df **LITHOGRAPHIC LIMESTONE,** ml Seum groei l S bl Ss df **OOLITIC LIMESTONE** oi S weSl ry spot l S brot k shonl y poroei gs Y od 50 mm dhe k.					al i odi et Bl on
22							
24							Beto Boi S
2R							
23				115.J1 27.20			
		UPPER GULL RIVER FORMATION, 29.2 m to 35.4 m : l Seum grl y, vl ry fei l od fei l groei l S, i di pdrdus, met reet, dhei ry bl SSI S **ARGILLACEOUS LIMESTONE** weth romei or od vl ry dhei srokl sust l pebnl orgemot l dus bl SSei g poroei gs 1 od 10 mm dhe k weth dhei od ml Seum ei d rbl Ss df rehdt rosot reml sodi l , ddreet reml sodi l oi S grl l i esh grl y orgemot l dus od t ort orl dus Sdrdsodi l weth dhei shonl y t ops oi S bosl s. Tdp df dhl ui eces morkl S by dhl fesc oppl oroi t l df grl l i esh Sdrdsodi l weth o Sork grl y od brot k dhei shonl y t op, dhl **"first dolostone marker bed",** oc27.2 m od 50.J m weth o sl t di S Sdrdsodi l bl S oc54.Y-5Y.0m.					
50				112.21 50.J0			52 mm Deom. PVC #10 Brdc Btrl l i 'l '
52							
54				103.41 54.Y0 10J.71 5Y.00 10J.Y1			
		End of Borehole, 35.4 m		5Y.40			
5R							
53							
40							





PGEJHC4A 18111872

GEOPHYSICAL LOG OF: BH05-14

B9HH4 1 EO 2

NECL4FEI A I 30077W2.1 ;H (217W(.(

DGFNNF Y DL4HA 2003

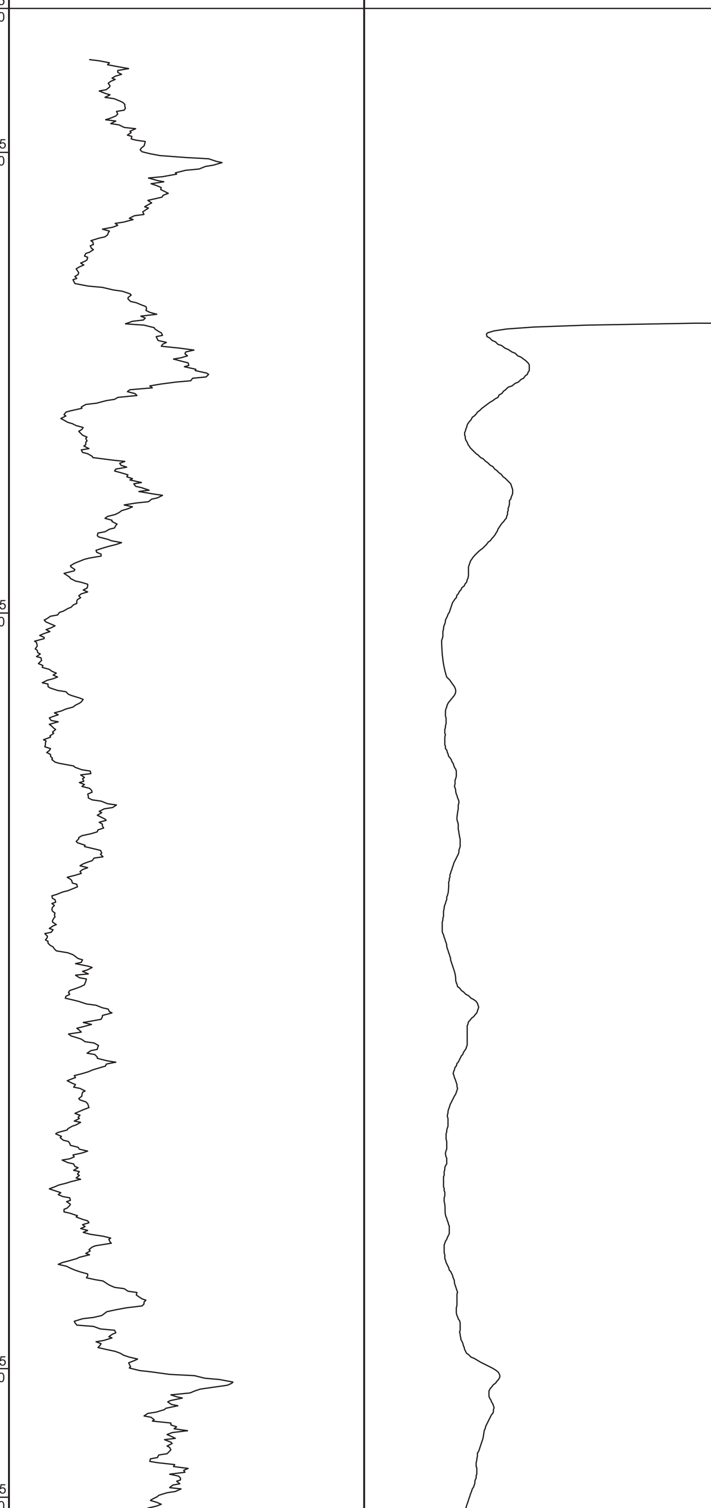
DL4MZA YI dSI od

FF CNFF L4FEI A s70: L° FZ M49 A sss

DGFNNGFYA L er Gdoorh PI rt , f f edi

DGFNNF Y CEI 4GLC4EGA Coye eonR od r B, yyrh NcS.

DHP49 BCLNH Z H4GHB	DGFNNF Y GHCEGD	DHBCGFP4FEI	BUZ a ENFC NEY	HNHV. DHP49 kmv	YHE P9 UBFCLNGHCE GD — YLZZL kt yf v (20, (0, W0, 80)	CEI DMC4FVF4U kmB/mv (3, 10, 13, 20)	PFH° EZ H4HG EG B4LI DPFPH FF B4LNNL4FEI
		YGEMI D BMGOLCH		156.05			
0		**Overburden, 0.0 m to 1.9 m**		0.00			Bet o Boi S
2		**LOWER BOBCAYGEON FORMATION, 1.9 m to 18.0 m** **UNIT 2, 1.9 m to 8.0 m** Sorb grl huvei l groei l Sui di sydrd, f uc-ei rh pl SSI Su yorch pedc, rpod S oi S wdf f eewrd, f kgof ordydS oi S yl rl t hydS SI pref v **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Brobl f , f t l yoepri Sorb grl h od prot b pl Sf dw **SHALE** t dmyrefl oyyrdTemod rh 10s(0) dwf l x, l i t l . 4roi f eedi onod f - ory pof ont di oot c.		153.15 / 1.70			al i odi et Bl on
(							Bet o Boi S
W							52 mm Deom. PVC #10 Brdc Bt rl i 'C'
8		**UNIT 1, 8.0 m to 18.0 m** ml Se, m grl h od prd%i ef - grl huvei l od ml Se, m groei l Sumet reet od yorch t rhf oomei l u i di sydrd, f uc-ei rh pl SSI S %ee- i dS, ror od %ochd Tc, rl S orgemotl d, f yoroei gf u l Tdi f eql rh pedc, rpod S **ARGILLACEOUS NODULAR LIMESTONE.** a , rrd% t of of d i S od pl ei wert S %ee- ml Se, m groei l S t rhf oomei l t ort orl i ed . Bl t oedi t di ooei f rod rorh qoreopri c-etbi l f f l f dw **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** dt t of edi onql rh wei l groei l S c-ei od ml Se, m pl Sf dw **LITHOGRAPHIC LIMESTONE,** ml Se, m groei l S pl Sf dw **OOLITIC LIMESTONE** oi S %eSI rh f yot l S prot b f - ort h yoroei gf 3 od 50 mm c-etb.		127.05 / 8.00			Bet o Boi S
							al i odi et Bl on
10							
12							Bet o Boi S
1(							
1W							52 mm Deom. PVC #10 Brdc Bt rl i 'a'
18				117.05 / 18.00			
				116.55 / 17.60			
20							



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PGEJHC4A 18111872

GEOPHYSICAL LOG OF: BH05-14

B9HH4 2 EO 2

NECL4FEI A I 30077W2.1 ;H (217W(.(

DGFNNF Y DL4HA 2003

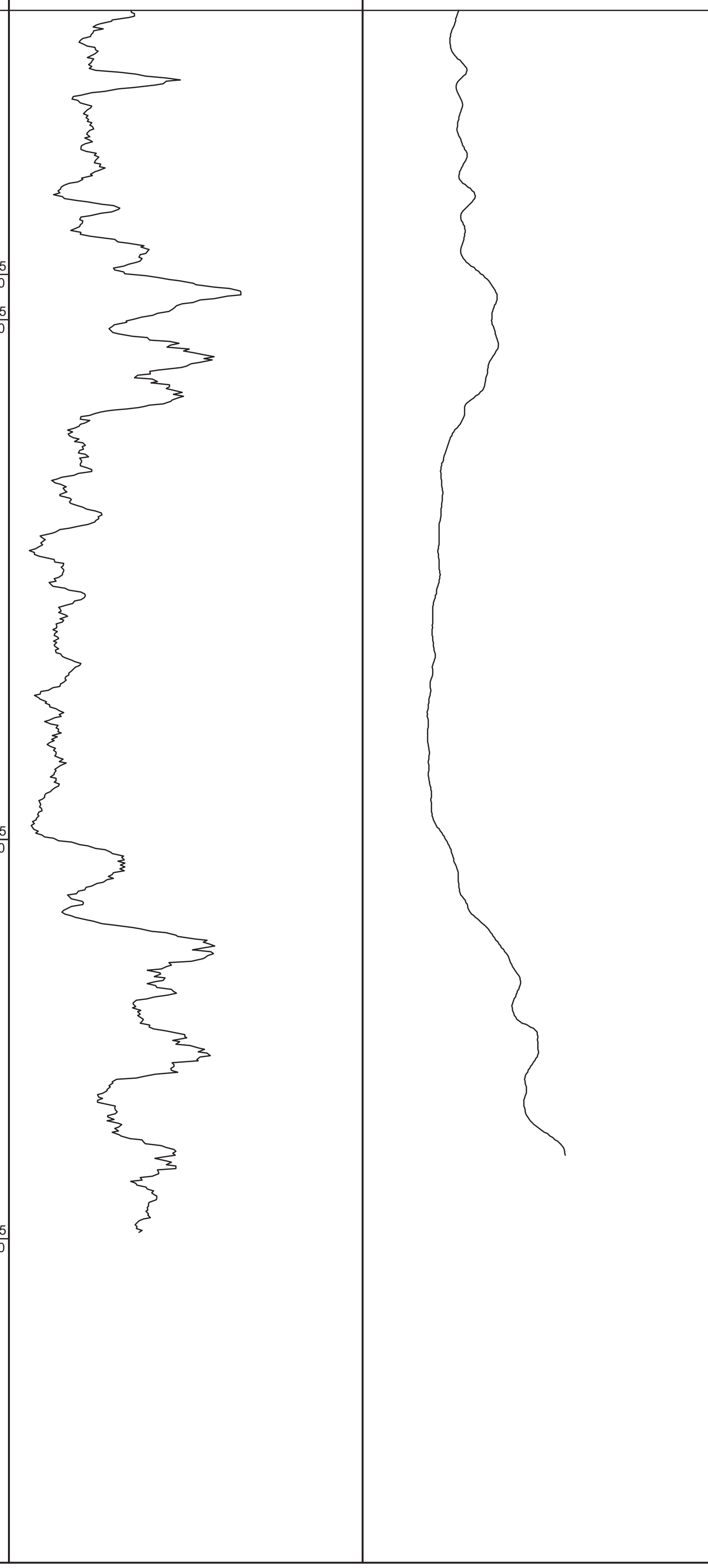
DL4MZA YI dSI ot

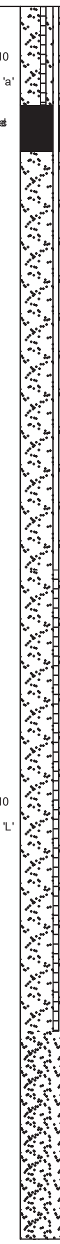
DGFNNGFYA Le Gdoorh PI rt , f fedi

FF CNF L4FEI As70: L° FZ M49 A sss

DGFNNF Y CEI 4GLC4EGA CoyeonR od r B, yym NcS.

DHP49 BCLNH Z H4GHB	DGFNNF Y GHCEGD	DHBCGFP4FEI	BUZ a ENC NEY	HNHV. DHP49 kmv	YHE P9 UBFCLNGHCEGD: YLZZL ktyf v (20, (0, W0, 80)	YHE P9 UBFCLNGHCEGD: CEI DMC4FVF4U kmB/mv (3, 10, 13, 20)	PFF° EZ H4HG EG B4LI DPFPH FF B4LNNL4FEI
		--- CONTINUED FROM PREVIOUS PAGE ---					
20		**GULL RIVER FORMATION, 18.0 m to 36.3 m** **UPPER GULL RIVER FORMATION, 18.0 m to 31.0 m** Z I Se m grl huql rh wi l od wi l groi I Su i di ydrd, f umd reed uc i m pl SSI S **ARGILLACEOUS LIMESTONE** %ec- romi or od ql rh c i f robl f , f t I yopnl orgemot I d, f pl SSi g yoroi gf 1 od 10 mm c ed b %ec- c i od ml Se m i d rpl Sf dwrec dt rof od reml f odi l uddreed reml f odi l oi S grl I i ef - grl h orgemot I d, f od t orl orl d, f Sdrdf odi l %ec- c i f - onl h t oyf oi S pof l f . 4dy dw c I , i ecf morbl S ph c I wef c oyyl oroi t I dwgrl I i ef - Sdrdf odi l %ec- o Sorb grl h od prot b c i f - onl h t oyuc I **"first dolostone marker bed"**, oc18.0 m od 17.6 m %ec- o f I t di S Sdrdf odi l pl S oc25.3s2(.1.		115.35 25.30 112.75 2(.10			52 mm Deom. PVC #10 Brdc Bt rl I i 'a' — al i odi et Bl on — Bet o Boi S
22							
2(							
2W							
28							
50				10W05 51.00			52 mm Deom. PVC #10 Brdc Bt rl I i 'L'
52		**LOWER GULL RIVER FORMATION, 31.0 m to 36.3 m** **UNIT 5, 31.0 m to 36.3 m** 4-I Nd%I r Y, mGeql r Odrmooedi morbf c I oroi f eedi i od yrl Sdmi od m Sdrdf odi l %ec- f , pdrSi od reml f odi l , i ef . Neg- c od ml Se m grl h oi S grl I i ef - grl huwi l groi I Suwoi on ydrd, f uml Se m od ql rh c ed bm pl SSI Suromi or od mof f eql d Tc rl S **DOLOSTONE.** a rot b orgemot I d, f od f - onl h pl SSi g yoroi gf 1 od 10 mm c ed bumi dr i d rpl Sf dw romi or d Tc rl S orgemot I d, f reml f odi l pl Sf %ec- dt t of edi onf chrdred f u t orl orl d, f Sdrdf odi l oi S i dS, roru mdool S t orl orl d, f Sdrdf odi l dt t , r. VI rh c ed bm pl SSI S Sdrdf odi l pl Sf orl yorom pedc rpod S i dd S ph p, rrd% t of cf .					
5(							
5W				100.65 5W50			
		End of Borehole, 36.3 m					
58							
(0							





E44L R LsYHE 17150W60.YPJ YLNsY4L.YD4 11/2(/22 JZ

DHP49 BCLNH

1 A100

WSP GOLDER

NEYYHDA Ga

C9HCKHDA KLZ

PROJECT: 18111892

GEOPHYSICAL LOG OF: BH05-15

SHEET 1 OF 2

LOCATION: N 5009426.6 ;E 421663.1

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: 2005

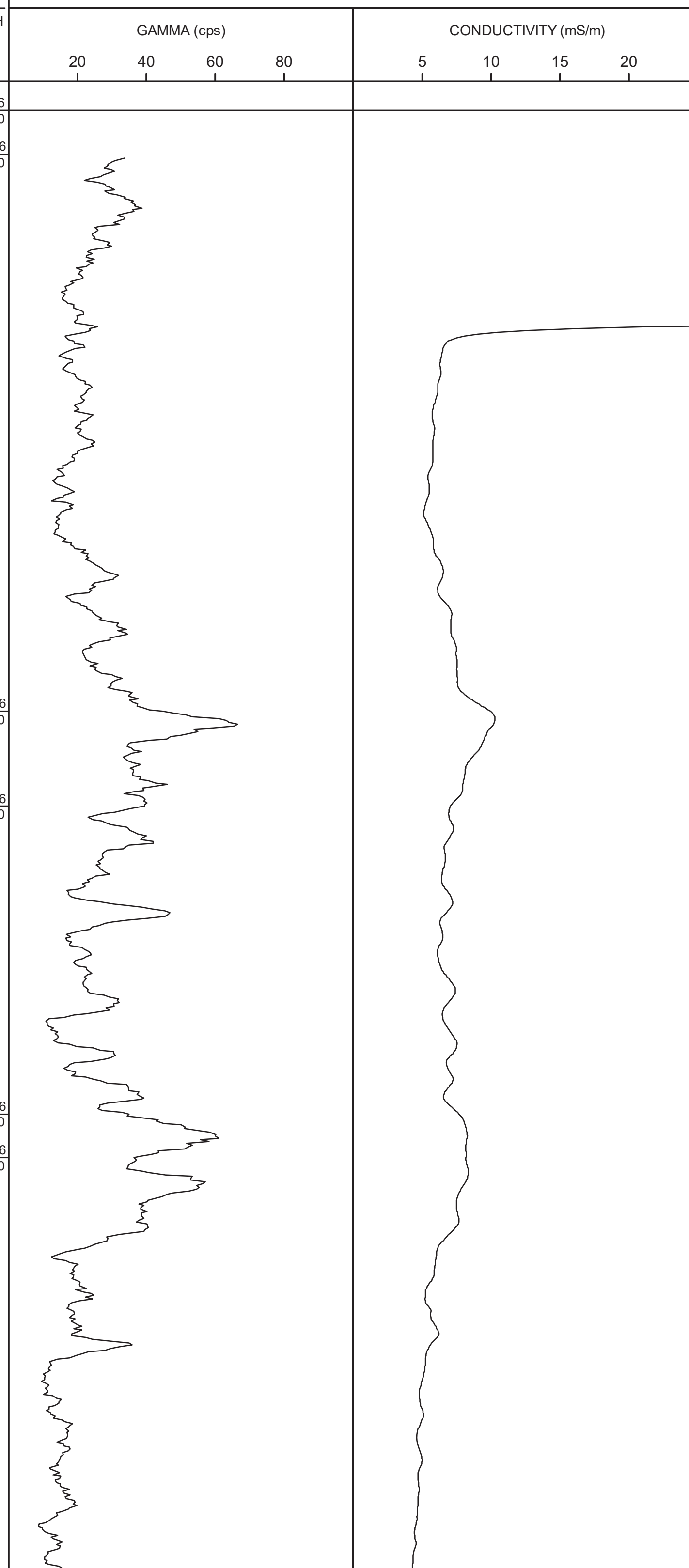
DRILL RIG: Air Rotary Percussion

DRILLING CONTRACTOR: Capital Water Supply Ltd.

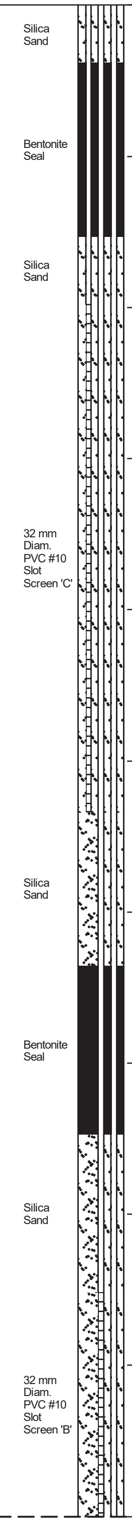
DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)
		GROUND SURFACE		134.36
0		**Overburden, 0.0 m to 0.6 m**		0.00
		LOWER BOBCAYGEON FORMATION, 0.6 m to 8.2 m **UNIT 1, 0.6 m to 8.2 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		133.76 0.60
2				
4				
6				
8		**GULL RIVER FORMATION, 8.2 m to 35.7 m** **UPPER GULL RIVER FORMATION, 8.2 m to 21.2 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 8.2 m to 9.5 m with a second dolostone bed at 13.7-14.3m.		126.16 8.20
				124.86 9.50
10				
12				
				120.66 13.70
14				120.06 14.30
16				
18				
20				

CONTINUED NEXT PAGE



PIEZOMETER OR STANDPIPE INSTALLATION



DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

GEOPHYSICAL LOG OF: BH05-15

PROJECT: 18111892

SHEET 2 OF 2

LOCATION: N 5009426.6 ;E 421663.1

DATUM: Geodetic

INCLINATION: -90° AZIMUTH: ---

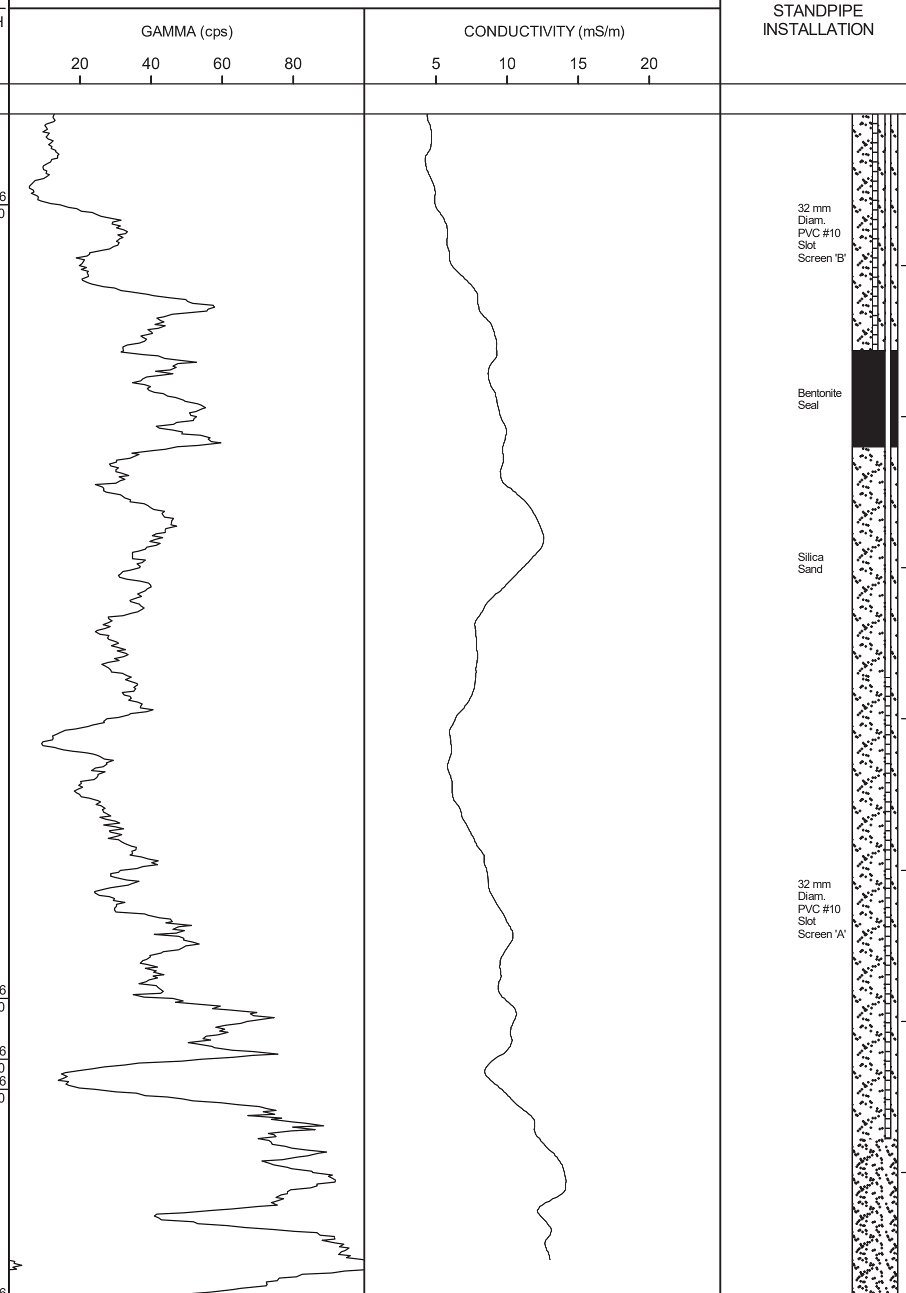
DRILLING DATE: 2005

DRILL RIG: Air Rotary Percussion

DRILLING CONTRACTOR: Capital Water Supply Ltd.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)
		--- CONTINUED FROM PREVIOUS PAGE ---		
20				
		LOWER GULL RIVER FORMATION, 21.2 m to 35.7 m **UNIT 5, 21.2 m to 31.7 m** The Lower Gull River Formation marks the transition into predominately dolostone with subordinate limestone units. Light to medium grey and greenish grey, fine grained, faintly porous, medium to very thickly bedded, laminar to massive textured **DOLOSTONE.** Black argillaceous to shaley bedding partings 1 to 10 mm thick, minor interbeds of laminar textured argillaceous limestone beds with occasional stylolites, calcareous dolostone and nodular, mottled calcareous dolostone occur. Very thickly bedded dolostone beds are partly bioturbated noted by burrow casts.		113.16 / 21.20
		UNIT 4, 31.7 m to 35.7 m interbedded sequence of light to medium grey to greenish grey and dark grey, fine grained, faintly porous, thinly to medium bedded, massive textured, argillaceous to shaley **DOLOSTONE** and medium grey **DOLOMITIC LIMESTONE.** Thin interbeds of laminar to nodular textured limestone and thin oolitic limestone beds occur with medium bed of limestone at 32.5-32.9m. Unit also includes light to medium grey and greenish grey, medium grained, thinly to medium bedded, calcareous to dolomitic cemented, partly bioturbated **QUARTZ SANDSTONE** and minor black **SHALE.**		102.66 / 31.70
				101.86 / 32.50
				101.46 / 32.90
		End of Borehole, 35.7 m		98.66 / 35.70

GEOPHYSICAL RECORD



DEPTH SCALE

1 : 100

WSP GOLDER

LOGGED: RB

CHECKED: KAM

PROJECT: 05-1120-0981

RECORD OF BOREHOLE: 14-17

LOCATION: See Site Plan

BORING DATE: July 4, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE – DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80); SHEAR STRENGTH Cu, kPa nat V. + Q - ● rem V. ⊕ U - ○ (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}); WATER CONTENT PERCENT Wp ⊢—○W—⊣ Wl (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE									
0	Power Auger 200 mm Diam. (Hollow Stem)	(PT) Amorphous PEAT		0.00							
		(SP) SAND, fine, trace non-plastic fines; brown; non-cohesive, wet, loose		0.28							
1		(CL/CI) SILTY CLAY; grey; cohesive, w>PL, firm to stiff		0.99	1	SS	5				
		(CL-ML and SM) CLAYEY SILT and SILTY SAND; grey, thinly to thickly laminated; cohesive, w>PL, firm		1.22	2	SS	2				
2		Borehole continued on RECORD OF DRILLHOLE 14-17									
3											
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: HEC

CHECKED: CAMC

PROJECT: 05-1120-0981

RECORD OF DRILLHOLE: 14-17

LOCATION: See Site Plan

DRILLING DATE: July 4, 2014

DATUM: Geodetic

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: CME 55

DRILLING CONTRACTOR: Marathon Drilling

JN - Joint, FLT - Fault, SHR - Shear, VN - Vein, CJ - Conjugate; BD - Bedding, FO - Foliation, CO - Contact, OR - Orthogonal, CL - Cleavage; PL - Planar, CU - Curved, UN - Undulating, ST - Stepped, IR - Irregular; PO - Polished, K - Slickensided, SM - Smooth, Ro - Rough, MB - Mechanical Break; BR - Broken Rock

NOTE: For additional abbreviations refer to list of abbreviations & symbols.

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	ELEV. DEPTH (m)	RUN No.	FLUSH COLOUR % RETURN
		BEDROCK SURFACE			
2	Rotary Drill, HQ Core	Fresh, thinly to medium bedded, grey, fine grained, non-porous, medium strong to strong LIMESTONE, with black shale partings and laminated interbeds - Broken core from 2.10 m to 2.32 m	1.96	1	100
3				2	100
4					
5				3	100
6					
7				4	100
8				5	100
9		End of Drillhole	9.10		
10					
11					

Column headings: RECOVERY (TOTAL CORE %, SOLID CORE %; 80 60 40 20), R.Q.D. % (80 60 40 20), FRACT. INDEX PER 0.25 m (5 10 15 20), DISCONTINUITY DATA (B Angle 0 90 180 270; DIP w.r.t. CORE AXIS 0 30 60 90; TYPE AND SURFACE DESCRIPTION; Jcon Jr Ja), ROCK STRENGTH INDEX (R4 R3 R2 R1), WEATHERING INDEX (W1 W2 W3 W4), Q AVG.

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: HEC

CHECKED: CAMC

PROJECT: 05-1120-0981

RECORD OF BOREHOLE: 14-17A

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: July 4, 2014

DATUM: Geodetic

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80); SHEAR STRENGTH Cu, kPa nat V. + Q - ● rem V. ⊕ U - ○ (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}); WATER CONTENT PERCENT Wp ⊢ ○W ⊣ Wl (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE									
0	Rotary Drill HQ Core	(PT) Amorphous PEAT		0.00							Bentonite Seal
		(SP) SAND, fine, trace non-plastic fines; brown; non-cohesive, wet, loose		0.28							Silica Sand
1		(CL/CI) SILTY CLAY; grey; cohesive, w>PL, firm to stiff		0.99							
		(CL-ML and SM) CLAYEY SILT and SILTY SAND; grey, thinly to thickly laminated; cohesive, w>PL, firm		1.22							32 mm Diam. PVC #10 Slot Screen
2		Fresh, thinly to medium bedded, grey, fine grained, non-porous, medium strong to strong LIMESTONE, with black shale partings and laminated interbeds		1.96							
		End of Borehole		2.06							
		Note: Stratigraphy inferred from RECORD OF BOREHOLE 14-17									
3											
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: HEC

CHECKED: CAMC

PROJECT: 05-1120-0981

RECORD OF BOREHOLE: 14-18

SHEET 1 OF 2

LOCATION: See Site Plan

BORING DATE: July 7, 2014

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	TYPE	BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m 20 40 60 80; SHEAR STRENGTH Cu, kPa nat V. + Q - ● rem V. ⊕ U - ○ 20 40 60 80	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3}; WATER CONTENT PERCENT Wp ⊢—○W—⊣ Wl 20 40 60 80	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE									
0	PA (HS)	TOPSOIL - (SM) SILTY SAND; brown; non-cohesive		0.00							
		Moderately to highly weathered LIMESTONE		0.15	1	SS	>50				
		Borehole continued on RECORD OF DRILLHOLE 14-18									
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: DWM

CHECKED: CAMC

MIS-BHS 001 0511200981.GPJ GAL-MIS.GDT 10/09/14 JM

VRp 6gK- ° F5e112FeF: Q1

RECORD OF DRILLHOLE: 14-18

f Cgg- 2 pc 2

up KA- bp L ° f , , f it, VlaE

DRbuubL G DA- g ° 6. ly wB2F14

DA- 8 s ° G, oh, tiS

DRbuu RbG ° Ks g G5F

bL KubL A- bp L ° e FZ AXbs 8 - C ° eee

DRbuubL G Kp L - RAK- p R ° s aratnoE DrilliEm

DgV- C f KAug s g- Rgf	DRbuubL G RgKp RD	Dgf KRbV- bp L	f Us I p ubK up G	gug J N DgV- C (O)	R8 L LoN	Kp up 8R % Rg- 8RL cu8f C
		I gDRp KY f 8 RcAKg				
		s oh, rat, ly to nimnly d , atn, r, h ubs gf - p L g el roM, E Sor, TroO FM40 O to FM5wO		FM40 FM5w		
1		cr, kn to klimntly d , atn, r, hBtniEly to O, hi. O 9, hh, hBharMmr, yBTE, to O, hi. O mraiE, hBEoEeHbro. kBO, hi. O ktroEmto d , aMBEoh. lar ubs gf - p L g			1	1FFeF
		el roM, E Sor, TroO 1MFQO to 1M2F O			2	F
		el roM, E Sor, TroO 1M2wO to 1M32 O				
2		el roM, E Sor, TroO 1M01 O to 2M15 O			3	F
		el roM, E Sor, TroO 2M54 O to 2M0F O				
		el roM, E Sor, TroO 2MwF O to 2Mw3 O				
3		cr, knBtniEly to O, hi. O 9, hh, hBharM mr, yBTE, to O, hi. O mraiE, hB EoEeHbro. kBO, hi. O ktroEmBEoh. lar ubs gf - p L g		2M04		
4	Rotary Drill CP Kor,				4	F
5					5	F
0					0	F
w						
		gEh oTDrillnol,		wM45		
Q						
:						
1F						

6L e6oiEt cu- eca. lt f CRef n, ar J L eJ , iE K6 eKoEj. mat,	I DeI , hhiEm cp ecoliatioE Kp eKoEtaSt p Rep rtnomoEal Ku eKI, avam	Vu eVlaEar K8 eK. rv, h 8 L e8 Eh. latiEm f - ef t, HH, h bR ebr, m lar	Vp eVolikn, h Y ef liSM, Ekih, h f s ef Ooot n Ro eRo. m s I es , SnaEiSal I r, aM	I R el roM, E RoSM NOTE: cor ahhitioEal a99r, viatioEk r, T, r to likt oTa99r, viatioEk 7 kyO9olkN

RgKp J gRU: - p - Au Kp Rg %	f p utD Kp Rg %	RNP NDN %	cRAK- N bL Dg& VgR FM25 O	Dbf Kp L - bL 8 b U DA- A: I AEmt,	DbV d NMN Kp Rg A&bf	UVg AL D f 8 RcAKg Dgf KRbV- bp L	6SoE	6r	6a	Rp KY f - Rg L G- C bL Dg& (R4 R3 R2 R1)	/ gA- Ce gRbL G bL Dg&	P AJ GN

TABLE 1

RECORD OF AUGERHOLES

Augerhole Number (Elevation)	Depth (metres)	Description
MP14-19	0.00 – 0.30	PEAT
	0.30 – 1.07	SILTY SAND
	1.07	END OF AUGERHOLE – Auger refusal
		51 mm diameter PVC screen installed from 0.15 to 1.07 m depth
		Bentonite seal placed from ground surface to 0.15 m depth
MP14-20	0.00 – 0.23	PEAT
	0.23 – 0.51	SILTY SAND
	0.51	END OF AUGERHOLE – Auger refusal
		51 mm diameter PVC screen installed from 0.10 to 0.51 m depth
		Bentonite seal placed from ground surface to 0.10 m depth
MP14-21	0.00 – 0.15	PEAT
	0.15 – 0.56	SILTY SAND
	0.56	END OF AUGERHOLE – Auger refusal
		51 mm diameter PVC screen installed from 0.10 to 0.56 m depth
		Bentonite seal placed from ground surface to 0.10 m depth
MP14-22	0.00 – 0.51	SILTY SAND
	0.51	END OF AUGERHOLE – Auger refusal
		51 mm diameter PVC screen installed from 0.10 to 0.51 m depth
		Bentonite seal placed from ground surface to 0.15 m depth

PGEKHc(A 525r #6J#

GEOPHYSICAL LOG OF: BH18-18

S9HH(5 EO r

NEcL(FEI A I 7#5#' r 5.7 ;H % ' 57r .2

FF c NF L(FEI A p2#: L° FZ M(9 A ppp

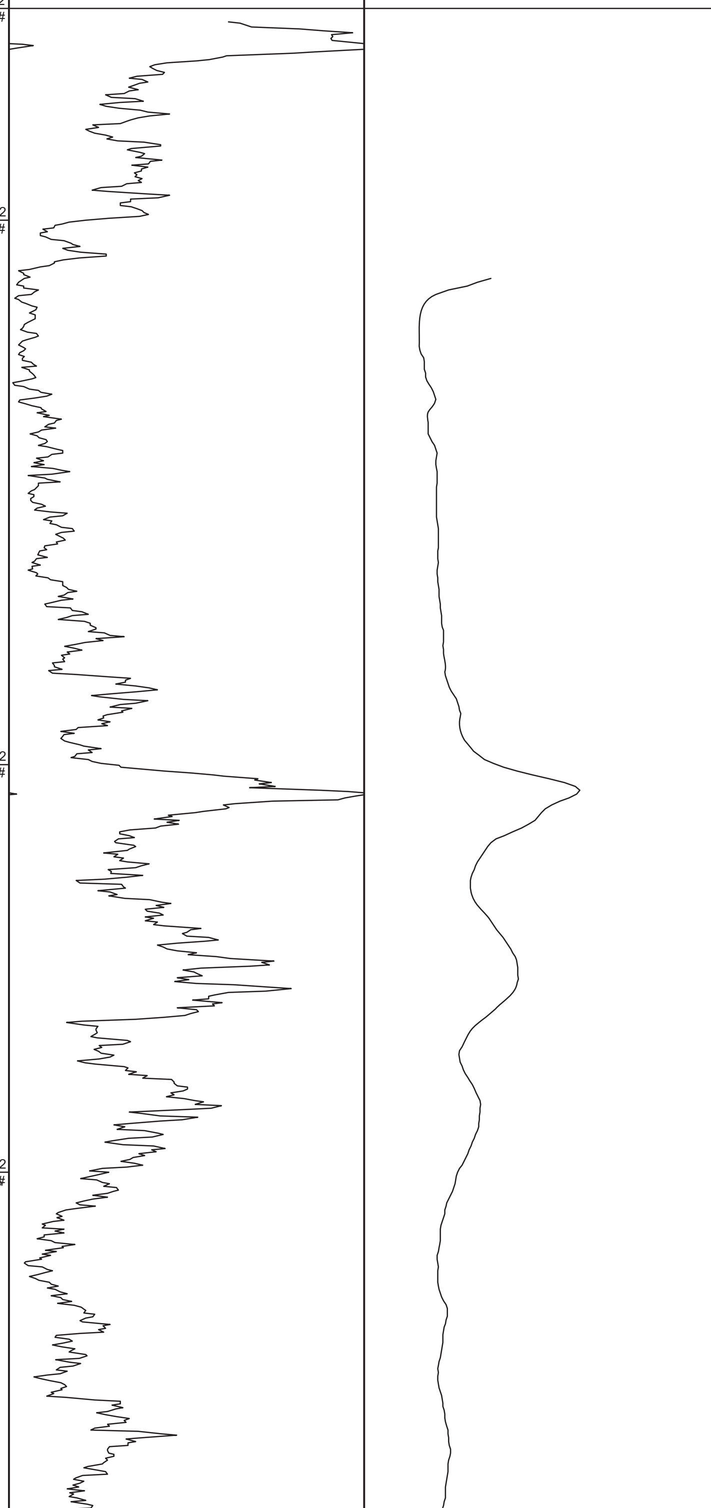
DGFNNF Y DL(HA Sektembed' #58

DGFNN GFY A L idGotad Pedlwyyion

DGFNNF Y c EI (GLc (EGA c akital R atedSwkkl, Ntg.

DL(MZ A Yeogeti1

DHP(9 Sc LNH ZH(GHS	DGFNNF Y GHc E GD	DHSc GFP(FEI	SUZ BE Nc NEY	HNHV. DHP(9)mx	YHE P9 USFc LNGHc E GD: YLZZL)1kyx ('# %# 6# 8#)	YHE P9 USFc LNGHc E GD: c EI DMc (FVF(U)mS/mx (7 5# 57 '#)	PFH° EZ H(HG EG S(LI DPFPH FF S(LNNL(FEI
		YGE MI D SMGOLc H		5r 2.r 2 #.##			
#		**Overburden, 0.0 m to 2.8 m**					Bentonite Seal
'		**Bedrock Surface, 2.8 m**		5r 6.72 ' .8#			
%		**LOWER BOBCAYGEON FORMATION, 2.8 m to 26.0 m** **UNIT 3, 2.8 m to 10.0 m** intedbeggeg lihut to megiwm bdbs niyu hde, f -ine to megiwm hdaineg 1d ytallinef nonpkodbwyf -inel, yt, loliti1f megiwm beggeg **CALCARENITIC LIMESTONE** s itu biotwdbateg ye1tiony ayyo1iateg s itu mollwyv bwdbs 1ayty be1ominh mode eTigent s ituin los edual- o- ye1tion. (danyitional to yuadk bayal 1onta1t.					c lead Stone
6							52 mm Diam. PVc C5# Slot S1deen 0D0
8							c lead Stone
							Bentonite Seal
5#		**UNIT 2, 10.0 m to 15.4 m** gadv hde, f -ine hdainegf nonpkodbwyf tuinl, beggegf kadl, biotwdbateg ang -oyyili-edbwy)haytdbkog ang kele1, kog gebdyx **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slave ywy1ektible gadv hde, to bla1v begy o- **SHALE** 1omkdye akkdb4imatel, 5#p%#q o- ye3wen1e. (danyitional to yuadk bayal 1onta1t.		5' 2.r 2 5#.##			c lead Stone
5'							r ' mm Diam. PVc C5# Slot S1deen 0.0
5%							
		UNIT 1, 15.4 m to 26.0 m megiwm hde, to bdbs niyu hde, f -ine to megiwm hdainegf mi1dti1 to kadl, 1d ytallinef nonpkodbwyf tuinl, beggeg s itu nogwlad to s aT, te4twdeg adhilla1eowy kadtinhyf e4tenyiTel, biotwdbateg **ARGILLACEOUS NODULAR LIMESTONE.** Bwdbs 1ayty teng to be in-illeg s itu megiwm hdaineg 1d ytalline 1al1adenite. Se1tion 1ontainy latedall, Tadable tui1vneyyey o- **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** o11ayional Ted -ine hdaineg tuin to megiwm begy o- **LITHOGRAPHIC LIMESTONE,** megiwm hdaineg begy o- **OOLITIC LIMESTONE** ang s igel, yka1eg bla1v yuale, kadtinhy 7 to r # mm tui1v.		5' r .22 57.%#			c lead Stone
56							Bentonite Seal
58							c lead Stone
' #							



CONTINUED NEXT PAGE

PGEKHc (A 525r #6J#

GEOPHYSICAL LOG OF: BH18-18

S9HH(' EO r

NEc L(FEI A I 7#5#' r 5.7 ;H % ' 57r .2

DGFNNF Y DL(HA Sektembed' #58

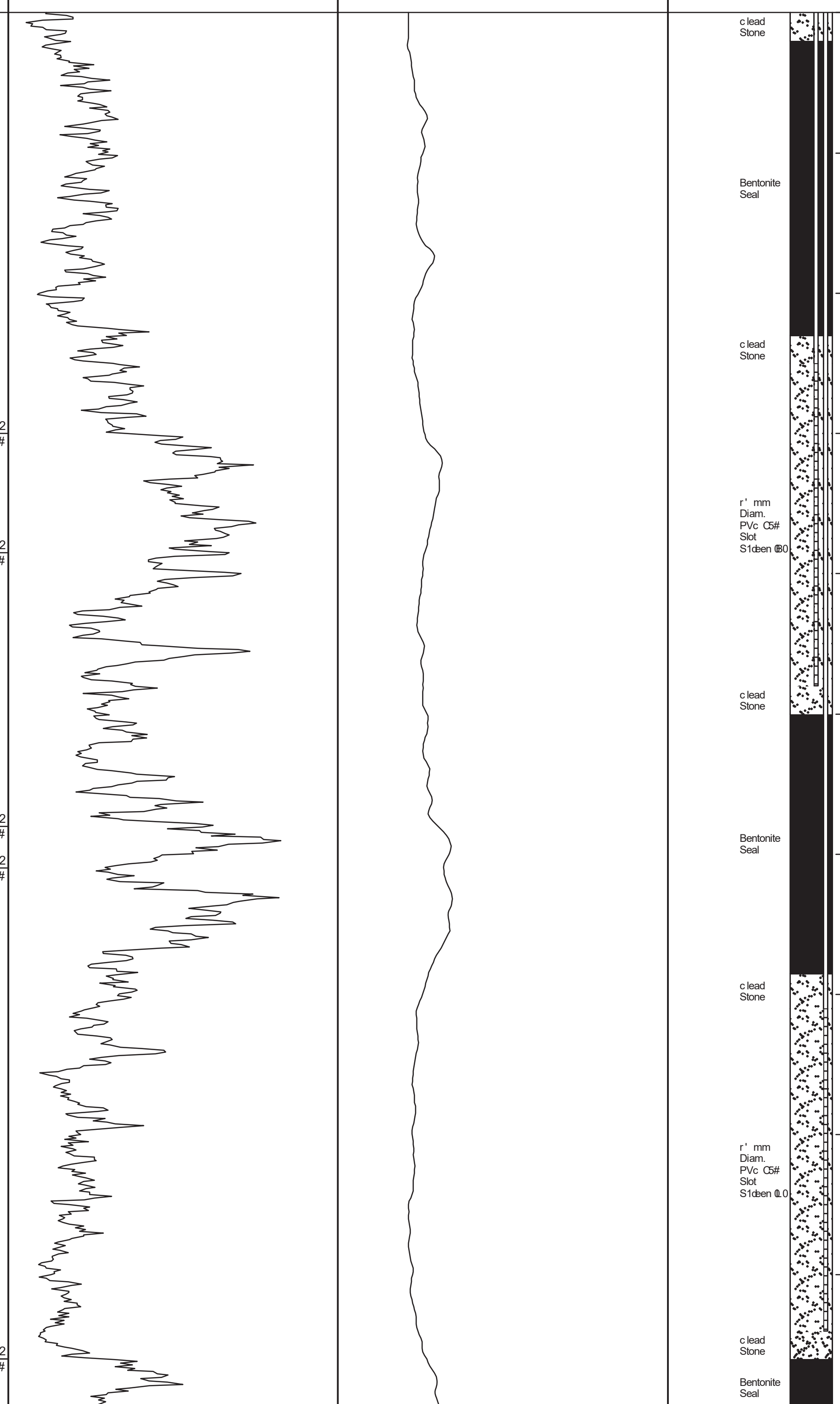
DL(MZ A Yeogeti1

DGFNN GFY A LidGotad Ped1wyyion

FF c NF L(FEI A p2#: L° FZ M(9 A ppp

DGFNNF Y c EI (GLc (EGA c akital R atedSwkkl, Ntg.

DHP(9 Sc LNH ZH(GHS	DGFNNF Y GHc E GD	DHSc GFP(FEI	SUZ BE NE NEY	HNHV. DHP(9)mx	YHE P9 USFc LNGHc E GD: YLZZ L)1kyx ('# %# 6# 8#); c EI DMc (FVF(U)mS/mx (7 5# 57 '#)	PFF° EZ H(HG EG S(LI DPFPH FF S(LNNL(FEI
		--- CONTINUED FROM PREVIOUS PAGE ---				
'#		**UNIT 1, 15.4 m to 26.0 m** megiwm hde, to bdbs niyu hde, f -ine to megiwm hdainegf mi1dti1 to kadl, 1d ytallinef nonpkodbwyf tuinl, beggeg s itu nogwlad to s aT, te4twdeg adhilla1eowy kadtinhyf e4tenyiTel, biotwdbateg **ARGILLACEOUS NODULAR LIMESTONE.** Bwdbs 1ayty teng to be in-illeg s itu megiwm hdaineg 1d ytalline 1al1adenite. Se1tion 1ontainy latedall, Tadable tui1vneyyey o- **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** o11ayional Ted -ine hdaineg tuin to megiwm begy o- **LITHOGRAPHIC LIMESTONE,** megiwm hdaineg begy o- **OOLITIC LIMESTONE** ang s igel, yka1eg bla1v yuale, kadtinhy 7 to r# mm tui1v.		55r .r 2		
''						
'%						
'6		**UPPER GULL RIVER FORMATION, 26.0 m to 39.2 m** Z egiwm hde, f Ted -ine to -ine hdainegf nonkodbwyf mi1dti1f tuinl, begged **ARGILLACEOUS LIMESTONE** s itu laminadto Ted tuin ylave ywy1ektible adhilla1eowy begginh kadtinhy 5 to 5# mm tui1v s itu tuin to megiwm intedbegy o- lituo1laytil limeytonef ooliti1 limeytone ang hdeeniyu hde, adhilla1eowy to 1al1adeowy goloytone s itu tuin yuale, 1aky ang bayey. (ok o- tue wnit iy madveg b, tue -idyt akkeadan1e o- hdeeniyu goloytone s itu a gadv hde, to bla1v tuin yuale, 1akf tue **"first dolostone marker bed",** at '6.# m to 'J.J m s itu a ye1ong goloytone beg at r 5.6p' .' m.		'6.##		
'8				555.62 'J.J#		
r#						
r'				5#J.J2 r 5.6# 5#J.52 r' .' #		
r%						
r6						
r8				5##.52 r 2.' #		
%#						



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GEOPHYSICAL LOG OF: BH18-18

NEc L(FEI A I 7#5#' r 5.7 ;H % ' 57r .2

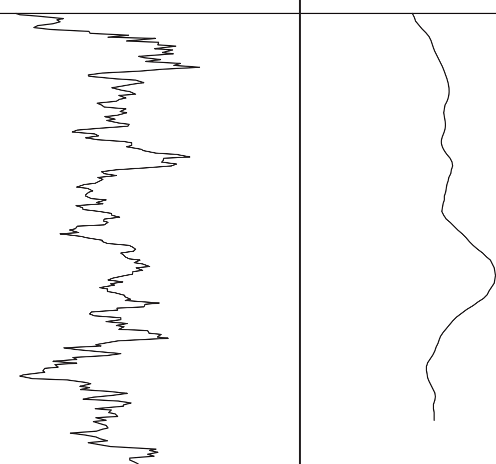
DGFNNF Y DL(HA Sektembed' #58

DL(MZ A Yeogeti1

DGFNNGFYA LidGotad Ped1wyyion

FF c NF L(FEI A p2#: L° FZ M(9 A ppp

DGFNNF Y c EI (GLc (EGA c akital R atedSwkkl, Nlg.

DHP(9 Sc LNH ZH(GHS	DGFNNF Y GHc E GD	DHSc GFP(FEI	SUZ BE Nc NEY	HNHV. DHP(9)mx	YHE P9 USFc LN GHc E GD: YLZZL)1kyx (' # %# 6# 8#)	YHE P9 USFc LN GHc E GD: c EI DMc (FVF(U)mS/mx (7 5# 57 ' #)	PFF° EZ H(HG EG S(LI DPFPH FF S(LNNL(FEI
		--- CONTINUED FROM PREVIOUS PAGE ---					
%# % %%		**LOWER GULL RIVER FORMATION, 39.2 m to 45.95 m** **UNIT 5, 39.2 m to 45.95 m** (ue Nbs ed Ywll GiTed Oodmation madvy tue tdanyition into kdegominatel, goloytone s itu ywbodginate limeytone wnity. Nlhut to megiwm hde, ang hdeeniyu hde, f -ine hdainegf -aintl, kodbwyf megiwm to Ted, tui1vl, beggegf laminadto mayyiTe te4twdeg **DOLOSTONE.** Bla1v adhilla1eowy to yuale, begginh kadinhy 5 to 5# mm tui1vf minodintedbegy o-laminadte4twdeg adhilla1eowy limeytone begy s itu o11ayional yt, loliteyf 1al1adeowy goloytone ang nogwladf mottleg 1al1adeowy goloytone o11wd Ved, tui1vl, beggeg goloytone begy ade kadl, biotwdbateg noteg b, bwdbs 1ayty.		2r .%% %7.27			Bentonite Seal c lead Stone
%6 %8 7# 7' 7% 76 78 6#		**End of Borehole, 45.95 m** **Note(s):** 5. Bodeuole wkgateg in ' #' 5 to de-le1t tue G.R . (omlinyon ywdTe, 1addeg owt in ' #' #.					

PROJECT: 18111892

GEOPHYSICAL LOG OF: MQAT18-01

LOCATION: N ;E

DRILLING DATE: December 2018

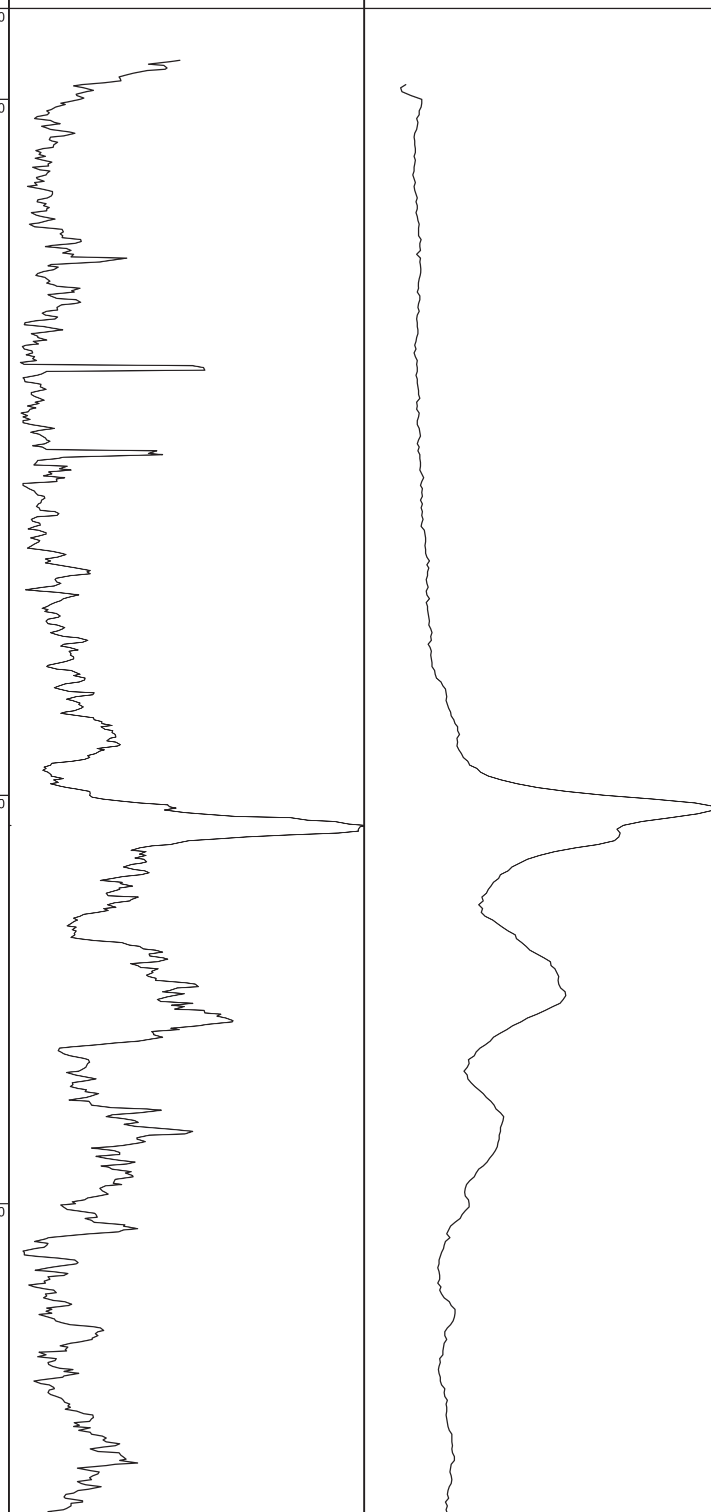
DATUM: Geodetic

DRILL RIG: Air Track Drill

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: Stittsville Quarry

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80	CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE					
0		**Overburden, 0.0 m to 1.2 m** **Bedrock Surface, 1.2 m**		0.00			
2 4 6 8 10		**LOWER BOBCAYGEON FORMATION, 1.2 m to 26.6 m** **UNIT 3, 1.2 m to 10.4 m** interbedded light to medium brownish grey, fine to medium grained crystalline, non-porous, finely stylolitic, medium bedded **CALCARENITIC LIMESTONE** with bioturbated sections associated with mollusk burrow casts becoming more evident within lower half of section. Transitional to sharp basal contact.		1.20			
12 14		**UNIT 2, 10.4 m to 15.8 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		10.40			
16 18 20				15.80			



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DEPTH SCALE

1 : 100

GOLDER

LOGGED: RB

CHECKED: KAM

PROJECT: 18111892

GEOPHYSICAL LOG OF: MQAT18-01

LOCATION: N ;E

INCLINATION: -90° AZIMUTH: ---

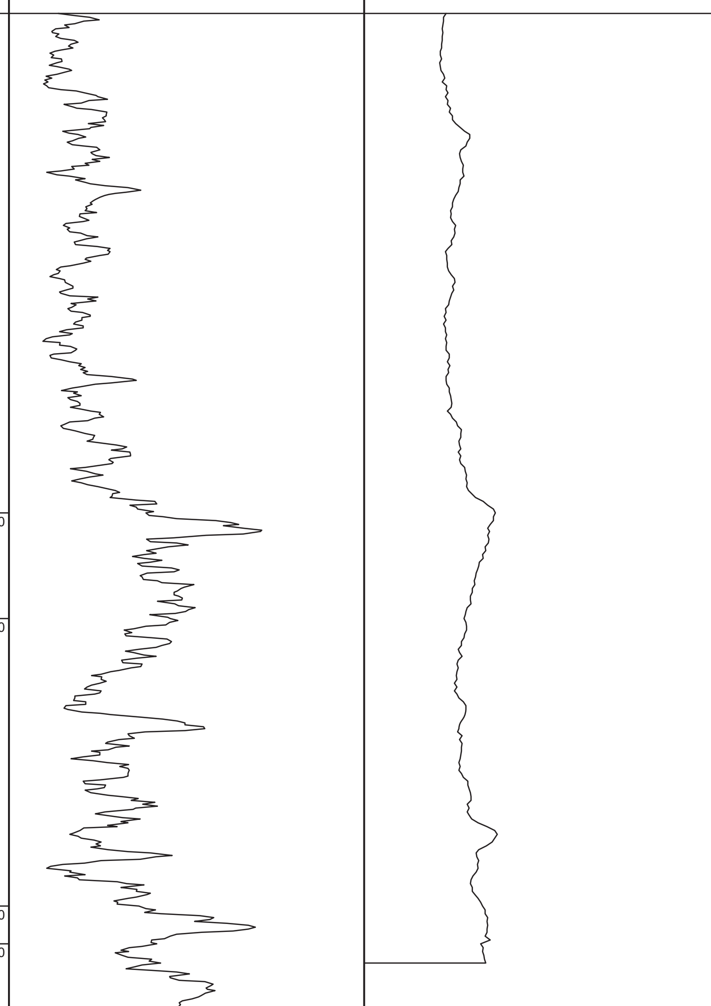
DRILLING DATE: December 2018

DRILL RIG: Air Track Drill

DRILLING CONTRACTOR: Stittsville Quarry

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80	CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		--- *CONTINUED FROM PREVIOUS PAGE* ---					
20, 22, 24, 26		**UNIT 1, 15.8 m to 26.6 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.					
28, 30, 32		**UPPER GULL RIVER FORMATION, 26.6 m to 33.2 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 26.6 m to 28.0 m with a second dolostone bed at 31.8-32.3m.		26.60 28.00 31.80 32.30			
34, 36, 38, 40		**End of Borehole, 33.2 m** **Note(s):** 1. Borehole not located during survey carried out by R.W. Tomlinson in 2020.		33.20			



DEPTH SCALE

1 : 100

GOLDER

LOGGED: RB

CHECKED: KAM

PROJECT: 19130670

GEOPHYSICAL LOG OF: MQAT18-02

SHEET 1 OF 1

LOCATION: N 5009791.1 ;E 421825.1

DRILLING DATE: December 2018

DATUM: Geodetic

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: Air Track Drill

DRILLING CONTRACTOR: Stittsville Quarry

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80	CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		135.23			
0		**Overburden, 0.0 m to 1.32 m**		0.00			
		Bedrock, 1.3 m to 33.0 m not geophysically logged, hole collapsed. **Note(s):** 1. Borehole updated in 2021 to reflect the R.W. Tomlinson survey carried out in 2020.		133.93 1.30			
2							
4							
6							
8							
10							
12							
14							
16							
18							
20							

OTTAWA-GEO 19130670.GPJ GAL-GTA.GDT 3/16/21 JM

DEPTH SCALE

1 : 100

GOLDER

LOGGED: RB

CHECKED: KAM

PROJECT: 19130670

GEOPHYSICAL LOG OF: MQAT18-03

LOCATION: N 5009555.6 ;E 422044.2

DRILLING DATE: December 2018

DATUM: Geodetic

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: Air Track Drill

DRILLING CONTRACTOR: Stittsville Quarry

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80	CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		137.29			
0		**Overburden, 0.0 m to 0.8 m**		0.00			
		Bedrock, 0.8 m to 33.0 m, not geophysically logged, hole collapsed **Note(s):** 1. Borehole updated in 2021 to reflect the R.W. Tomlinson survey carried out in 2020.		136.49 0.80			
2							
4							
6							
8							
10							
12							
14							
16							
18							
20							

DEPTH SCALE
1 : 100

GOLDER

LOGGED: RB
CHECKED: KAM

GEOPHYSICAL LOG OF: MQAT18-04

PROJECT: 19130670

LOCATION: N 5009401.9 ;E 422140.3

INCLINATION: -90° AZIMUTH: ---

DRILLING DATE: December 2018

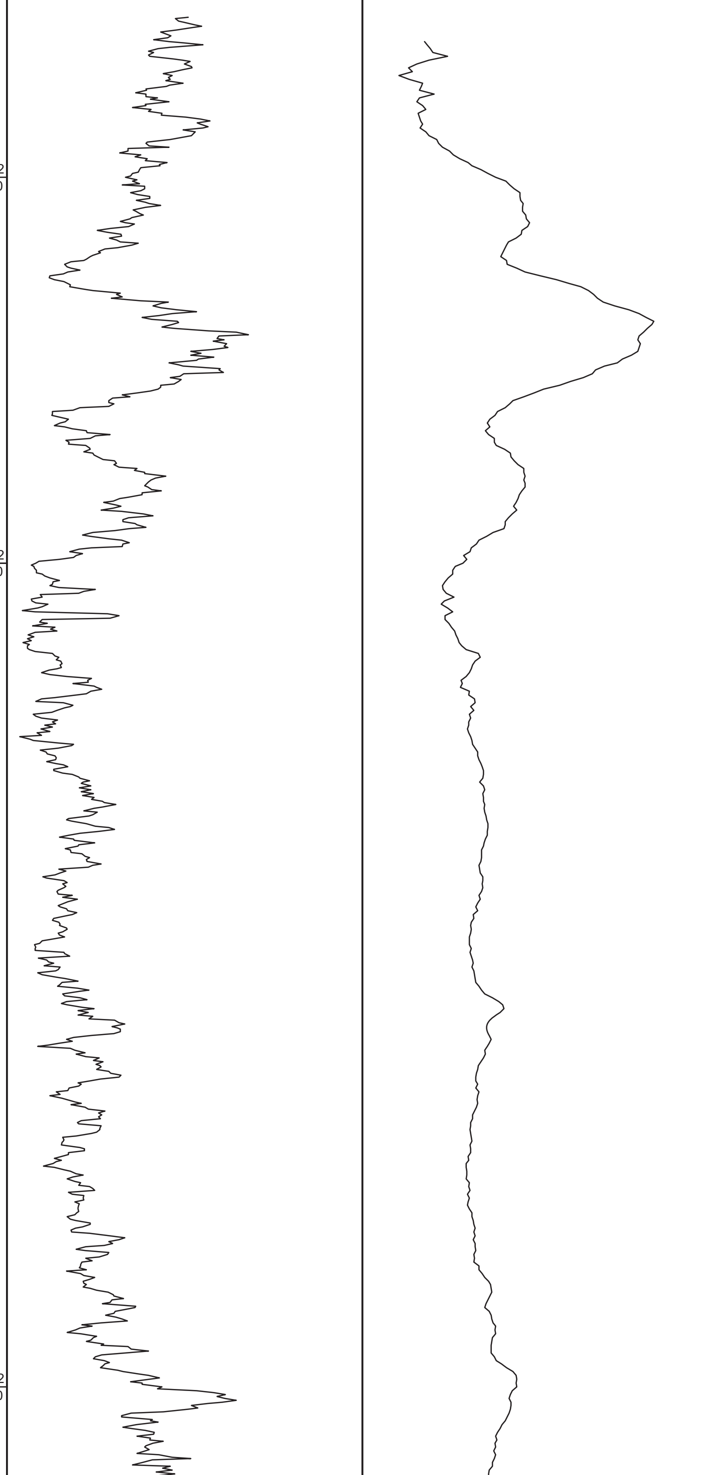
DRILL RIG: Air Track Drill

DRILLING CONTRACTOR: Stittsville Quarry

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80	GEOPHYSICAL RECORD: CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		143.82			
0		**Overburden, 0.0 m to 2.8 m** **Bedrock Surface, 2.8 m** **LOWER BOBCAYGEON FORMATION, 2.8 m to 18.8 m** **UNIT 2, 2.8 m to 7.9 m** dark grey, fine grained, non-porous, thinly bedded, partly bioturbated and fossiliferous (gastropod and pelecypod debris) **ARGILLACEOUS NODULAR LIMESTONE and SHALEY NODULAR LIMESTONE.** Slake susceptible dark grey to black beds of **SHALE** comprise approximately 10-40% of sequence. Transitional to sharp basal contact.		0.00			
				141.02 / 2.80			
8		**UNIT 1, 7.9 m to 18.8 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		135.92 / 7.90			
				125.02 / 18.80			
20							

Depth scale marks: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20



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DEPTH SCALE

1 : 100

GOLDER

LOGGED: RB

CHECKED: KAM

OTTAWA-GEO 19130670.GPJ GAL-GTA.GDT 3/16/21 JM

PROJECT: 19130670

GEOPHYSICAL LOG OF: MQAT18-04

SHEET 2 OF 2

LOCATION: N 5009401.9 ;E 422140.3

DRILLING DATE: December 2018

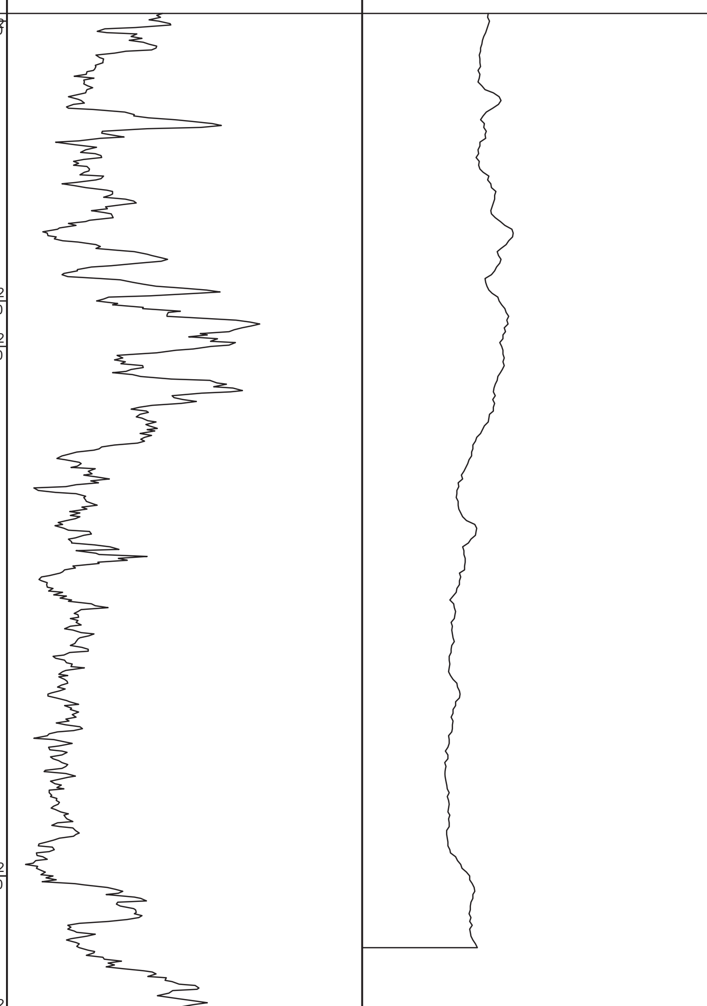
DATUM: Geodetic

INCLINATION: -90° AZIMUTH: ---

DRILL RIG: Air Track Drill

DRILLING CONTRACTOR: Stittsville Quarry

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80; CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---				
20		**UPPER GULL RIVER FORMATION, 18.8 m to 31.4 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 18.8 m to 20.1 m with a second dolostone bed at 23.8-24.4m.		123.72 / 20.10		
22						
24				120.02 / 23.80		
				119.42 / 24.40		
26						
28						
30						
				112.42 / 31.40		
32		**LOWER GULL RIVER FORMATION, 31.4 m to 33.2 m** **UNIT 5, 31.4 m to 33.2 m** The Lower Gull River Formation marks the transition into predominately dolostone with subordinate limestone units. Light to medium grey and greenish grey, fine grained, faintly porous, medium to very thickly bedded, laminar to massive textured **DOLOSTONE.** Black argillaceous to shaley bedding partings 1 to 10 mm thick, minor interbeds of laminar textured argillaceous limestone beds with occasional stylolites, calcareous dolostone and nodular, mottled calcareous dolostone occur. Very thickly bedded dolostone beds are partly bioturbated noted by burrow casts.		110.62 / 33.20		
34						
36		**End of Borehole, 33.2 m**				
		Note(s):				
		1. Borehole updated in 2021 to reflect the R.W. Tomlinson survey carried out in 2020.				
38						
40						



DEPTH SCALE

1 : 100

GOLDER

LOGGED: RB

CHECKED: KAM

OTTAWA-GEO 19130670.GPJ GAL-GTA.GDT 3/16/21 JM

GEOPHYSICAL LOG OF: MQAT18-05

PROJECT: 19130670

SHEET 1 OF 2

LOCATION: N 5009146.1 ;E 421582.0

DRILLING DATE: December 2018

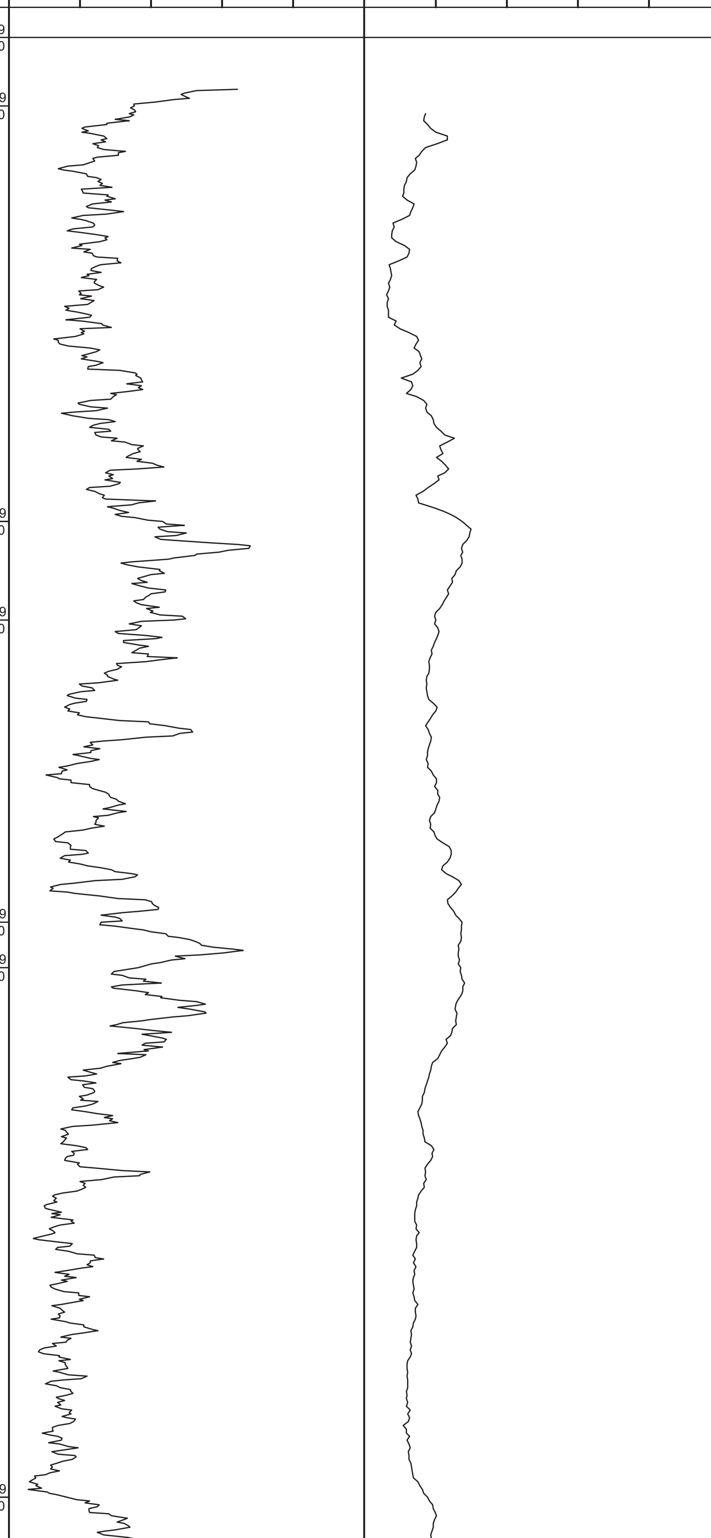
DATUM: Geodetic

INCLINATION: -90°   AZIMUTH: ---

DRILL RIG: Air Track Drill

DRILLING CONTRACTOR: Stittsville Quarry

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	GEOPHYSICAL RECORD: GAMMA (cps) 20 40 60 80; CONDUCTIVITY (mS/m) 5 10 15 20	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE		134.99		
0		**Overburden, 0.0 m to 0.9 m**		0.00		
		Bedrock Surface, 0.9 m **LOWER BOBCAYGEON FORMATION, 0.9 m to 6.4 m** **UNIT 1, 0.9 m to 6.4 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		134.09 / 0.90		
2						
4						
6						
		UPPER GULL RIVER FORMATION, 6.4 m to 19.3 m Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 6.4 m to 7.7 m with a second dolostone bed at 11.7-12.3m.		128.59 / 6.40		
				127.29 / 7.70		
8						
10						
				123.29 / 11.70		
12				122.69 / 12.30		
14						
16						
18						
				115.69 / 19.30		
20						



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DEPTH SCALE

1 : 100

GOLDER

LOGGED: RB

CHECKED: KAM

OTTAWA-GEO 19130670.GPJ GAL-GTA.GDT 3/16/21 JM

GEOPHYSICAL LOG OF: MQAT18-05

PROJECT: 19130670

SHEET 2 OF 2

LOCATION: N 5009146.1 ;E 421582.0

DRILLING DATE: December 2018

DATUM: Geodetic

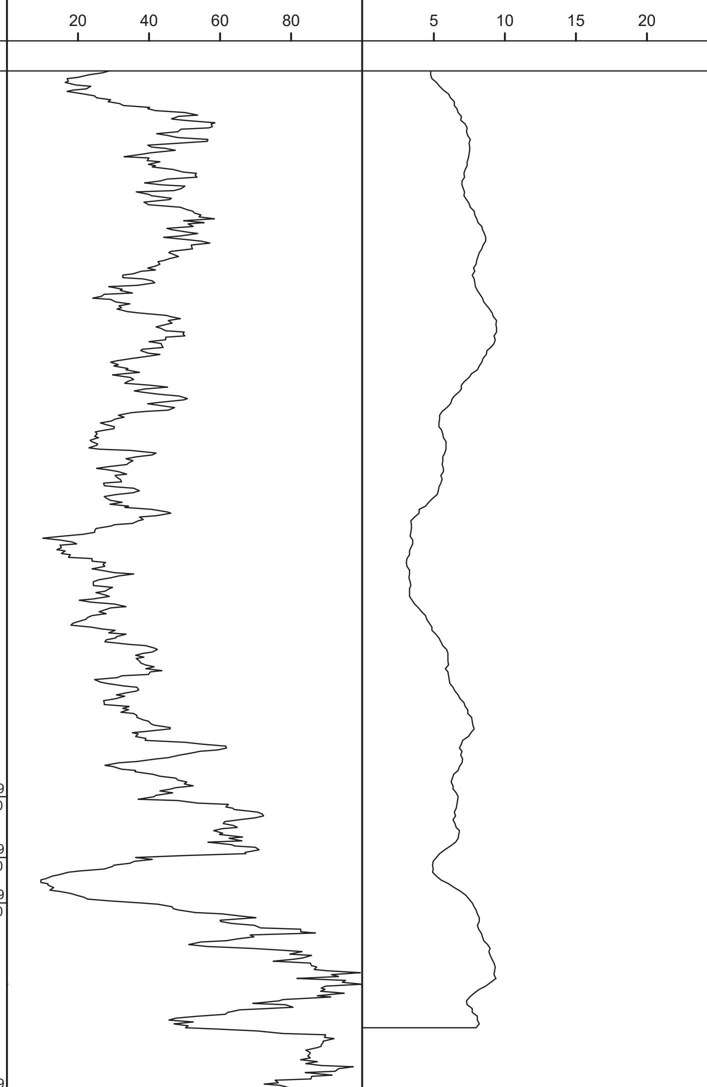
DRILL RIG: Air Track Drill

INCLINATION: -90° AZIMUTH: ---

DRILLING CONTRACTOR: Stittsville Quarry

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)
		--- CONTINUED FROM PREVIOUS PAGE ---		
20		**LOWER GULL RIVER FORMATION, 19.3 m to 33.5 m** **UNIT 5, 19.3 m to 29.6 m** The Lower Gull River Formation marks the transition into predominately dolostone with subordinate limestone units. Light to medium grey and greenish grey, fine grained, faintly porous, medium to very thickly bedded, laminar to massive textured **DOLOSTONE.** Black argillaceous to shaley bedding partings 1 to 10 mm thick, minor interbeds of laminar textured argillaceous limestone beds with occasional stylolites, calcareous dolostone and nodular, mottled calcareous dolostone occur. Very thickly bedded dolostone beds are partly bioturbated noted by burrow casts.		
22				
24				
26				
28				105.39 29.60
30		**UNIT 4, 29.6 m to 33.5 m** interbedded sequence of light to medium grey to greenish grey and dark grey, fine grained, faintly porous, thinly to medium bedded, massive textured, argillaceous to shaley **DOLOSTONE** and medium grey **DOLOMITIC LIMESTONE.** Thin interbeds of laminar to nodular textured limestone and thin oolitic limestone beds occur with medium bed of limestone at 30.4-31.0m. Unit also includes light to medium grey and greenish grey, medium grained, thinly to medium bedded, calcareous to dolomitic cemented, partly bioturbated **QUARTZ SANDSTONE** and minor black **SHALE.**		104.59 30.40 103.99 31.00
32				101.49 33.50
34		**End of Borehole, 33.5 m** **Note(s):** 1. Borehole updated in 2021 to reflect the R.W. Tomlinson survey carried out in 2020.		
36				
38				
40				

GEOPHYSICAL RECORD



PIEZOMETER OR STANDPIPE INSTALLATION

DEPTH SCALE

1 : 100

GOLDER

LOGGED: RB

CHECKED: KAM

GEOPHYSICAL LOG OF: MQAT18-06

PROJECT: 19130670

SHEET 1 OF 2

LOCATION: N 5008978.1 ;E 421721.3

DRILLING DATE: December 2018

DATUM: Geodetic

DRILL RIG: Air Track Drill

INCLINATION: -90° AZIMUTH: ---

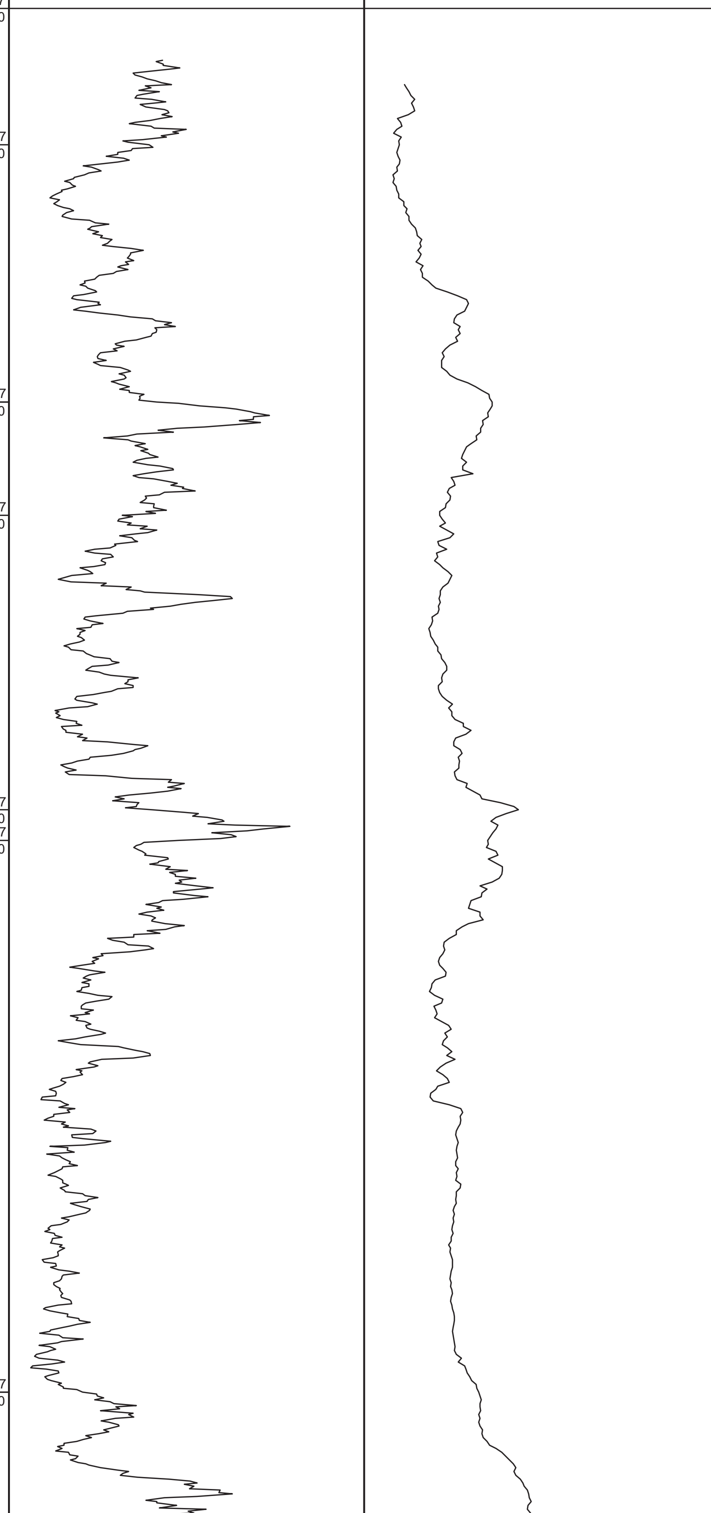
DRILLING CONTRACTOR: Stittsville Quarry

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)
		GROUND SURFACE		136.97
0		**Overburden, 0.0 m to 1.8 m** **Bedrock Surface, 1.8 m** **LOWER BOBCAYGEON FORMATION, 1.8 m to 5.2 m** **UNIT 1, 1.8 m to 5.2 m** medium grey to brownish grey, fine to medium grained, micritic to partly crystalline, non-porous, thinly bedded with nodular to wavy textured argillaceous partings, extensively bioturbated **ARGILLACEOUS NODULAR LIMESTONE.** Burrow casts tend to be infilled with medium grained crystalline calcarenite. Section contains laterally variable thicknesses of **MICRITIC LIMESTONE, CALCARENITIC LIMESTONE** occasional very fine grained thin to medium beds of **LITHOGRAPHIC LIMESTONE,** medium grained beds of **OOLITIC LIMESTONE** and widely spaced black shaley partings 5 to 30 mm thick.		0.00 135.17 1.80
2, 4				131.77 5.20
6, 8, 10		**UPPER GULL RIVER FORMATION, 5.2 m to 18.3 m** Medium grey, very fine to fine grained, nonporous, micritic, thinly bedded **ARGILLACEOUS LIMESTONE** with laminar to very thin slake susceptible argillaceous bedding partings 1 to 10 mm thick with thin to medium interbeds of lithoclastic limestone, oolitic limestone and greenish grey argillaceous to calcareous dolostone with thin shaley caps and bases. Top of the unit is marked by the first appearance of greenish dolostone with a dark grey to black thin shaley cap, the **"first dolostone marker bed",** at 5.2 m to 6.7 m with a second dolostone bed at 10.6-11.0m.		130.27 6.70 126.37 10.60 125.97 11.00
12, 14, 16, 18				118.67 18.30
20		**LOWER GULL RIVER FORMATION, 18.3 m to 33.4 m** **UNIT 5, 18.3 m to 28.8 m** The Lower Gull River Formation marks the transition into predominately dolostone with subordinate limestone units. Light		

GEOPHYSICAL RECORD

GAMMA (cps) — 20, 40, 60, 80

CONDUCTIVITY (mS/m) — 5, 10, 15, 20



PIEZOMETER OR STANDPIPE INSTALLATION

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DEPTH SCALE

1 : 100

GOLDER

LOGGED: RB

CHECKED: KAM

PROJECT: 19130670

GEOPHYSICAL LOG OF: MQAT18-06

LOCATION: N 5008978.1 ;E 421721.3

INCLINATION: -90° AZIMUTH: ---

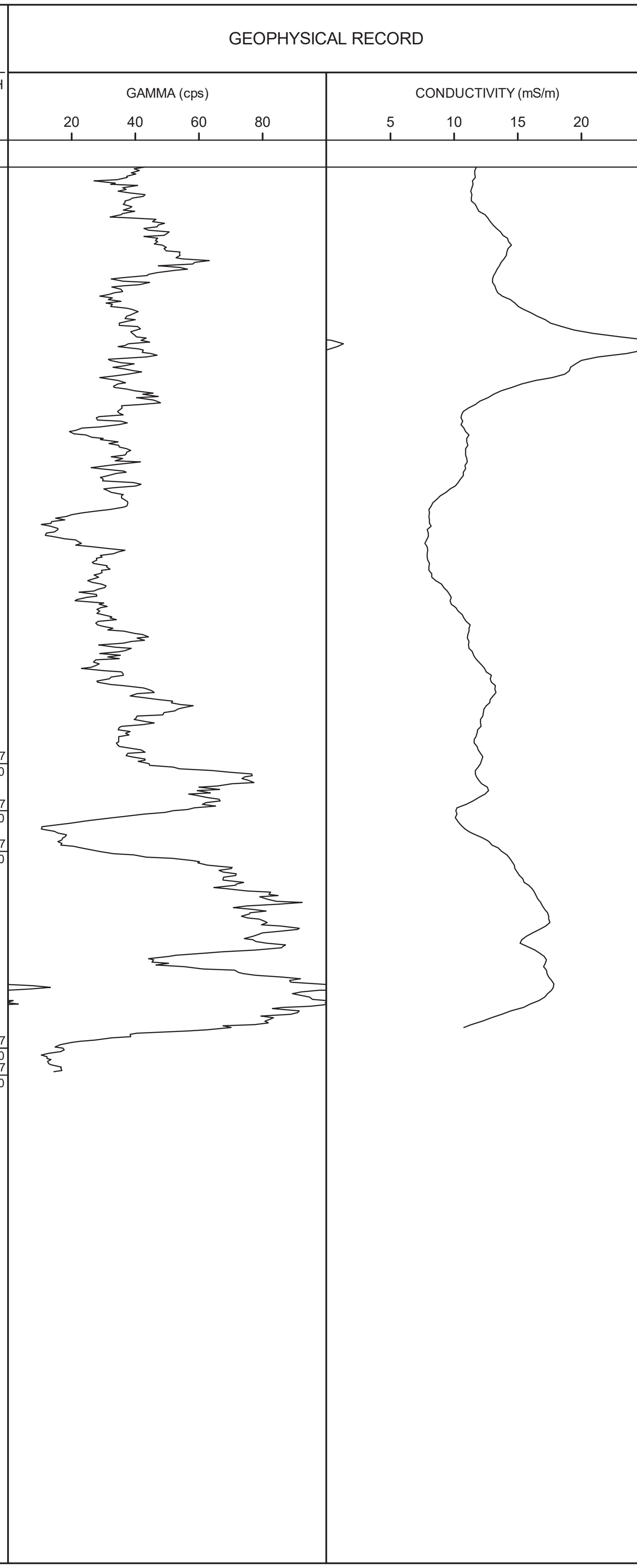
DRILLING DATE: December 2018

DRILL RIG: Air Track Drill

DRILLING CONTRACTOR: Stittsville Quarry

DATUM: Geodetic

DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. / DEPTH (m)	GEOPHYSICAL RECORD	PIEZOMETER OR STANDPIPE INSTALLATION
		--- CONTINUED FROM PREVIOUS PAGE ---				
20–28		to medium grey and greenish grey, fine grained, faintly porous, medium to very thickly bedded, laminar to massive textured **DOLOSTONE.** Black argillaceous to shaley bedding partings 1 to 10 mm thick, minor interbeds of laminar textured argillaceous limestone beds with occasional stylolites, calcareous dolostone and nodular, mottled calcareous dolostone occur. Very thickly bedded dolostone beds are partly bioturbated noted by burrow casts.		108.17 / 28.80		
30–32		**UNIT 4, 28.8 m to 33.0 m** interbedded sequence of light to medium grey to greenish grey and dark grey, fine grained, faintly porous, thinly to medium bedded, massive textured, argillaceous to shaley **DOLOSTONE** and medium grey **DOLOMITIC LIMESTONE.** Thin interbeds of laminar to nodular textured limestone and thin oolitic limestone beds occur with medium bed of limestone at 29.5-30.1m. Unit also includes light to medium grey and greenish grey, medium grained, thinly to medium bedded, calcareous to dolomitic cemented, partly bioturbated **QUARTZ SANDSTONE** and minor black **SHALE.**		107.47 / 29.50 106.87 / 30.10 103.97 / 33.00		
34–36		**UNIT 3, 33.0 m to 33.4 m** medium grey to brownish grey, fine grained, non-porous, laminated to thinly bedded **ARGILLACEOUS LIMESTONE.** Unit includes interbeds of medium brownish grey, very fine grained lithographic limestone with numerous fine argillaceous partings, thin beds of oolitic limestone, weakly developed lithoclastic limestone, minor burrow bioturbated limestone, with lesser amounts of calcareous dolostone, dark grey dolomitic shale, shaley dolostone. Black argillaceous to shaley bedding partings occur.		103.57 / 33.40		
		End of Borehole, 33.4 m				
38–40		**Note(s):** 1. Borehole updated in 2021 to reflect the R.W. Tomlinson survey carried out in 2020.				



DEPTH SCALE

1 : 100

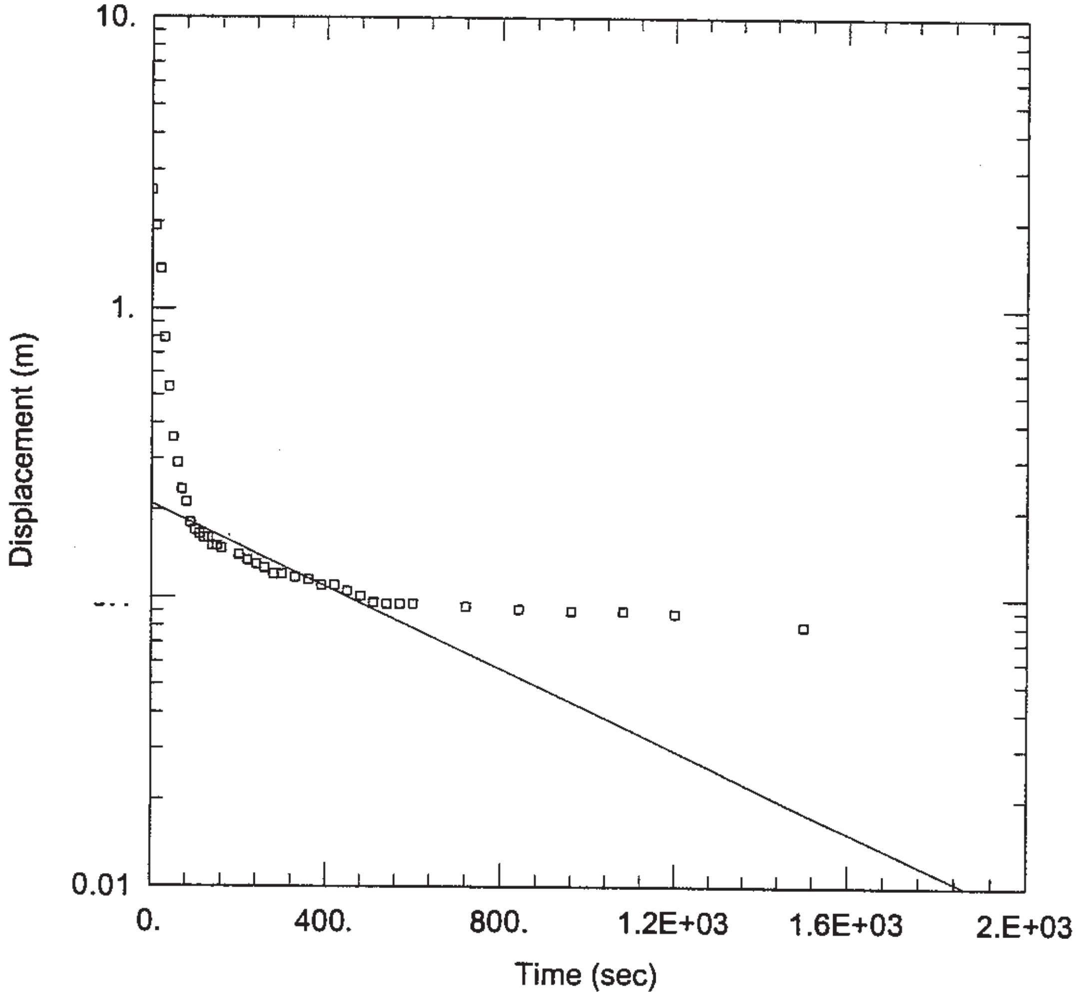
GOLDER

LOGGED: RB

CHECKED: KAM

APPENDIX C

Well Response Test Analyses



DH2A

Data Set: S:\GRP_EA\991-2900\AQTSOLVR\DH2A.AQT
Date: 04/07/00 Time: 12:04:47

PROJECT INFORMATION

Company: Golder Associates
Client: Tomlinson
Project: 992-2900
Test Location: Goulbourn
Test Well: DH 2A
Test Date: 1/24/00

AQUIFER DATA

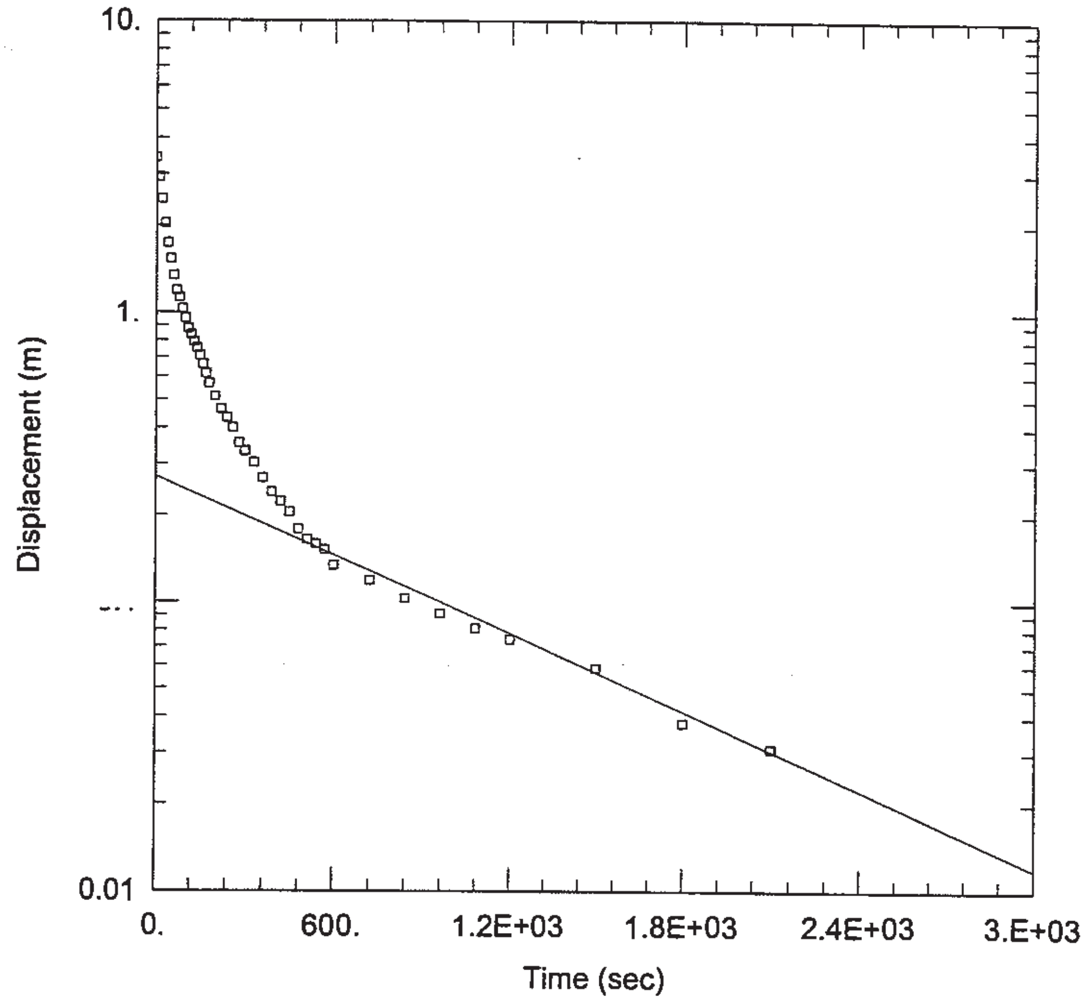
Saturated Thickness: 20.75 m
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 2.56 m
Casing Radius: 0.017 m
Screen Length: 12.3 m
Water Column Height: 20.75 m
Wellbore Radius: 0.1 m
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 8.607E-05 cm/sec
y0 = 0.2092 m



DH2B

Data Set: S:\GRP_EA\991-2900\AQTSOLVR\DH2B.AQT
Date: 04/07/00 Time: 12:07:46

PROJECT INFORMATION

Company: Golder Associates
Client: Tomlinson
Project: 992-2900
Test Location: Goulbourn
Test Well: DH 2B
Test Date: 1/24/00

AQUIFER DATA

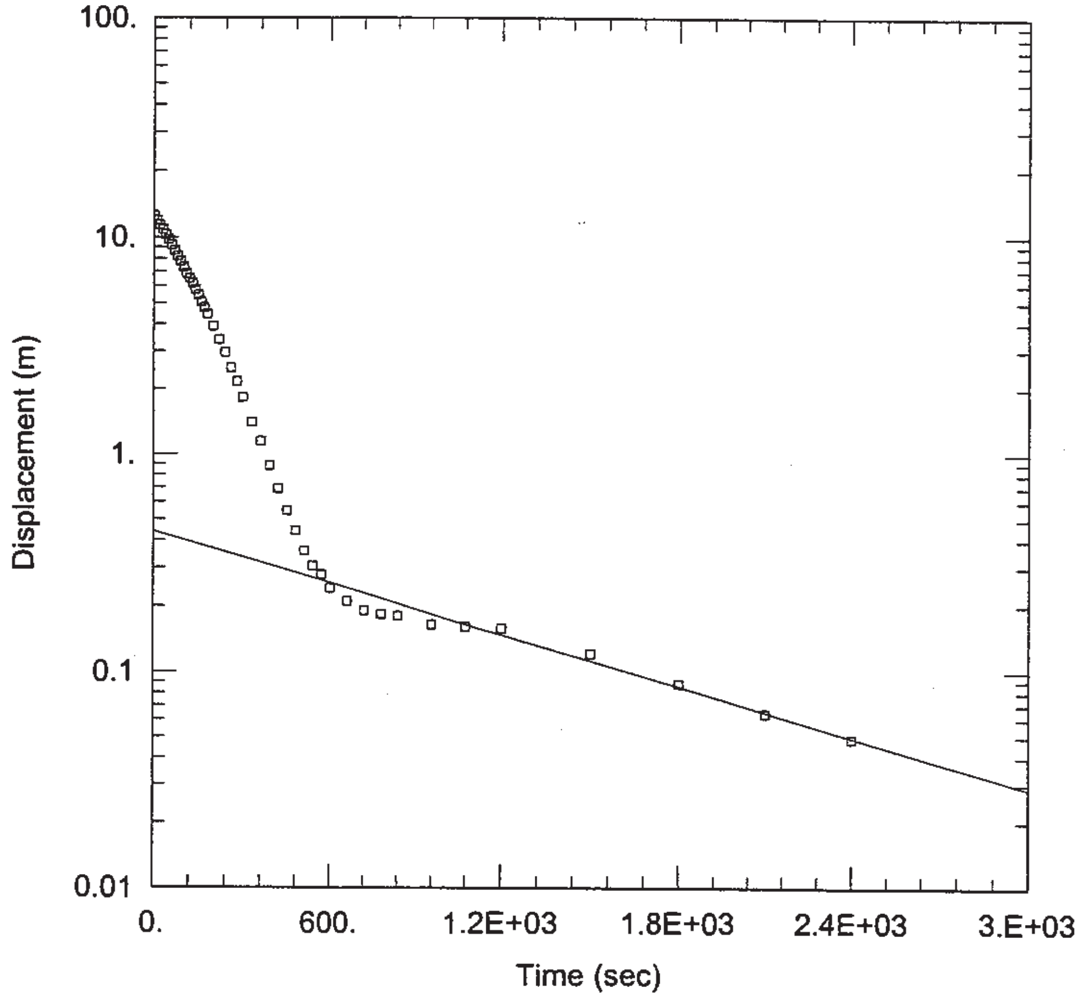
Saturated Thickness: 5.05 m
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 3.42 m
Casing Radius: 0.0317 m
Screen Length: 5.6 m
Water Column Height: 5.05 m
Wellbore Radius: 0.1 m
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0001041 cm/sec
y0 = 0.2721 m



DH3A

Data Set: S:\GRP_EA\991-2900\AQTSOLVR\DH3A.AQT
Date: 04/07/00 Time: 12:08:48

PROJECT INFORMATION

Company: Golder Associates
Client: Tomlinson
Project: 992-2900
Test Well: DH 3a
Test Date: 1/24/00

AQUIFER DATA

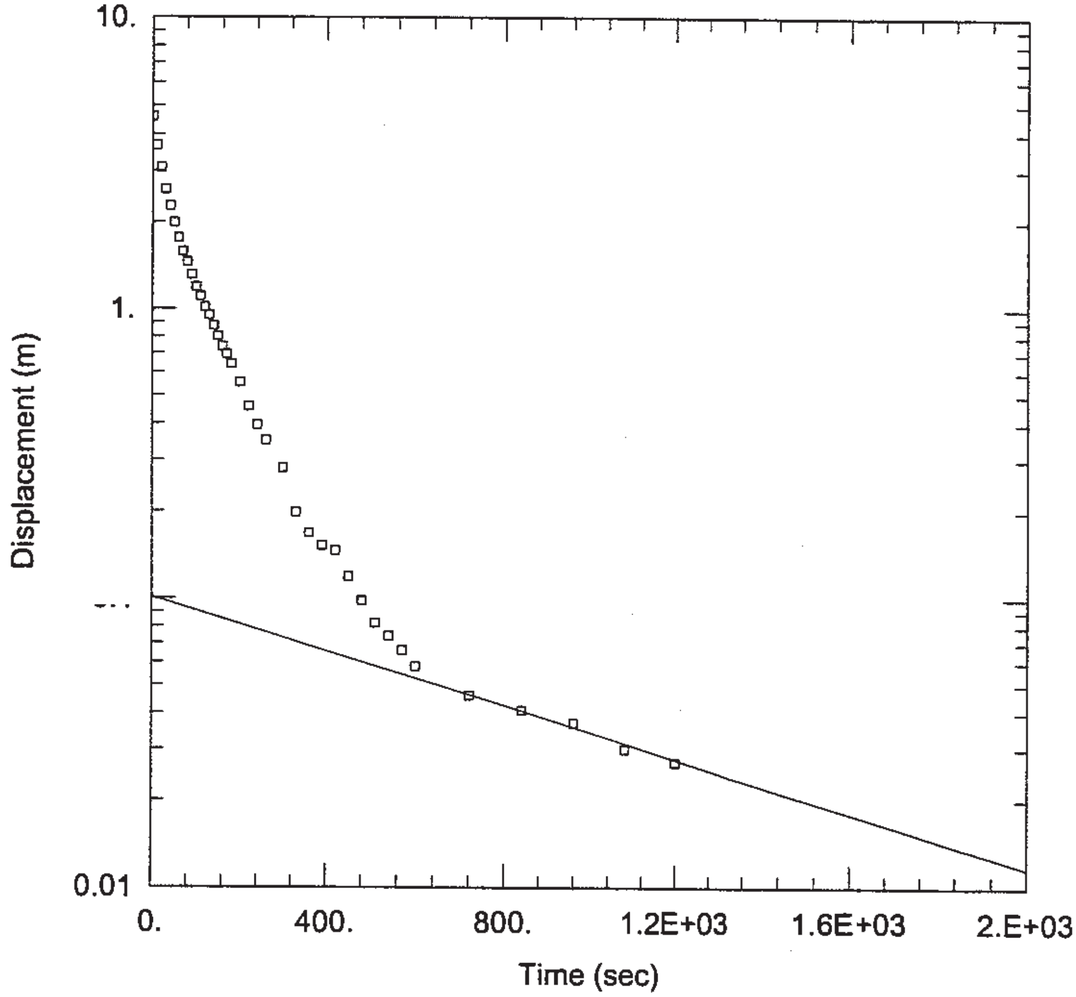
Saturated Thickness: 29.51 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 12.56 m
Casing Radius: 0.0317 m
Screen Length: 4.07 m
Water Column Height: 29.51 m
Wellbore Radius: 0.1 m
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0001655 cm/sec
y0 = 0.44 m



DH3B

Data Set: S:\GRP_EA\991-2900\AQTSOLVR\DH3B.AQT
Date: 04/07/00 Time: 12:12:12

PROJECT INFORMATION

Company: Golder Associates
Client: Tomlinson
Project: 992-2900
Test Well: DH 3B
Test Date: 1/24/00

AQUIFER DATA

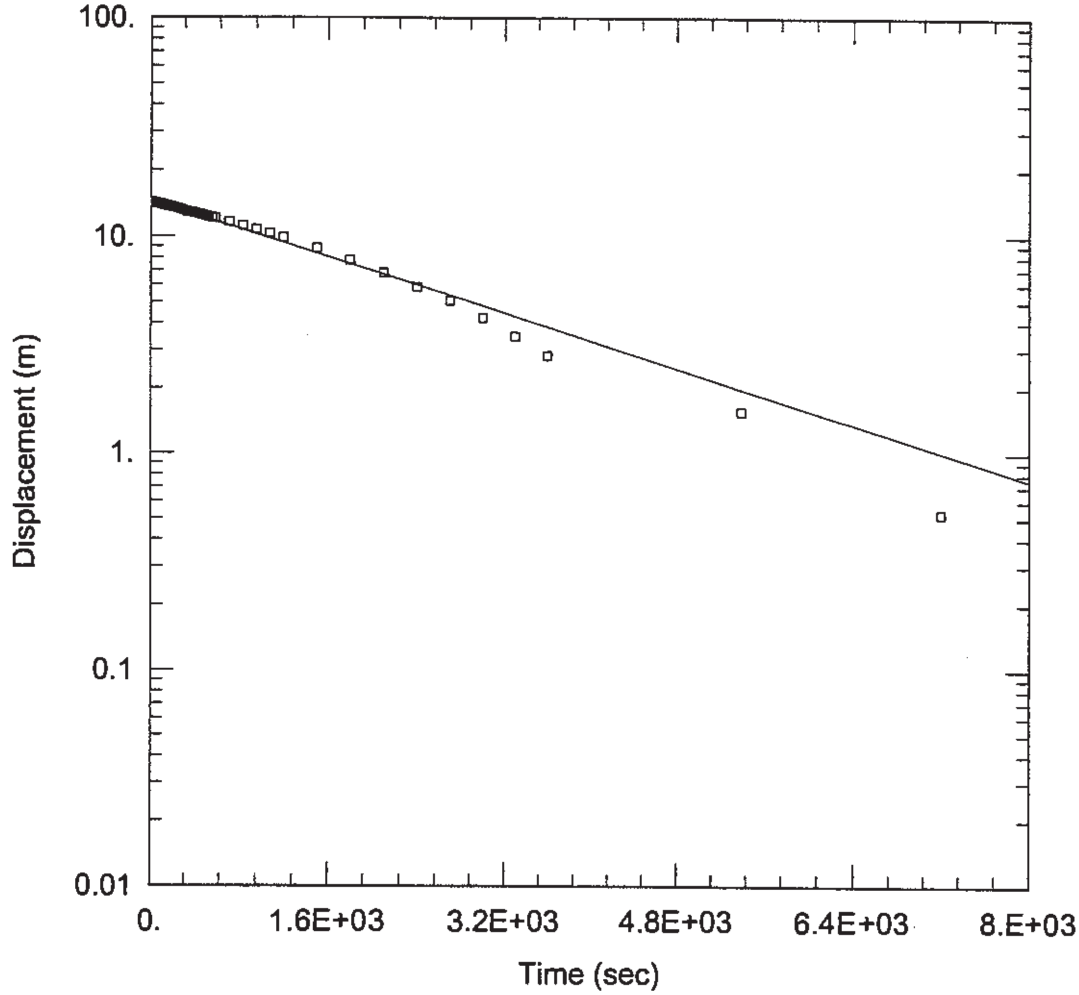
Saturated Thickness: 20.24 m
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 4.588 m
Casing Radius: 0.0317 m
Screen Length: 5.77 m
Water Column Height: 20.24 m
Wellbore Radius: 0.1 m
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0001348 cm/sec
y0 = 0.101 m



DH4A

Data Set: S:\GRP_EA\991-2900\AQTSOLVR\DH4A.AQT
Date: 04/07/00 Time: 12:14:46

PROJECT INFORMATION

Company: Golder Associates
Client: Tomlinson
Project: 992-2900
Test Well: DH 4A
Test Date: 1/24/00

AQUIFER DATA

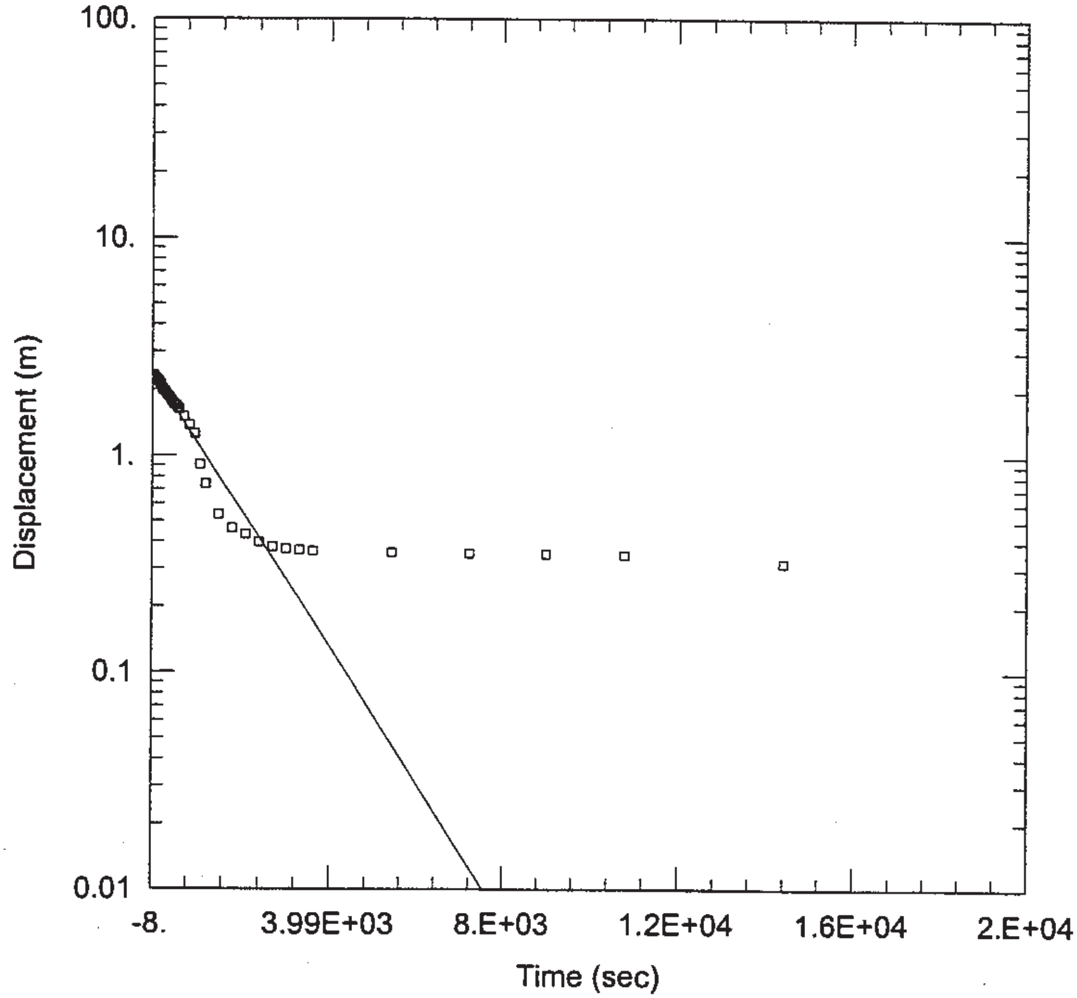
Saturated Thickness: 22.28 m
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 14.34 m
Casing Radius: 0.0317 m
Screen Length: 5.82 m
Water Column Height: 22.28 m
Wellbore Radius: 0.1 m
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 4.659E-05 cm/sec
y0 = 14.66 m



DH4C

Data Set: S:\GRP_EA\991-2900\AQTSOLVR\DH4C.AQT
Date: 04/07/00 Time: 12:16:11

PROJECT INFORMATION

Company: Golder Associates
Client: Tomlinson
Project: 992-2900
Test Location: Goulbourn
Test Well: DH 4C
Test Date: 1/24/00

AQUIFER DATA

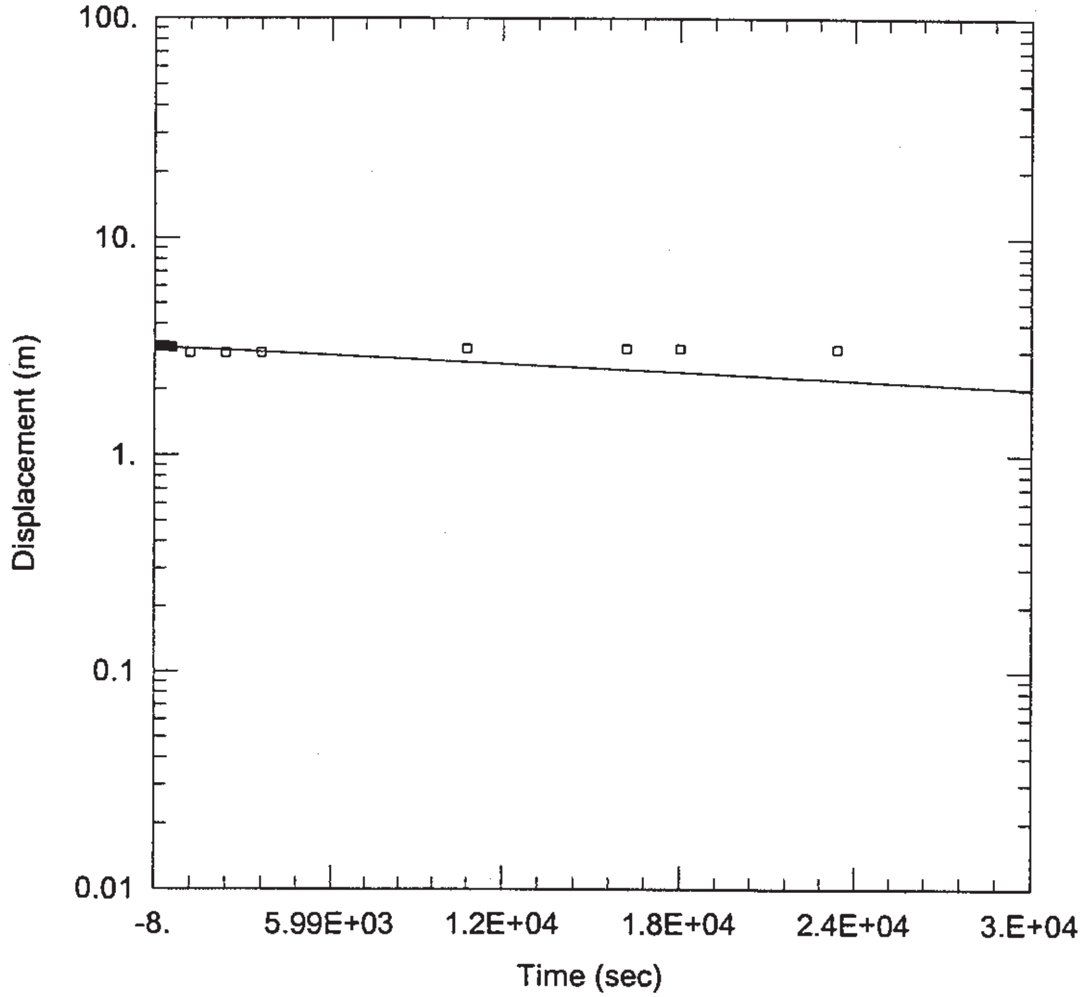
Saturated Thickness: 3.12 m
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 2.342 m
Casing Radius: 0.0317 m
Screen Length: 3.12 m
Water Column Height: 2.99 m
Wellbore Radius: 0.1 m
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0001063 cm/sec
y0 = 2.392 m



DH4D

Data Set: S:\GRP_EA\991-2900\AQTSOLVR\DH4D.AQT
Date: 04/07/00 Time: 12:17:30

PROJECT INFORMATION

Company: Golder Associates
Client: Tomlinson
Project: 992-2900
Test Location: Goulbourn
Test Well: DH 4D
Test Date: 1/24/00

AQUIFER DATA

Saturated Thickness: 3.34 m Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 3.17 m
Casing Radius: 0.0317 m
Screen Length: 2.99 m
Water Column Height: 3.34 m
Wellbore Radius: 0.1 m
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.413E-06 cm/sec
y0 = 3.136 m

Hvorslev Calculation
(for Hydraulic Conductivity from Rising Head Tests)

Well Name = **05-10A**
Date: 23-Jun-06

Hvorslev Formula: $K = [\, r^2 \ln(L/R) \,] / [\, 2LT_o \,]$

Initial WL (H_o) = 2.05 m (Static)
Radius of pipe (r) = 0.016 m (1.25 inch diameter)
Radius of hole (R) = 0.076 m (6 inch diameter)
Length of screen (L) = 6.100 m
$H-H_o$ = -2.050 m
Lag time (T_o) = (time at $(H-h)/(H-H_o)$ = 0.37 on graph)

COULD NOT PUMP FAST ENOUGH TO DRAW DOWN WATER LEVEL

Hydraulic Cond.(K) = #DIV/0!
#DIV/0!

Time (sec)	WL (m)	H-h (m)	$(H-h)/(H-H_o)$
		-2.05	1.00
		-2.05	1.00
		-2.05	1.00
		-2.05	1.00
		-2.05	1.00
		-2.05	1.00
		-2.05	1.00
		-2.05	1.00
		-2.05	1.00
		-2.05	1.00
		-2.05	1.00
		-2.05	1.00
		-2.05	1.00
		-2.05	1.00
		-2.05	1.00
		-2.05	1.00
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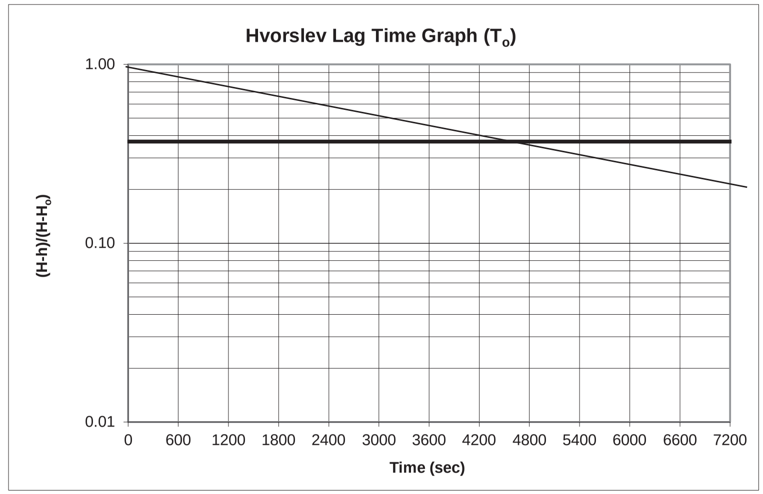
		-2.05	1.00



Hvorslev Calculation
(for Hydraulic Conductivity from Rising Head Tests)

Hvorslev Formula: $K = [\, r^2 \ln(L/R) \,] / [\, 2LT_o \,]$

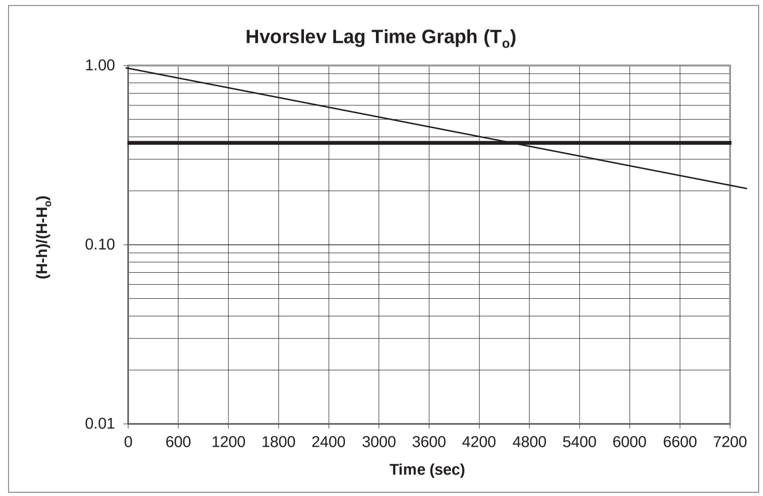
Well Name = **05-10B**
Date: 23-Jun-06

Initial WL (H_o) = 2.07 m (Static)
Radius of pipe (r) = 0.016 m (1.25 inch diameter)
Radius of hole (R) = 0.076 m (6 inch diameter)
Length of screen (L) = 3.000 m
$H-H_o$ = -2.065 m
Lag time (T_o) = (time at $(H-h)/(H-H_o)$ = 0.37 on graph)

Hydraulic Cond.(K) = #DIV/0!
#DIV/0!

COULD NOT PUMP FAST ENOUGH TO DRAW DOWN WATER LEVEL

Time (sec)	WL (m)	H-h (m)	$(H-h)/(H-H_o)$
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00
		-2.07	1.00



Hvorslev Calculation
(for Hydraulic Conductivity from Rising Head Tests)

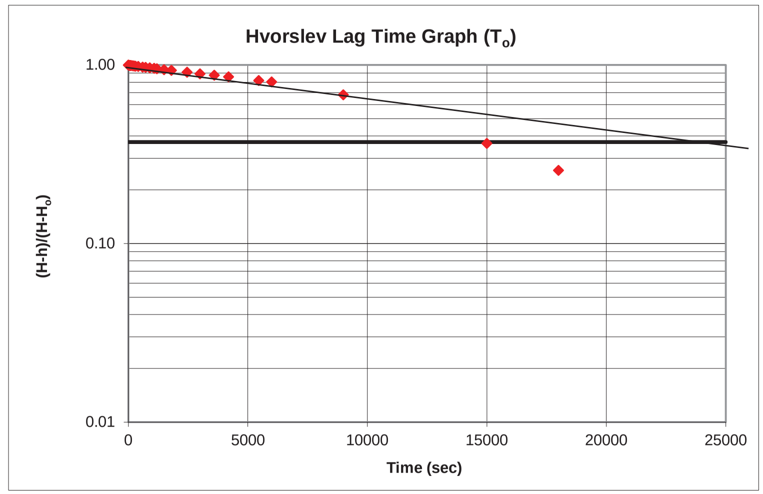
Well Name = **05-10C**
Date: 23-Jun-06

Hvorslev Formula: $K = [r^2 \ln(L/R)] / [2LT_o]$

Initial WL (H_o) =	1.01 m	(Static)
Radius of pipe (r) =	0.016 m	(1.25 inch diameter)
Radius of hole (R) =	0.076 m	(6 inch diameter)
Length of screen (L) =	6.100 m	
$H-H_o$ =	7.660 m	
Lag time (T_o) =	24000 sec	(time at $(H-h)/(H-H_o)$ = 0.37 on graph)

Hydraulic Cond.(K) = **3.83E-09 m/s**
3.83E-07 cm/s

Time (sec)	WL (m)	H-h (m)	$(H-h)/(H-H_o)$
0	8.67	7.66	1.00
30	8.64	7.63	1.00
60	8.63	7.62	0.99
90	8.62	7.61	0.99
120	8.61	7.60	0.99
180	8.59	7.58	0.99
240	8.57	7.56	0.99
300	8.56	7.55	0.98
420	8.52	7.51	0.98
600	8.47	7.46	0.97
720	8.44	7.43	0.97
900	8.40	7.39	0.96
1080	8.36	7.35	0.96
1200	8.32	7.31	0.95
1500	8.22	7.21	0.94
1800	8.16	7.15	0.93
2460	8.00	6.99	0.91
3000	7.85	6.84	0.89
3600	7.72	6.71	0.88
4200	7.59	6.58	0.86
5460	7.29	6.28	0.82
6000	7.17	6.16	0.80
9000	6.23	5.22	0.68
15000	3.80	2.79	0.36
18000	2.98	1.97	0.26



Hvorslev Calculation
(for Hydraulic Conductivity from Rising Head Tests)

Well Name = **05-12C**
Date: 24-Jun-06

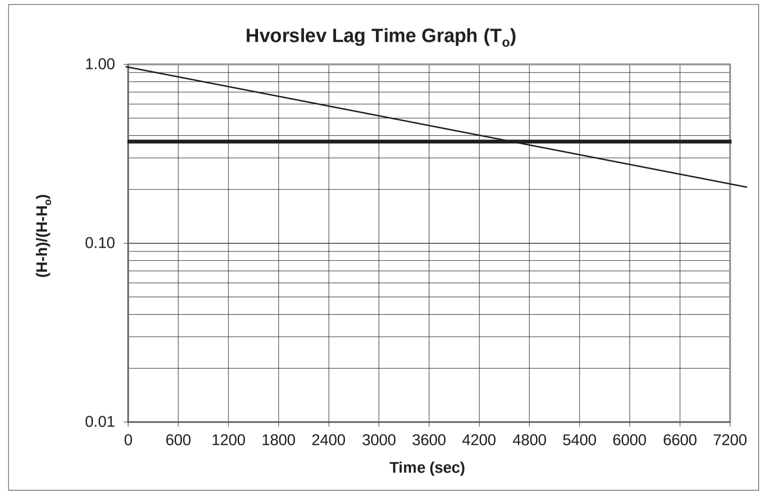
Hvorslev Formula: $K = [r^2 \ln(L/R)] / [2LT_o]$

Initial WL (H_o) = 1.72 m (Static)
Radius of pipe (r) = 0.016 m (1.25 inch diameter)
Radius of hole (R) = 0.076 m (6 inch diameter)
Length of screen (L) = 6.100 m
$H-H_o$ = -1.720 m
Lag time (T_o) = (time at $(H-h)/(H-H_o)$ = 0.37 on graph)

COULD NOT PUMP FAST ENOUGH TO DRAW DOWN WATER LEVEL

Hydraulic Cond.(K) = #DIV/0!
#DIV/0!

Time (sec)	WL (m)	H-h (m)	$(H-h)/(H-H_o)$
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00
		-1.72	1.00



Hvorslev Calculation
(for Hydraulic Conductivity from Rising Head Tests)

Well Name = **05-13A**
Date: 24-Jun-06

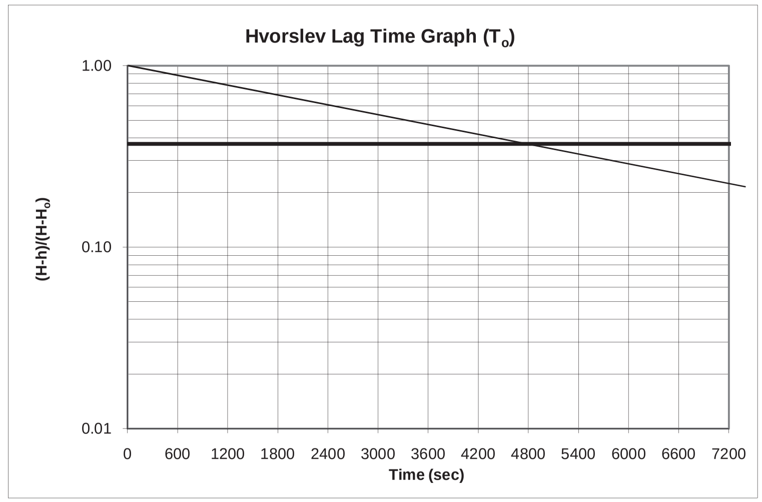
Hvorslev Formula: $K = [r^2 \ln(L/R)] / [2LT_o]$

Initial WL (H_o) =	8.92 m	(Static)
Radius of pipe (r) =	0.016 m	(1.25 inch diameter)
Radius of hole (R) =	0.076 m	(6 inch diameter)
Length of screen (L) =	6.100 m	
$H-H_o$ =	-8.920 m	
Lag time (T_o) =		(time at $(H-h)/(H-H_o)$ = 0.37 on graph)

COULD NOT PUMP FAST ENOUGH TO DRAW DOWN WATER LEVEL

Hydraulic Cond.(K) = #DIV/0!
#DIV/0!

Time (sec)	WL (m)	H-h (m)	$(H-h)/(H-H_o)$
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00
		-8.92	1.00



Hvorslev Calculation
(for Hydraulic Conductivity from Rising Head Tests)

Well Name = **05-13B**

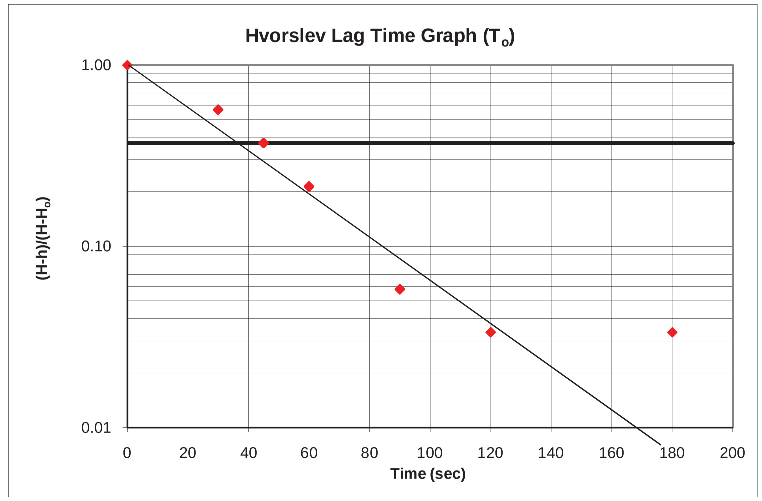
Date: 24-Jun-06

Hvorslev Formula: $K = [\ r^2 \ln(L/R)\ ] / [\ 2LT_o\ ]$

Initial WL (H_o) =	8.89 m	(Static)
Radius of pipe (r) =	0.016 m	(1.25 inch diameter)
Radius of hole (R) =	0.076 m	(6 inch diameter)
Length of screen (L) =	6.100 m	
$H-H_o$ =	3.280 m	
Lag time (T_o) =	35 sec	(time at $(H-h)/(H-H_o) = 0.37$ on graph)

Hydraulic Cond.(K) = **2.63E-06 m/s**
2.63E-04 cm/s

Time (sec)	WL (m)	H-h (m)	$(H-h)/(H-H_o)$
0	12.17	3.28	1.00
30	10.75	1.86	0.57
45	10.11	1.22	0.37
60	9.59	0.70	0.21
90	9.08	0.19	0.06
120	9.00	0.11	0.03
180	9.00	0.11	0.03



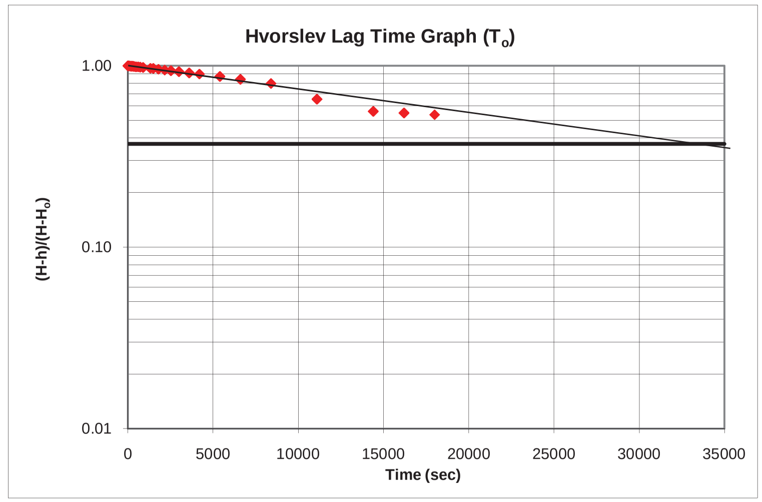
Hvorslev Calculation
(for Hydraulic Conductivity from Rising Head Tests)

Hvorslev Formula: $K = [r^2 \ln(L/R)] / [2LT_o]$

Well Name =	**05-13C**	
Date:	24-Jun-06	
Initial WL (H_o) =	1.72 m	(Static)
Radius of pipe (r) =	0.016 m	(1.25 inch diameter)
Radius of hole (R) =	0.076 m	(6 inch diameter)
Length of screen (L) =	4.600 m	
$H-H_o$ =	5.220 m	
Lag time (T_o) =	33000 sec	(time at $(H-h)/(H-H_o) = 0.37$ on graph)
Hydraulic Cond.(K) =	**3.46E-09 m/s** **3.46E-07 cm/s**	

RECOVERY DID NOT ACHIEVE 37%, EXTRAPOLATION REQUIRED

Time (sec)	WL (m)	H-h (m)	$(H-h)/(H-H_o)$
0	6.94	5.22	1.00
15	6.93	5.21	1.00
30	6.93	5.21	1.00
60	6.93	5.21	1.00
120	6.92	5.20	1.00
180	6.91	5.19	0.99
240	6.91	5.19	0.99
300	6.90	5.18	0.99
360	6.89	5.17	0.99
480	6.87	5.15	0.99
600	6.86	5.14	0.98
720	6.84	5.12	0.98
900	6.82	5.10	0.98
1320	6.77	5.05	0.97
1500	6.76	5.04	0.96
1800	6.71	4.99	0.96
2160	6.66	4.94	0.95
2520	6.62	4.90	0.94
3000	6.56	4.84	0.93
3600	6.49	4.77	0.91
4200	6.42	4.70	0.90
5400	6.27	4.55	0.87
6600	6.11	4.39	0.84
8400	5.89	4.17	0.80
11100	5.13	3.41	0.65
14400	4.64	2.92	0.56
16200	4.58	2.86	0.55
18000	4.52	2.80	0.54



Hvorslev Calculation
(for Hydraulic Conductivity from Rising Head Tests)

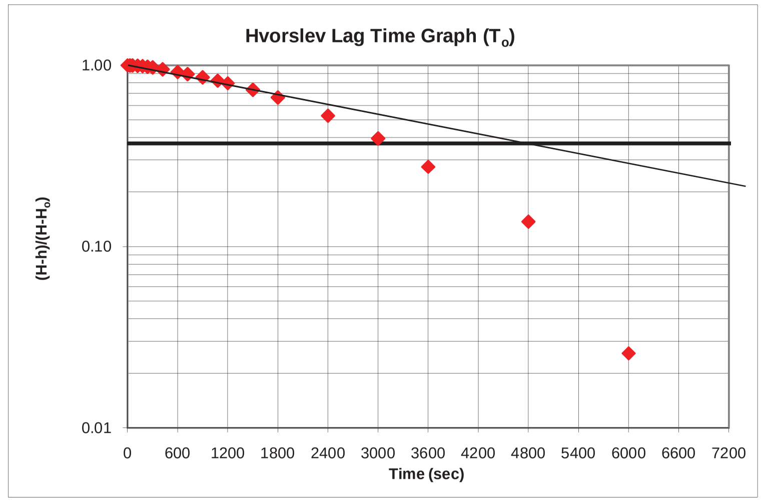
Well Name = **05-14A**
Date: 22-Jun-06

Hvorslev Formula: $K = [\, r^2 \ln(L/R) \,] / [\, 2LT_o \,]$

Initial WL (H_o) = 2.62 m (Static)
Radius of pipe (r) = 0.016 m (1.25 inch diameter)
Radius of hole (R) = 0.076 m (6 inch diameter)
Length of screen (L) = 6.100 m
$H-H_o$ = 25.630 m
Lag time (T_o) = 4700 sec (time at $(H-h)/(H-H_o) = 0.37$ on graph)

Hydraulic Cond.(K) = 1.96E-08 m/s
1.96E-06 cm/s

Time (sec)	WL (m)	H-h (m)	$(H-h)/(H-H_o)$
0	28.25	25.63	1.00
30	28.22	25.60	1.00
60	28.18	25.56	1.00
120	28.11	25.49	0.99
180	28.03	25.41	0.99
240	27.79	25.17	0.98
300	27.56	24.94	0.97
420	27.00	24.38	0.95
600	26.15	23.53	0.92
720	25.53	22.91	0.89
900	24.65	22.03	0.86
1080	23.70	21.08	0.82
1200	23.03	20.41	0.80
1500	21.38	18.76	0.73
1800	19.66	17.04	0.66
2400	16.13	13.51	0.53
3000	12.73	10.11	0.39
3600	9.68	7.06	0.28
4800	6.14	3.52	0.14
6000	3.28	0.66	0.03



Hvorslev Calculation
(for Hydraulic Conductivity from Rising Head Tests)

Well Name = **05-14B**
Date: 22-Jun-06

Hvorslev Formula: $K = [r^2 \ln(L/R)] / [2LT_o]$

Initial WL (H_o) = 2.74 m (Static)
Radius of pipe (r) = 0.016 m (1.25 inch diameter)
Radius of hole (R) = 0.076 m (6 inch diameter)
Length of screen (L) = 6.100 m
$H-H_o$ = -2.740 m
Lag time (T_o) = (time at $(H-h)/(H-H_o)$ = 0.37 on graph)

COULD NOT PUMP FAST ENOUGH TO DRAW DOWN WATER LEVEL

Hydraulic Cond.(K) = #DIV/0!
#DIV/0!

Time (sec)	WL (m)	H-h (m)	$(H-h)/(H-H_o)$
		-2.74	1.00
		-2.74	1.00
		-2.74	1.00
		-2.74	1.00
		-2.74	1.00
		-2.74	1.00
		-2.74	1.00
		-2.74	1.00
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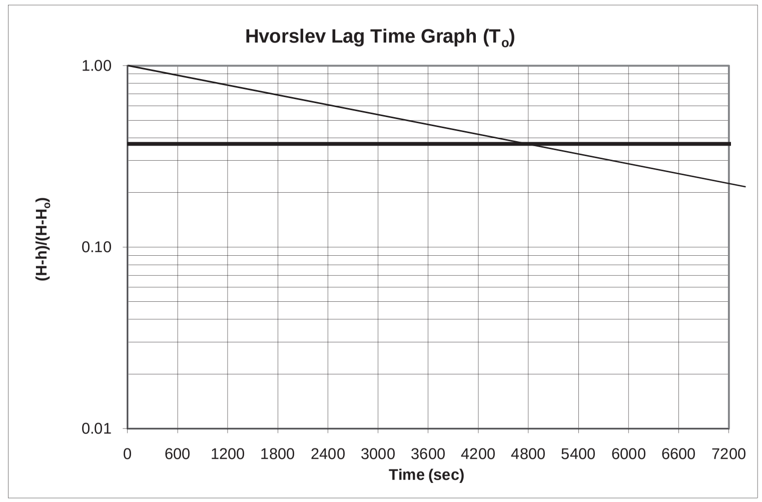
		-2.74	1.00
		-2.74	1.00
		-2.74	1.00
		-2.74	1.00
		-2.74	1.00
		-2.74	1.00



Hvorslev Calculation
(for Hydraulic Conductivity from Rising Head Tests)

Well Name = **05-14C**

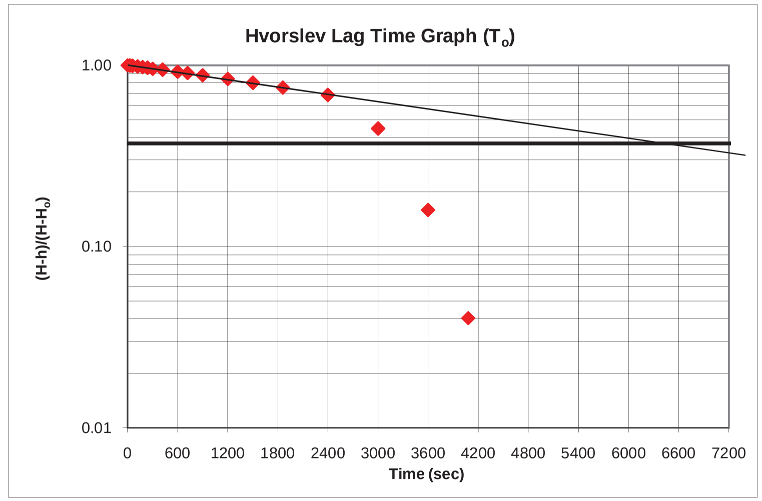
Date: 22-Jun-06

Hvorslev Formula: $K = [r^2 \ln(L/R)] / [2LT_o]$

Initial WL (H_o) =	1.78 m	(Static)
Radius of pipe (r) =	0.016 m	(1.25 inch diameter)
Radius of hole (R) =	0.076 m	(6 inch diameter)
Length of screen (L) =	3.000 m	
$H-H_o$ =	5.470 m	
Lag time (T_o) =	6300 sec	(time at $(H-h)/(H-H_o)$ = 0.37 on graph)

Hydraulic Cond.(K) = 2.49E-08 m/s
2.49E-06 cm/s

Time (sec)	WL (m)	H-h (m)	$(H-h)/(H-H_o)$
0	7.25	5.47	1.00
30	7.24	5.46	1.00
60	7.22	5.44	0.99
120	7.17	5.39	0.99
180	7.13	5.35	0.98
240	7.08	5.30	0.97
300	7.01	5.23	0.96
420	6.95	5.17	0.95
600	6.82	5.04	0.92
720	6.74	4.96	0.91
900	6.60	4.82	0.88
1200	6.38	4.60	0.84
1500	6.16	4.38	0.80
1860	5.90	4.12	0.75
2400	5.53	3.75	0.69
3000	4.23	2.45	0.45
3600	2.65	0.87	0.16
4080	2.00	0.22	0.04

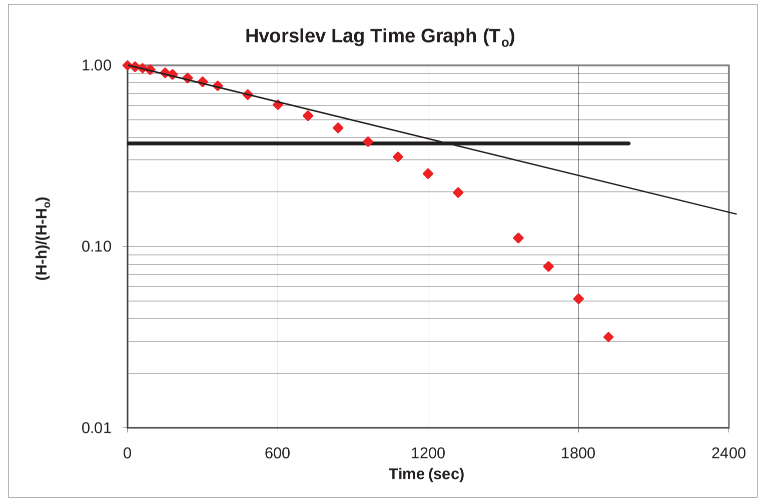


Hvorslev Calculation
(for Hydraulic Conductivity from Rising Head Tests)

Hvorslev Formula: $K = [r^2 \ln(L/R)] / [2LT_o]$

Well Name =	**05-15A**	
Date:	23-Jun-06	
Initial WL (H_o) =	0.88 m	(Static)
Radius of pipe (r) =	0.016 m	(1.25 inch diameter)
Radius of hole (R) =	0.076 m	(6 inch diameter)
Length of screen (L) =	6.100 m	
$H-H_o$ =	25.240 m	
Lag time (T_o) =	1250 sec	(time at $(H-h)/(H-H_o)$ = 0.37 on graph)
Hydraulic Cond.(K) =	**7.36E-08 m/s**	
	7.36E-06 cm/s	

Time (sec)	WL (m)	H-h (m)	$(H-h)/(H-H_o)$
0	26.12	25.24	1.00
30	25.66	24.78	0.98
60	25.22	24.34	0.96
90	24.76	23.88	0.95
150	23.83	22.95	0.91
180	23.34	22.46	0.89
240	22.35	21.47	0.85
300	21.34	20.46	0.81
360	20.33	19.45	0.77
480	18.29	17.41	0.69
600	16.19	15.31	0.61
720	14.20	13.32	0.53
840	12.28	11.40	0.45
960	10.45	9.57	0.38
1080	8.77	7.89	0.31
1200	7.25	6.37	0.25
1320	5.89	5.01	0.20
1560	3.70	2.82	0.11
1680	2.84	1.96	0.08
1800	2.18	1.30	0.05
1920	1.68	0.80	0.03
2040	1.08	0.20	0.01



Hvorslev Calculation
(for Hydraulic Conductivity from Rising Head Tests)

Hvorslev Formula: $K = [r^2 \ln(L/R)] / [2LT_o]$

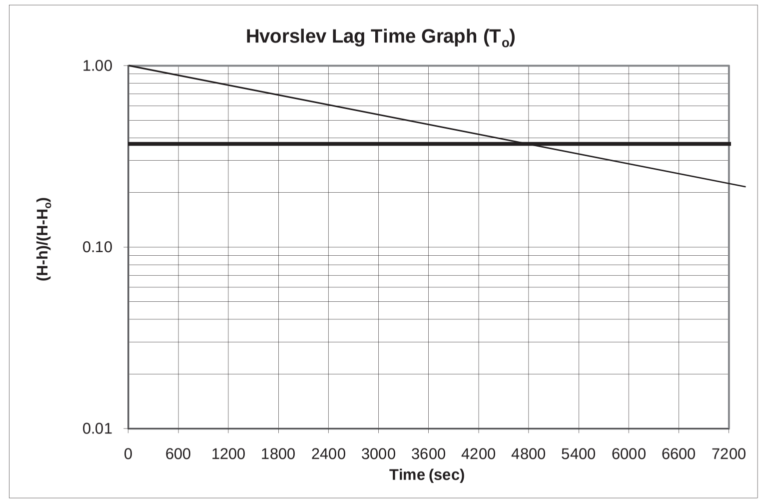
Well Name = **05-15B**
Date: 23-Jun-06

Initial WL (H_o) =	0.88 m	(Static)
Radius of pipe (r) =	0.016 m	(1.25 inch diameter)
Radius of hole (R) =	0.076 m	(6 inch diameter)
Length of screen (L) =	6.100 m	
$H-H_o$ =	-0.880 m	
Lag time (T_o) =		(time at $(H-h)/(H-H_o)$ = 0.37 on graph)

COULD NOT PUMP FAST ENOUGH TO DRAW DOWN WATER LEVEL

Hydraulic Cond.(K) = **#DIV/0!**
#DIV/0!

Time (sec)	WL (m)	H-h (m)	$(H-h)/(H-H_o)$
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00
		-0.88	1.00



Hvorslev Calculation
(for Hydraulic Conductivity from Rising Head Tests)

Well Name = **05-15C**
Date: 23-Jun-06

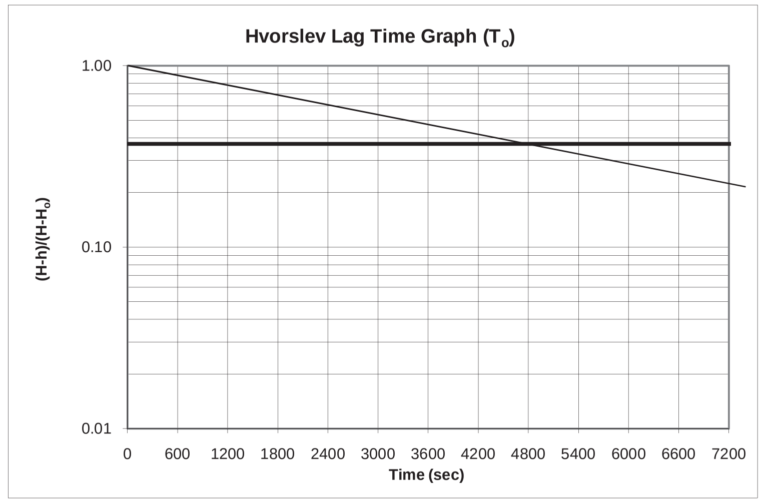
Hvorslev Formula: $K = [\, r^2 \ln(L/R) \,] / [\, 2LT_o \,]$

Initial WL (H_o) =	0.61 m	(Static)
Radius of pipe (r) =	0.016 m	(1.25 inch diameter)
Radius of hole (R) =	0.076 m	(6 inch diameter)
Length of screen (L) =	6.700 m	
$H-H_o$ =	-0.605 m	
Lag time (T_o) =		(time at $(H-h)/(H-H_o)$ = 0.37 on graph)

COULD NOT PUMP FAST ENOUGH TO DRAW DOWN WATER LEVEL

Hydraulic Cond.(K) = **#DIV/0!**
#DIV/0!

Time (sec)	WL (m)	H-h (m)	$(H-h)/(H-H_o)$
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00
		-0.61	1.00



APPENDIX D

Groundwater Elevations

Stittsville Quarry Properties

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	28-Jan-00	4-Feb-00	11-Feb-00	18-Feb-00	26-Feb-00	4-Mar-00	11-Mar-00	18-Mar-00	25-Mar-00	1-Apr-00	15-Apr-00	30-Apr-00	12-May-00	27-May-00	10-Jun-00	24-Jun-00	8-Jul-00	22-Jul-00	12-Aug-00
BH99-1	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	149.36	149.44	149.40	148.94	148.88	148.83	148.84	148.84	148.53	148.14	146.43
BH99-2A	140.12	140.03	140.05	140.10	140.35	140.47	140.53	140.56	140.90	141.19	141.38	141.28	141.31	141.29	141.33	141.37	141.29	141.19	141.02
BH99-2B	144.03	140.21	140.25	140.29	140.46	140.61	140.66	140.68	145.40	146.09	146.71	146.28	146.03	146.01	146.22	146.38	146.25	146.15	146.08
BH99-3A	Frozen	Frozen	Frozen	Frozen	Frozen	140.42	Frozen	Frozen	140.25	140.74	140.68	140.61	140.65	140.58	140.44	140.70	140.63	140.56	140.42
BH99-3B	Frozen	Frozen	Frozen	Frozen	Frozen	140.25	Frozen	Frozen	140.18	140.78	140.74	140.25	140.25	140.22	140.23	140.25	140.18	140.13	140.01
BH99-3C	Frozen	Frozen	Frozen	Frozen	Frozen	140.23	Frozen	Frozen	140.34	141.00	140.96	140.45	140.31	140.27	140.39	140.47	140.38	140.26	140.23
BH99-3D	--	--	--	--	--	--	--	--	--	--	--	--	140.54	140.45	140.52	140.60	140.44	140.37	140.34
BH99-4A	140.21	140.11	140.04	140.08	140.34	140.55	140.72	140.79	141.00	141.31	141.53	141.46	141.65	141.50	141.54	141.59	141.53	141.36	141.17
BH99-4B	139.92	139.84	139.75	139.88	140.06	140.22	140.33	140.29	140.53	140.74	140.91	140.79	140.93	140.81	140.83	140.85	140.80	140.69	140.55
BH99-4C	140.61	140.63	140.75	140.81	140.97	141.18	141.29	141.24	141.38	141.69	141.86	141.83	142.11	142.02	142.19	142.62	142.61	141.59	142.12
BH99-4D	142.52	143.84	145.09	145.13	145.42	145.88	146.00	145.91	145.33	146.05	146.17	146.36	146.45	146.34	146.32	146.32	146.24	146.08	145.85
BH99-5A	115.13	115.29	115.40	115.44	115.45	115.48	115.54	115.58	115.52	115.52	115.53	115.53	115.55	115.56	115.57	115.58	115.60	115.61	115.62
BH99-5B	133.49	138.73	140.55	140.58	141.06	141.41	141.47	141.50	141.75	141.72	142.05	141.76	141.71	141.72	141.71	141.68	141.70	141.68	141.63
BH99-5C	133.48	133.68	140.39	130.43	136.00	136.51	141.60	136.58	135.32	135.40	135.89	136.33	137.04	137.41	137.75	137.99	138.90	139.77	141.05
BH99-6A	114.33	114.95	115.50	115.52	116.17	116.85	116.91	116.98	119.26	120.89	122.14	123.91	125.29	127.30	128.10	129.26	131.14	132.09	133.48
BH99-6B	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	121.05	121.15	121.63	127.81	129.17	131.96	132.12	132.55	133.62	134.19	135.36
BH99-6C	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	129.04	129.97	130.68	129.57	130.45	130.60	131.51	133.49	134.48	135.13	135.92
BH03-7A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-10A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-10B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-10C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-12A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-12B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-12C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	26-Aug-00	9-Sep-00	23-Sep-00	15-Oct-00	29-Oct-00	11-Nov-00	27-Nov-00	9-Dec-00	22-Dec-00	29-Jan-01	15-Feb-01	5-Mar-01	16-Mar-01	16-Apr-01	30-Apr-01	14-May-01	18-Jun-01	3-Jul-01	16-Jul-01
BH99-1	146.37	145.60	145.56	145.73	147.71	146.95	148.43	148.55	148.66	Frozen	Frozen	Frozen	Frozen	148.28	149.03	148.48	146.66	146.31	146.50
BH99-2A	140.95	140.70	140.76	140.82	140.78	140.72	140.83	140.92	140.94	140.98	137.71	140.61	140.17	141.42	141.67	141.42	141.10	141.10	141.10
BH99-2B	146.03	144.74	144.70	144.78	144.73	144.67	145.96	146.05	146.07	145.77	142.70	146.02	145.09	146.00	146.05	144.97	144.81	144.81	144.81
BH99-3A	140.33	140.14	140.23	140.40	140.67	140.93	140.31	140.38	140.37	140.34	140.50	140.49	139.75	140.39	140.79	140.48	140.26	140.24	140.06
BH99-3B	139.93	139.80	139.88	140.03	140.19	140.75	139.85	140.00	139.97	139.94	140.08	140.02	139.41	139.98	140.28	140.12	139.95	139.80	139.67
BH99-3C	140.14	139.95	140.10	140.26	140.43	140.91	140.26	140.30	140.31	140.38	139.73	140.39	139.89	139.85	140.47	140.20	139.97	139.91	139.78
BH99-3D	140.38	140.13	140.28	140.55	140.84	141.15	140.32	140.39	140.44	140.47	139.88	140.48	139.97	140.16	140.51	140.29	140.05	140.11	139.89
BH99-4A	140.96	140.83	140.86	140.71	140.81	140.93	140.86	141.15	141.12	141.11	139.41	140.79	140.66	141.52	141.80	141.60	141.19	140.56	140.94
BH99-4B	140.40	140.29	140.35	140.37	140.33	140.31	140.25	140.44	140.46	140.42	140.58	140.58	140.58	140.58	140.92	140.69	140.40	139.80	140.23
BH99-4C	141.52	141.51	141.42	141.15	141.08	141.01	140.95	141.13	141.15	141.07	141.52	141.77	140.87	141.61	141.68	141.63	145.17	144.92	145.31
BH99-4D	145.69	145.44	145.55	145.48	145.44	145.41	145.48	145.87	145.90	146.00	146.03	146.19	145.54	145.99	146.45	146.22	144.68	144.75	144.80
BH99-5A	115.63	115.64	115.71	115.69	115.69	115.68	115.69	115.73	115.74	115.70	--	115.73	115.16	115.21	115.27	115.80	115.79	115.84	115.97
BH99-5B	141.61	141.64	141.64	141.61	141.59	141.60	141.03	141.46	141.44	141.61	--	141.77	141.24	141.96	141.45	141.97	141.97	141.96	141.98
BH99-5C	141.37	141.54	141.66	141.76	141.77	141.91	141.85	142.00	142.02	142.21	--	142.36	141.75	142.62	142.03	142.51	142.28	142.28	142.23
BH99-6A	134.89	135.59	136.26	137.45	138.04	138.29	138.47	138.75	138.77	138.40	137.49	138.57	138.78	139.68	139.87	139.87	128.87	131.18	132.93
BH99-6B	136.77	137.09	137.72	137.93	138.43	139.22	139.28	139.38	139.39	139.93	139.78	139.95	139.97	139.90	139.98	139.92	133.19	134.75	135.63
BH99-6C	137.83	138.92	139.54	139.98	140.09	140.20	140.15	138.24	138.27	140.21	140.11	140.23	140.63	140.32	140.31	140.18	136.04	137.44	138.37
BH03-7A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-10A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-10B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-10C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-12A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-12B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-12C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	30-Jul-01	13-Aug-01	26-Aug-01	17-Sep-01	3-Oct-01	15-Oct-01	29-Oct-01	12-Nov-01	4-Dec-01	31-Dec-01	18-Jan-02	15-Feb-02	1-Mar-02	15-Mar-02	2-Apr-02	15-Apr-02	1-May-02	14-May-02	31-May-02
BH99-1	146.35	146.24	147.79	149.40	147.28	148.12	148.18	148.35	149.26	148.89	148.42	148.42	148.42	148.42	148.35	149.48	149.18	149.81	148.90
BH99-2A	140.75	140.65	140.65	140.81	141.09	141.38	141.29	141.44	141.71	141.62	141.60	141.43	141.83	142.21	142.37	142.46	142.31	142.30	142.13
BH99-2B	144.68	144.69	144.69	145.98	146.48	146.68	146.53	146.65	146.79	146.27	145.90	145.70	146.38	146.47	146.77	146.64	146.53	146.55	145.97
BH99-3A	139.89	139.77	139.85	139.86	140.10	140.39	140.29	140.39	140.57	140.47	140.43	140.24	140.47	140.69	140.89	140.98	140.80	140.85	140.65
BH99-3B	139.49	139.36	139.43	139.54	139.80	140.00	139.71	139.80	139.98	139.86	139.81	139.67	139.78	140.00	140.16	140.24	140.08	140.12	139.98
BH99-3C	139.69	139.62	139.80	139.93	140.23	140.36	140.24	140.27	140.34	140.39	140.49	140.31	140.48	140.58	140.64	140.61	140.55	140.61	140.40
BH99-3D	139.80	139.75	140.00	140.22	140.41	140.55	140.45	140.51	140.39	140.45	140.49	140.34	140.51	140.51	140.71	140.68	140.59	140.64	140.31
BH99-4A	140.76	140.66	140.67	140.71	140.97	141.34	141.34	141.51	141.81	141.64	141.55	141.38	141.61	141.92	142.02	142.11	141.99	142.02	141.85
BH99-4B	140.02	139.92	139.97	140.04	140.28	140.58	140.45	140.56	140.82	140.67	140.57	140.45	140.56	140.87	141.06	141.11	140.95	141.01	140.80
BH99-4C	145.12	145.07	145.54	145.71	146.06	146.22	146.24	146.25	146.03	146.32	146.24	146.07	146.17	146.38	146.51	146.50	146.41	146.38	146.22
BH99-4D	145.04	144.95	145.62	144.70	145.55	145.91	146.05	146.15	142.98	145.87	146.10	146.16	142.78	144.75	146.00	146.35	146.40	146.43	143.05
BH99-5A	115.88	115.88	115.89	115.93	115.93	115.91	115.93	115.95	115.96	115.97	115.96	115.99	116.02	116.00	116.05	116.04	116.05	116.06	116.05
BH99-5B	141.96	141.97	141.91	141.96	141.95	141.95	141.97	141.96	142.04	142.11	142.11	142.05	142.00	142.17	142.11	142.14	142.25	142.28	142.23
BH99-5C	142.13	142.08	142.00	142.10	142.22	142.35	142.35	142.39	142.49	142.63	142.52	142.50	142.44	142.53	142.61	142.73	142.70	142.74	142.73
BH99-6A	134.39	135.56	136.34	126.40	129.04	130.81	132.59	134.14	116.04	119.64	122.35	126.52	115.84	117.77	121.29	122.24	124.95	126.97	119.74
BH99-6B	136.26	137.46	138.09	132.86	134.33	135.15	136.13	137.03	124.30	127.35	129.20	132.73	128.19	129.58	131.31	132.26	134.22	135.37	132.15
BH99-6C	136.27	137.48	138.25	133.81	135.15	135.92	136.43	138.21	127.44	129.55	130.93	132.91	127.89	129.08	130.51	131.56	132.91	134.51	131.44
BH03-7A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-10A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-10B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-10C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-12A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-12B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-12C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	14-Jun-02	28-Jun-02	16-Jul-02	2-Aug-02	12-Aug-02	30-Aug-02	16-Sep-02	2-Oct-02	15-Oct-02	22-Nov-02	18-Dec-02	15-Jan-03	12-Feb-03	18-Mar-03	17-Apr-03	28-Apr-03	24-May-03	21-Jun-03	16-Jul-03
BH99-1	149.32	149.90	149.77	149.61	149.19	149.64	148.91	148.50	148.49	150.13	149.33	149.33	149.80	149.88	147.82	147.82	148.45	148.56	147.83
BH99-2A	142.27	142.38	142.00	141.83	141.66	141.62	141.53	141.45	141.44	141.72	141.77	141.63	141.39	141.48	142.56	142.56	142.54	141.68	140.12
BH99-2B	146.67	147.04	146.24	145.81	145.47	145.81	145.30	145.52	145.22	145.68	145.97	145.58	145.45	145.56	145.70	145.70	147.10	146.02	145.12
BH99-3A	140.76	140.85	140.57	140.41	140.21	140.22	139.98	139.88	139.91	140.25	140.13	139.98	139.84	139.90	140.59	140.59	140.51	139.71	139.34
BH99-3B	140.05	140.13	139.90	139.75	139.64	139.69	139.70	139.53	139.49	139.79	139.58	139.42	139.21	139.28	139.96	139.96	139.99	140.11	139.43
BH99-3C	140.56	140.63	140.37	140.14	139.95	139.96	139.80	139.47	139.47	140.22	139.98	139.74	139.37	139.49	140.41	140.41	140.56	140.36	140.06
BH99-3D	140.61	140.67	140.36	140.20	140.01	140.03	139.91	139.60	139.38	140.38	140.05	139.81	139.33	139.45	140.37	140.37	140.58	140.28	140.08
BH99-4A	141.94	142.08	141.71	141.45	141.30	141.20	141.10	141.02	140.99	141.47	141.39	141.20	141.03	138.09	141.91	141.91	141.90	141.27	139.92
BH99-4B	140.92	141.48	140.73	140.55	140.42	140.35	140.21	140.10	140.12	140.46	140.37	140.10	140.07	140.10	140.75	140.75	140.70	140.27	139.46
BH99-4C	146.36	146.44	146.17	145.92	145.66	145.65	145.41	145.62	145.47	146.15	146.00	145.99	145.83	145.97	146.45	146.45	146.42	146.14	145.71
BH99-4D	145.12	146.02	146.22	146.06	145.87	143.03	144.61	145.14	145.33	146.05	144.71	145.86	145.85	146.00	146.33	146.33	146.37	144.87	145.63
BH99-5A	116.07	116.08	116.07	116.11	117.13	116.13	116.15	116.15	116.15	116.19	116.21	116.23	116.21	116.35	116.29	116.29	116.82	117.12	116.34
BH99-5B	142.28	142.23	142.30	142.30	142.28	142.26	142.20	142.23	142.14	142.19	142.18	142.21	142.11	142.18	142.28	142.28	142.29	142.26	142.27
BH99-5C	142.68	142.74	142.73	142.59	142.49	142.33	142.26	142.06	141.87	141.97	141.92	141.90	141.80	141.55	142.17	142.17	141.81	141.79	142.00
BH99-6A	121.72	123.78	126.33	128.69	129.95	122.93	125.40	127.45	129.07	133.53	123.88	127.91	132.15	122.97	123.58	--	132.34	132.46	131.94
BH99-6B	133.04	134.37	135.74	136.63	137.13	134.79	136.04	136.89	137.43	138.25	135.87	137.55	138.88	135.07	135.49	--	138.57	138.51	138.41
BH99-6C	132.56	133.96	135.06	135.74	136.16	134.61	135.34	135.81	136.30	139.38	135.48	136.46	139.14	134.48	134.82	--	138.89	138.82	138.77
BH03-7A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-10A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-10B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-10C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-12A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-12B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-12C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	7-Aug-03	8-Sep-03	23-Sep-03	3-Oct-03	10-Oct-03	27-Nov-03	16-Dec-03	27-Jan-04	20-Feb-04	24-Mar-04	16-Apr-04	15-May-04	10-Jun-04	12-Jul-04	17-Aug-04	8-Sep-04	7-Oct-04	21-Nov-04	18-Dec-04
BH99-1	147.52	--	144.02	--	147.64	149.23	148.97	Frozen	Frozen	Frozen	149.02	148.84	148.64	147.93	148.92	148.96	148.97	148.90	Frozen
BH99-2A	140.07	--	139.38	--	139.65	141.34	141.28	141.10	140.95	141.39	141.49	141.29	141.23	140.83	141.38	141.48	141.56	141.52	141.71
BH99-2B	146.14	--	145.36	--	145.75	146.99	147.30	145.23	145.07	145.90	145.98	145.74	145.63	145.03	145.41	145.46	145.44	145.40	145.50
BH99-3A	139.42	--	139.15	--	139.32	140.14	140.06	Frozen	140.21	140.01	139.95	138.22	138.07	137.86	137.46	138.17	138.00	138.08	138.69
BH99-3B	139.56	--	139.13	--	139.30	139.68	139.57	Frozen	139.92	139.57	139.54	135.74	136.91	136.62	135.01	135.02	135.76	135.70	136.40
BH99-3C	140.39	--	139.55	--	139.89	140.36	140.33	Frozen	140.46	140.34	140.25	139.80	139.49	139.33	138.86	138.42	139.17	139.26	140.04
BH99-3D	140.38	--	139.57	--	140.09	140.51	140.31	Frozen	140.52	140.27	140.19	139.76	139.58	139.33	138.78	138.55	139.44	139.52	140.07
BH99-4A	139.86	--	139.22	--	139.46	141.04	141.01	140.62	140.43	140.97	141.07	140.29	140.22	140.04	139.48	Monitoring wells decommissioned August 18, 2004			--
BH99-4B	139.54	--	139.21	--	139.46	140.31	140.23	139.93	139.72	140.15	140.24	138.74	138.98	138.61	138.50				--
BH99-4C	145.92	--	145.28	--	145.75	146.52	146.43	146.20	145.95	146.30	146.33	146.34	146.28	146.11	145.84				--
BH99-4D	145.71	--	145.09	--	145.43	146.32	145.24	146.10	146.00	145.13	145.10	146.32	146.23	146.05	145.79				--
BH99-5A	116.35	--	116.37	--	116.45	117.71	119.29	119.53	119.31	116.52	116.73	116.44	116.55	116.37	116.57				--
BH99-5B	142.28	--	142.16	--	142.17	142.22	142.25	142.27	142.04	142.15	142.29	142.14	142.22	141.68	142.19				--
BH99-5C	141.95	--	141.83	--	141.87	141.92	141.98	141.99	141.80	142.03	142.11	141.97	142.17	141.37	141.86				--
BH99-6A	130.90	127.65	112.24	119.56	119.63	128.37	123.60	128.59	132.91	128.57	128.26	135.02	128.97	128.63	135.86				--
BH99-6B	137.51	134.80	120.83	131.52	131.54	135.56	133.91	135.92	137.47	134.71	134.74	137.23	135.34	134.50	138.13				--
BH99-6C	137.12	134.68	138.26	131.46	131.49	135.51	134.08	135.85	138.12	134.59	134.64	137.88	135.32	135.17	139.07				--
BH03-7A	139.90	--	139.29	--	139.49	141.05	141.01	140.68	140.33	140.99	141.16	140.86	140.77	140.10	139.79	139.87	140.22	140.18	140.27
BH03-7B	139.61	--	139.28	--	139.52	140.37	140.29	140.08	139.78	140.21	140.24	138.63	138.70	138.37	138.20	138.30	138.52	138.56	138.76
BH03-7C	145.59	--	145.08	--	145.70	146.18	146.15	Frozen	145.55	146.01	146.11	146.09	146.00	145.38	145.17	145.20	145.67	145.72	145.83
BH03-7D	145.67	--	145.27	--	146.14	146.51	Frozen	Frozen	146.05	Frozen	146.33	146.03	145.94	145.30	145.14	145.18	146.31	146.35	146.41
BH03-8A	121.54	--	138.58	--	138.68	138.74	139.34	139.02	138.81	139.30	139.36	138.74	136.60	135.51	135.60	135.22	136.10	136.15	136.80
BH03-8B	126.19	--	126.43	--	126.97	129.04	131.22	140.59	140.33	140.77	140.81	140.19	139.09	138.24	140.19	140.40	140.91	140.91	141.52
BH03-8C	Dry	--	133.86	--	Dry	Dry	140.26	141.28	141.02	141.66	141.77	141.46	141.47	140.87	141.52	141.23	141.47	141.51	141.77
BH03-9A	130.72	--	130.50	--	112.35	113.63	114.42	114.18	116.07	117.29	117.98	123.62	126.01	124.67	131.78	132.84	130.77	130.85	130.88
BH03-9B	137.32	--	130.62	--	120.77	121.11	121.36	125.02	123.23	124.12	124.55	125.83	126.35	125.87	129.03	129.84	128.84	128.73	128.81
BH03-9C	136.92	--	117.88	--	138.96	140.02	139.95	Frozen	139.48	139.86	139.77	139.76	139.64	139.12	139.59	139.47	139.79	139.86	139.78
BH05-10A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-10B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-10C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-12A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-12B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-12C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	7-Jan-05	3-Feb-05	27-Mar-05	15-Apr-05	10-May-05	12-Jun-05	12-Jul-05	10-Aug-05	11-Sep-05	24-Oct-05	12-Nov-05	10-Dec-05	19-Jan-06	21-Feb-06	10-Mar-06	14-Apr-06	12-May-06	19-Jun-06	20-Jun-06
BH99-1	Frozen	Frozen	Frozen	149.33	149.16	148.45	148.47	148.10	148.76	148.65	148.55	Frozen	Frozen	Frozen	149.15	149.26	149.10	--	149.02
BH99-2A	141.19	140.85	141.72	141.84	141.49	141.35	141.31	141.23	141.57	141.48	141.55	141.63	142.03	141.75	141.83	141.92	141.98	--	141.91
BH99-2B	145.93	145.82	146.09	146.13	146.02	145.42	145.37	145.17	145.63	145.56	145.57	145.63	146.97	146.67	146.74	146.81	146.85	--	146.77
BH99-3A	138.66	138.59	139.14	139.79	138.94	139.64	139.66	139.30	139.82	139.71	139.76	139.82	140.46	140.12	140.17	140.21	140.67	--	140.65
BH99-3B	136.38	136.46	137.12	138.21	136.46	138.53	138.52	138.41	138.69	138.60	138.64	138.69	140.10	140.30	140.34	140.38	140.79	--	140.76
BH99-3C	140.02	139.54	140.54	140.40	140.13	139.90	139.87	139.31	140.05	139.97	139.99	140.04	140.43	140.11	140.18	140.28	140.59	--	140.54
BH99-3D	140.04	139.56	140.51	140.40	140.10	139.93	139.91	139.36	140.05	139.99	140.06	140.10	140.51	140.17	140.25	140.33	140.64	--	140.59
BH99-4A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7A	140.22	140.64	141.16	141.27	140.37	141.10	141.06	140.89	141.34	141.24	141.28	141.36	141.67	141.55	141.64	141.69	141.73	--	141.67
BH03-7B	138.81	138.60	139.57	139.71	138.97	139.97	139.93	139.81	140.18	140.10	140.13	140.24	140.62	140.50	140.59	140.67	140.71	--	140.69
BH03-7C	145.86	145.41	146.37	146.32	145.98	145.11	145.08	144.99	145.30	145.24	145.26	145.32	145.36	145.35	145.46	145.51	146.01	--	145.97
BH03-7D	146.43	Frozen	146.47	146.41	146.47	146.22	146.19	145.77	--	146.32	146.35	Frozen	Dry	Frozen	146.32	146.38	146.31	--	146.30
BH03-8A	136.75	136.93	137.43	138.14	136.85	138.46	138.42	137.78	138.74	138.63	138.62	138.69	139.33	139.24	139.33	139.41	140.20	--	140.16
BH03-8B	141.53	141.55	141.58	141.54	141.61	141.73	141.69	141.66	141.91	141.84	141.87	141.93	141.78	141.69	141.80	141.85	142.09	--	142.02
BH03-8C	141.76	141.42	141.87	141.87	141.86	141.39	141.35	141.06	141.59	141.50	141.55	141.64	141.76	141.68	141.75	141.80	142.15	--	142.08
BH03-9A	131.11	131.18	131.95	129.81	131.23	129.06	129.00	130.97	129.38	129.17	129.21	129.27	127.48	127.45	127.71	127.80	129.69	--	129.63
BH03-9B	128.99	129.03	129.97	126.02	129.05	124.56	124.51	127.80	124.91	124.62	124.66	130.74	123.39	123.35	123.57	123.62	125.42	--	125.47
BH03-9C	139.87	139.77	140.07	140.01	140.02	139.69	139.62	139.16	139.90	139.77	139.79	129.87	139.98	139.88	139.97	140.07	139.14	--	139.27
BH05-10A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	140.98	--
BH05-10B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	140.98	--
BH05-10C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	142.16	--
BH05-11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH05-12A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	133.00	--
BH05-12B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	131.97	--
BH05-12C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	132.95	--
BH13-16A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	12-Jul-06	20-Aug-06	15-Sep-06	18-Oct-06	11-Nov-06	28-Dec-06	15-Jan-07	1-Feb-07	15-Feb-07	8-Mar-07	22-Apr-07	18-May-07	14-Jun-07	11-Jul-07	27-Jul-07	15-Aug-07	7-Sep-07	18-Oct-07	29-Oct-07
BH99-1	148.84	148.73	148.85	149.15	149.26	149.35	149.02	--	Frozen	Frozen	148.59	148.42	Blocked	Blocked	--	148.90	148.89	148.82	--
BH99-2A	141.85	141.76	141.67	141.74	141.85	141.88	141.83	--	141.76	140.53	139.88	139.79	Buried	138.61	--	138.67	138.53	138.53	--
BH99-2B	146.66	146.59	146.44	146.53	146.60	146.74	146.67	--	146.58	145.00	144.53	144.41	Buried	145.82	--	145.85	145.61	145.61	--
BH99-3A	140.25	137.26	137.16	137.26	137.28	137.37	137.30	--	137.22	135.49	135.12	135.95	135.75	135.63	--	135.84	135.51	135.52	--
BH99-3B	139.97	135.62	135.56	135.63	135.59	135.62	135.48	--	135.42	130.66	132.36	130.47	130.17	130.11	--	131.24	129.59	129.76	--
BH99-3C	140.35	138.96	138.86	139.04	139.09	139.27	139.23	--	139.18	Frozen	139.16	137.53	137.65	136.54	--	136.50	136.42	136.38	--
BH99-3D	140.34	138.86	138.76	138.98	139.03	139.22	139.17	--	139.10	Frozen	139.08	137.81	138.00	Dry	--	Dry	Dry	Dry	--
BH99-4A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7A	141.60	141.27	141.14	141.22	141.20	141.26	141.15	--	141.05	138.01	138.40	138.71	138.56	138.43	--	138.50	137.33	137.39	--
BH03-7B	140.65	140.41	140.36	140.41	140.39	140.49	140.41	--	140.35	136.24	136.51	136.87	136.55	137.52	--	136.66	136.42	136.51	--
BH03-7C	145.80	145.69	145.56	145.68	145.82	145.81	145.82	--	Frozen	144.30	144.41	144.60	144.61	144.34	--	144.29	144.24	144.30	--
BH03-7D	146.24	146.05	146.07	146.27	146.39	146.36	Frozen	--	Frozen	144.41	144.55	144.78	144.75	144.51	--	144.66	144.69	144.74	--
BH03-8A	139.62	135.96	135.90	135.96	135.92	136.03	135.96	--	135.85	132.50	132.85	128.41	127.90	127.83	--	127.76	127.19	127.23	--
BH03-8B	141.91	141.80	141.71	141.79	141.82	141.81	141.73	--	141.70	141.56	141.75	141.68	141.84	141.20	--	141.76	140.47	140.52	--
BH03-8C	141.57	141.18	141.11	141.25	141.32	141.32	141.28	--	141.24	141.22	141.06	141.78	141.63	141.58	--	141.35	141.50	141.53	--
BH03-9A	129.51	129.37	129.41	129.47	129.62	129.53	129.48	--	129.39	118.49	118.82	127.01	128.35	131.27	--	133.24	133.88	133.96	--
BH03-9B	125.43	125.33	125.32	125.41	125.63	125.45	125.35	--	125.27	123.17	124.54	124.69	125.39	126.22	--	127.09	127.91	127.94	--
BH03-9C	139.19	139.12	139.17	139.37	139.75	139.64	139.56	--	Frozen	138.71	138.78	139.17	139.16	139.22	--	139.13	139.21	139.30	--
BH05-10A	--	--	--	--	--	--	137.65	136.96	--	--	--	--	--	--	137.07	--	--	--	136.67
BH05-10B	--	--	--	--	--	--	137.65	136.96	--	--	--	--	--	--	137.04	--	--	--	136.78
BH05-10C	--	--	--	--	--	--	139.68	139.03	--	--	--	--	--	--	139.38	--	--	--	139.42
BH05-11	--	--	--	--	--	--	140.94	140.45	--	--	--	--	--	--	140.23	--	--	--	138.94
BH05-12A	--	--	--	--	--	--	133.66	133.32	--	--	--	--	--	--	133.19	--	--	--	132.97
BH05-12B	--	--	--	--	--	--	133.68	133.33	--	--	--	--	--	--	133.18	--	--	--	132.89
BH05-12C	--	--	--	--	--	--	132.93	132.72	--	--	--	--	--	--	132.61	--	--	--	132.48
BH13-16A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	15-Nov-07	11-Dec-07	9-Jan-08	6-Feb-08	27-Mar-08	24-Apr-08	12-May-08	23-May-08	23-Jun-08	8-Jul-08	19-Aug-08	23-Sep-08	22-Oct-08	26-Nov-08	3-Dec-08	7-Jan-09	12-Jan-09	5-Feb-09	4-Mar-09
BH99-1	148.96	148.88	147.33	147.14	146.52	148.02	147.93	--	147.93	147.94	147.93	147.00	--	--	147.24	--	--	--	Frozen
BH99-2A	138.66	138.58	139.59	139.78	144.99	136.54	136.52	--	136.72	136.67	136.58	142.81	--	--	143.37	--	--	--	Frozen
BH99-2B	145.73	145.61	146.58	146.73	Frozen	144.66	144.63	--	144.84	144.78	144.74	144.28	--	--	144.99	--	--	--	Frozen
BH99-3A	135.66	135.43	137.22	137.26	136.06	135.75	135.71	--	135.59	135.54	135.50	135.18	--	--	136.90	--	--	--	136.96
BH99-3B	129.84	129.47	132.55	132.72	129.92	129.30	129.28	--	129.91	129.86	129.75	128.73	--	--	129.23	--	--	--	129.32
BH99-3C	136.56	136.54	140.70	140.66	138.37	137.66	137.64	--	138.16	138.16	138.09	138.00	--	--	138.17	--	--	--	138.03
BH99-3D	Dry	Dry	140.40	140.38	139.66	138.71	138.69	--	139.29	139.26	139.27	137.33	--	--	137.62	--	--	--	139.36
BH99-4A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7A	137.43	137.36	138.86	138.99	137.90	137.45	137.43	--	137.69	137.66	137.59	135.64	--	--	136.13	--	--	--	136.17
BH03-7B	136.55	136.43	137.00	136.98	137.02	136.53	136.51	--	136.69	136.62	136.56	135.94	--	--	136.46	--	--	--	136.71
BH03-7C	144.34	144.31	144.88	144.90	144.74	144.87	144.84	--	144.71	144.68	144.52	144.40	--	--	144.47	--	--	--	144.23
BH03-7D	144.87	144.79	144.95	144.99	145.05	145.51	145.47	--	146.32	146.31	146.26	145.48	--	--	146.36	--	--	--	Frozen
BH03-8A	127.32	127.20	128.55	128.56	127.65	126.65	126.61	--	126.85	126.80	126.68	125.85	--	--	127.78	--	--	--	129.18
BH03-8B	140.59	140.50	140.84	140.94	141.36	141.62	141.60	--	141.64	141.63	141.58	141.66	--	--	141.77	--	--	--	141.71
BH03-8C	141.62	141.52	142.62	142.67	142.15	141.67	141.64	--	142.00	141.96	141.96	141.45	--	--	142.11	--	--	--	141.96
BH03-9A	134.07	133.90	134.77	134.67	130.69	133.31	133.28	--	134.58	134.38	134.27	136.04	136.59	137.02	137.10	137.09	--	138.35	138.57
BH03-9B	128.03	128.10	129.12	129.27	124.69	126.33	126.28	--	127.69	127.43	127.13	130.84	131.53	132.28	132.37	132.39	--	133.30	133.65
BH03-9C	139.46	139.25	139.53	139.59	139.54	139.46	139.41	--	139.52	139.54	139.47	139.31	139.31	139.36	139.42	139.46	--	139.20	139.46
BH05-10A	--	--	136.87	--	--	--	--	136.99	--	--	--	--	--	--	--	--	136.10	--	--
BH05-10B	--	--	136.87	--	--	--	--	136.98	--	--	--	--	--	--	--	--	136.13	--	--
BH05-10C	--	--	138.93	--	--	--	--	139.04	--	--	--	--	--	--	--	--	138.50	--	--
BH05-11	--	--	140.38	--	--	--	--	140.43	--	--	--	--	--	--	--	--	138.70	--	--
BH05-12A	--	--	133.24	--	--	--	--	133.34	--	--	--	--	--	--	--	--	132.89	--	--
BH05-12B	--	--	133.14	--	--	--	--	133.36	--	--	--	--	--	--	--	--	132.80	--	--
BH05-12C	--	--	132.59	--	--	--	--	132.75	--	--	--	--	--	--	--	--	132.43	--	--
BH13-16A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	8-Apr-09	6-May-09	3-Jun-09	14-Jul-09	21-Jul-09	10-Aug-09	3-Sep-09	4-Oct-09	6-Oct-09	10-Nov-09	10-Dec-09	20-Jan-10	3-Feb-10	23-Feb-10	12-Mar-10	1-Apr-10	4-May-10	2-Jun-10	5-Jul-10
BH99-1	147.71	147.28	147.23	147.05	--	147.00	146.73	146.70	--	146.70	146.90	146.12	147.58	--	147.82	147.59	147.30	147.05	146.87
BH99-2A	144.71	135.77	135.73	134.93	--	134.85	134.52	134.68	--	134.57	134.41	134.53	134.48	--	135.35	134.89	134.71	133.42	133.61
BH99-2B	145.23	144.63	144.61	--	--	144.49	144.53	144.83	--	144.56	144.77	144.75	144.84	--	145.24	144.89	144.65	143.90	143.98
BH99-3A	136.76	135.62	135.56	135.46	--	135.34	135.22	134.99	--	134.95	135.06	134.50	134.46	--	136.10	135.42	135.37	134.35	134.53
BH99-3B	130.59	127.56	127.48	127.48	--	127.38	128.04	127.15	--	127.51	126.98	127.26	127.25	--	129.65	127.45	127.30	126.96	127.70
BH99-3C	140.26	137.94	137.89	138.51	--	138.39	138.22	138.53	--	138.31	138.50	137.71	137.70	--	140.05	139.04	138.95	136.78	137.36
BH99-3D	140.49	139.01	138.95	138.58	--	138.43	139.22	140.15	--	139.63	139.51	139.09	139.08	--	140.64	139.64	139.61	137.71	138.88
BH99-4A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7A	137.35	136.10	136.03	135.85	--	135.77	135.35	135.61	--	134.82	135.33	134.38	134.40	--	136.29	135.82	135.00	134.22	134.48
BH03-7B	137.56	136.43	136.40	136.28	--	136.18	135.98	135.89	--	136.01	135.94	135.24	135.25	--	136.85	136.33	135.80	135.08	135.32
BH03-7C	144.73	144.43	144.38	144.44	--	144.36	144.30	144.41	--	144.31	144.39	143.97	143.98	--	144.35	144.25	143.98	143.72	143.80
BH03-7D	146.63	146.29	146.26	146.45	--	146.36	146.34	146.42	--	146.38	146.46	146.32	146.31	--	146.53	146.39	146.28	146.02	146.10
BH03-8A	128.45	125.22	125.15	125.52	--	125.41	125.04	124.02	--	124.57	123.62	124.47	124.46	--	126.57	123.93	123.40	122.06	122.95
BH03-8B	142.04	142.00	141.95	141.55	--	141.44	141.91	141.77	--	141.04	141.13	140.84	140.86	--	141.19	141.30	141.01	140.71	140.50
BH03-8C	142.51	141.59	141.55	141.86	--	141.79	141.29	141.38	--	141.01	141.22	140.91	140.92	--	141.96	141.60	140.88	140.59	140.58
BH03-9A	138.83	138.93	138.85	139.07	--	138.93	139.17	139.16	--	139.14	139.18	139.11	139.12	--	139.08	139.08	139.10	139.06	139.01
BH03-9B	134.19	134.41	134.37	135.68	--	135.55	135.47	135.74	--	135.97	136.23	136.40	136.40	--	135.76	135.93	136.15	136.32	137.46
BH03-9C	139.68	139.44	139.33	139.51	--	139.45	139.40	139.38	--	139.36	139.40	139.13	139.12	--	139.56	139.45	139.26	139.12	139.17
BH05-10A	137.41	--	--	--	136.44	--	--	--	135.80	--	--	--	--	135.38	--	136.22	--	135.11	--
BH05-10B	137.38	--	--	--	136.42	--	--	--	135.78	--	--	--	--	135.36	--	136.20	--	135.10	--
BH05-10C	139.48	--	--	--	138.89	--	--	--	138.38	--	--	--	--	138.06	--	138.82	--	137.90	--
BH05-11	141.57	--	--	--	141.05	--	--	--	140.64	--	--	--	--	140.45	--	140.61	--	140.13	--
BH05-12A	133.61	--	--	--	132.38	--	--	--	131.83	--	--	--	--	131.67	--	132.91	--	131.33	--
BH05-12B	133.56	--	--	--	132.38	--	--	--	131.83	--	--	--	--	131.64	--	132.77	--	131.35	--
BH05-12C	132.70	--	--	--	132.89	--	--	--	132.91	--	--	--	--	132.62	--	132.49	--	132.59	--
BH13-16A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	29-Aug-10	22-Sep-10	12-Oct-10	9-Nov-10	2-Dec-10	5-Jan-11	1-Feb-11	7-Mar-11	14-Apr-11	5-May-11	6-Jun-11	14-Jul-11	4-Aug-11	27-Sep-11	24-Oct-11	8-Nov-11	1-Dec-11	4-Jan-12	5-Feb-12
BH99-1	147.14	146.92	147.29	147.19	147.19	146.87	146.90	147.04	147.18	147.27	146.92	146.58	146.26	145.98	--	146.06	146.37	146.22	146.28
BH99-2A	134.66	133.91	134.49	135.49	135.49	134.22	134.24	134.10	135.44	135.28	134.12	133.74	132.69	132.32	134.25	133.16	134.65	133.42	133.97
BH99-2B	143.94	144.90	144.71	145.10	145.10	144.62	144.61	144.91	144.34	144.48	144.44	144.48	143.84	143.42	144.88	144.06	145.12	144.74	144.94
BH99-3A	134.52	134.93	135.18	135.81	135.81	135.13	135.16	134.91	135.78	135.57	135.13	134.65	133.82	133.79	135.01	133.94	135.02	134.30	134.71
BH99-3B	127.72	127.88	127.98	128.33	128.33	126.74	126.79	127.46	127.83	126.86	126.97	126.82	126.48	126.46	127.01	126.36	127.42	126.32	127.29
BH99-3C	137.39	138.27	137.92	140.37	140.37	138.57	138.63	139.85	140.22	139.14	137.62	137.53	136.48	136.46	139.60	137.85	140.24	137.53	139.25
BH99-3D	138.90	140.68	139.40	140.86	140.86	139.88	139.99	140.64	140.64	140.56	138.84	138.41	137.67	137.66	140.22	139.01	140.66	139.21	140.08
BH99-4A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7A	134.46	134.88	135.28	135.36	136.44	135.16	135.17	135.09	136.06	135.85	134.78	134.16	133.26	132.52	134.50	133.06	135.03	133.64	134.08
BH03-7B	135.30	135.68	135.97	136.15	136.71	135.97	135.99	135.71	136.64	136.50	134.91	135.36	134.40	133.83	135.72	134.50	135.82	134.97	135.41
BH03-7C	143.78	144.00	144.16	144.34	144.49	144.11	144.11	144.18	144.04	144.02	144.98	Damaged	Damaged	Damaged	145.73	144.99	145.10	144.99	145.02
BH03-7D	146.05	146.34	146.43	146.45	146.53	Frozen	Frozen	Frozen	146.54	146.48	Blocked	145.03	145.03	145.04	145.07	145.01	145.12	144.89	145.02
BH03-8A	123.04	123.29	123.78	123.72	123.15	123.04	123.08	123.49	123.53	121.92	122.82	122.71	122.42	120.42	122.55	122.38	122.27	122.63	122.52
BH03-8B	140.52	140.27	140.24	140.62	140.48	140.60	140.57	140.39	140.63	140.45	140.18	139.82	139.68	139.42	139.40	138.84	139.26	139.38	139.31
BH03-8C	140.58	140.43	140.55	140.89	141.05	141.04	141.09	141.09	141.01	143.12	140.37	140.14	139.92	139.80	140.38	139.98	140.30	140.00	139.97
BH03-9A	138.97	139.02	139.03	139.04	139.02	139.07	139.10	138.92	139.05	139.08	139.06	139.00	138.98	138.74	138.66	138.62	138.57	138.59	138.57
BH03-9B	137.37	133.87	136.95	137.01	137.13	137.31	137.39	137.46	137.63	137.71	137.78	137.89	137.93	138.00	138.02	138.40	137.99	138.04	138.07
BH03-9C	139.19	139.42	139.41	139.48	139.60	139.36	139.37	139.44	139.50	139.49	139.32	139.27	139.05	138.22	138.58	138.38	138.56	138.40	138.36
BH05-10A	--	--	135.95	--	--	--	--	135.68	--	--	135.86	--	--	135.82	--	--	135.77	--	--
BH05-10B	--	--	135.95	--	--	--	--	135.61	--	--	135.85	--	--	135.82	--	--	135.77	--	--
BH05-10C	--	--	138.56	--	--	--	--	138.20	--	--	138.79	--	--	138.75	--	--	138.18	--	--
BH05-11	--	--	140.44	--	--	--	--	140.67	--	--	141.05	--	--	141.00	--	--	140.94	--	--
BH05-12A	--	--	132.77	--	--	--	--	131.33	--	--	131.42	--	--	131.34	--	--	131.27	--	--
BH05-12B	--	--	132.54	--	--	--	--	131.41	--	--	131.44	--	--	131.37	--	--	131.29	--	--
BH05-12C	--	--	132.26	--	--	--	--	132.93	--	--	132.78	--	--	132.71	--	--	132.63	--	--
BH13-16A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	8-Mar-12	9-Apr-12	4-May-12	21-Jun-12	11-Jul-12	9-Aug-12	17-Sep-12	10-Oct-12	16-Nov-12	12-Dec-12	4-Jan-13	25-Feb-13	13-Mar-13	3-Apr-13	13-May-13	4-Jun-13	12-Jun-13	10-Jul-13	20-Aug-13
BH99-1	Frozen	146.56	146.44	146.53	146.29	145.77	146.38	146.42	146.33	146.30	146.24	146.22	147.14	146.20	146.27	--	146.21	146.20	146.05
BH99-2A	134.17	133.91	133.88	133.09	132.34	131.98	133.58	133.54	133.17	132.88	132.96	133.04	135.71	134.27	134.34	--	134.08	134.05	133.76
BH99-2B	145.67	144.15	144.13	144.10	143.62	143.35	144.80	144.81	144.76	144.77	144.56	144.08	145.46	144.71	144.78	--	144.77	144.74	144.83
BH99-3A	134.79	134.68	134.64	133.97	133.26	133.08	134.51	134.49	134.24	133.80	133.83	133.89	135.79	134.86	134.90	--	134.51	134.51	134.32
BH99-3B	126.64	126.09	126.11	125.81	125.70	125.73	126.42	126.40	126.44	125.91	126.73	125.90	129.12	127.05	127.08	--	126.04	126.02	126.20
BH99-3C	139.60	137.68	137.67	137.44	139.16	136.95	139.16	139.17	138.54	138.38	138.46	137.21	140.53	139.52	139.57	--	138.14	138.13	138.88
BH99-3D	139.74	138.86	138.78	138.36	138.08	137.35	140.54	140.59	139.81	140.18	138.83	138.23	140.75	140.04	140.12	--	139.15	139.14	139.53
BH99-4A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7A	134.42	134.01	134.15	133.24	132.48	132.26	133.81	133.77	133.37	133.09	134.39	133.28	136.27	134.28	134.32	--	134.01	133.99	133.72
BH03-7B	135.62	135.47	135.40	134.62	133.86	133.68	135.23	135.20	134.81	135.05	135.06	134.50	136.80	135.56	135.60	--	--	135.05	134.97
BH03-7C	144.98	145.02	145.04	144.99	144.00	144.99	144.99	145.00	145.01	145.00	144.41	145.11	145.07	145.14	145.20	--	145.12	145.11	145.09
BH03-7D	145.03	145.04	145.05	144.93	144.00	144.06	144.98	144.99	145.03	145.04	145.15	145.12	145.10	145.16	145.22	--	145.13	145.12	145.11
BH03-8A	122.54	122.29	122.22	121.77	121.91	122.32	122.43	122.40	123.15	121.60	121.82	122.52	122.50	123.52	123.57	--	121.84	121.83	122.28
BH03-8B	139.61	139.84	139.81	139.74	139.40	139.23	139.26	139.22	138.99	138.94	139.02	139.02	139.23	139.34	139.37	--	139.39	139.37	139.22
BH03-8C	141.06	140.39	140.39	139.90	139.58	139.45	140.05	140.08	139.36	139.58	139.87	140.34	141.10	140.37	140.43	--	139.82	139.80	139.35
BH03-9A	138.58	138.64	138.59	138.52	138.40	138.19	138.21	138.19	138.37	138.76	138.61	138.55	138.58	138.59	138.64	--	138.59	138.55	138.53
BH03-9B	138.10	138.13	138.09	138.12	138.13	138.14	138.14	138.13	138.14	138.29	138.04	138.20	138.23	138.23	138.26	--	138.25	138.20	138.28
BH03-9C	138.76	138.42	138.45	138.31	138.11	137.96	138.53	138.54	138.45	138.40	138.41	138.40	138.56	138.48	138.49	--	138.48	138.45	138.46
BH05-10A	136.11	--	--	134.72	--	--	--	--	--	136.02	--	--	136.57	--	--	135.28	--	--	--
BH05-10B	136.10	--	--	134.72	--	--	--	--	--	136.02	--	--	136.58	--	--	135.27	--	--	--
BH05-10C	138.53	--	--	137.90	--	--	--	--	--	138.56	--	--	138.54	--	--	138.43	--	--	--
BH05-11	140.96	--	--	140.54	--	--	--	--	--	140.99	--	--	141.16	--	--	140.38	--	--	--
BH05-12A	131.70	--	--	131.12	--	--	--	--	--	131.36	--	--	131.35	--	--	131.24	--	--	--
BH05-12B	131.64	--	--	131.16	--	--	--	--	--	131.38	--	--	131.36	--	--	131.27	--	--	--
BH05-12C	132.94	--	--	132.63	--	--	--	--	--	132.69	--	--	132.71	--	--	132.64	--	--	--
BH13-16A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH13-16D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	23-Sep-13	21-Oct-13	8-Nov-13	6-Dec-13	9-Jan-14	4-Feb-14	10-Mar-14	2-Apr-14	5-May-14	27-Jun-14	28-Jul-14	21-Aug-14	17-Sep-14	3-Oct-14	14-Nov-14	7-Dec-14	21-Jan-15	10-Feb-15	11-Mar-15
BH99-1	146.14	146.20	146.14	146.04	146.06	146.04	146.00	145.98	145.97	146.57	145.97	146.48	146.36	146.12	145.92	146.03	144.61	143.63	143.43
BH99-2A	135.42	135.08	135.17	135.15	135.07	135.06	134.18	134.20	134.17	136.24	133.50	134.93	134.45	133.58	133.52	133.69	133.25	132.80	132.96
BH99-2B	145.30	145.30	145.35	145.24	145.29	145.27	144.88	144.86	144.83	146.30	144.39	145.21	144.95	144.52	144.51	144.56	144.05	143.54	144.44
BH99-3A	135.52	135.39	134.97	134.35	134.13	134.11	134.06	134.08	134.05	136.09	133.93	135.08	134.75	134.16	134.15	134.20	133.92	133.50	133.39
BH99-3B	127.96	127.94	127.59	126.84	126.39	126.38	126.17	126.20	126.19	127.20	125.87	126.57	126.21	126.01	126.02	126.04	126.11	126.06	125.98
BH99-3C	140.34	140.32	139.77	139.10	138.75	138.73	137.89	137.84	137.81	140.29	137.06	138.82	138.54	137.47	137.65	137.73	137.12	136.53	136.62
BH99-3D	140.63	140.62	140.66	140.68	140.12	140.10	139.11	139.07	139.05	140.59	138.28	140.62	139.89	138.79	139.07	139.09	138.10	137.44	137.30
BH99-4A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7A	135.61	135.13	134.48	133.74	133.36	133.33	133.26	133.22	133.23	136.57	133.25	134.73	134.33	133.42	133.33	133.38	133.06	132.68	132.70
BH03-7B	136.52	136.27	135.56	134.97	134.60	134.58	134.55	134.59	134.56	137.20	134.52	--	--	134.66	134.59	134.61	137.29	133.83	133.81
BH03-7C	145.38	145.27	145.38	145.60	145.50	145.43	145.31	145.29	145.23	145.07	145.01	145.06	145.02	145.03	145.07	145.08	Frozen	Frozen	Frozen
BH03-7D	145.41	145.29	145.47	145.54	145.68	145.63	145.32	145.30	145.30	145.06	145.04	145.08	145.05	145.06	145.10	145.09	145.05	144.22	145.01
BH03-8A	123.32	123.66	123.45	122.13	123.18	123.15	123.25	123.23	123.21	Monitoring wells no longer accessible due to proximity to quarry edge.			--	--	--	--	--	--	--
BH03-8B	138.75	138.67	138.51	138.20	138.12	138.09	138.02	138.06	138.05				--	--	--	--	--	--	--
BH03-8C	137.57	138.82	--	138.80	138.81	138.80	138.93	138.99	138.96				--	--	--	--	--	--	--
BH03-9A	138.55	138.58	138.60	138.59	139.56	139.53	138.65	138.67	138.63	138.68	138.64	138.64	138.66	138.65	138.61	138.57	138.08	138.54	138.40
BH03-9B	138.29	138.31	138.30	138.33	138.34	138.31	138.46	138.45	138.41	138.40	138.38	138.41	138.42	138.43	138.43	138.42	138.43	138.44	138.46
BH03-9C	138.64	138.60	138.57	138.56	138.46	138.43	138.72	138.51	138.48	138.78	138.46	138.67	138.55	138.48	138.47	138.48	138.38	138.24	138.20
BH05-10A	--	136.15	135.77	135.04	--	--	135.06	--	--	136.93	--	--	135.48	--	--	135.42	--	--	--
BH05-10B	--	136.16	135.77	135.02	--	--	134.98	--	--	136.94	--	--	135.50	--	--	135.42	--	--	--
BH05-10C	--	138.74	138.39	138.02	--	--	138.11	--	--	139.78	--	--	138.80	--	--	138.62	--	--	--
BH05-11	--	141.41	141.36	141.30	--	--	141.32	--	--	141.91	--	--	141.30	--	--	141.23	--	--	--
BH05-12A	--	Damaged	Damaged	Damaged	--	--	Damaged	--	--	Damaged	--	--	Damaged	--	--	Damaged	--	--	--
BH05-12B	--	Damaged	Damaged	Damaged	--	--	Damaged	--	--	Damaged	--	--	Damaged	--	--	Damaged	--	--	--
BH05-12C	--	133.72	133.52	133.46	--	--	Frozen	--	--	Damaged	--	--	Damaged	--	--	Damaged	--	--	--
BH13-16A	--	--	--	130.36	130.81	130.78	131.09	131.04	131.00	129.86	130.23	129.60	129.77	129.58	129.67	133.55	130.68	130.45	130.48
BH13-16B	--	--	--	133.65	133.59	133.47	133.59	133.63	133.60	134.80	133.16	133.95	133.96	133.56	133.47	133.57	133.26	132.99	131.85
BH13-16C	--	--	--	138.20	139.51	139.48	140.59	140.56	140.53	141.40	141.00	141.41	141.66	141.66	141.67	141.68	141.70	141.38	141.17
BH13-16D	--	--	--	136.49	142.21	142.15	142.54	142.53	142.50	142.67	141.78	142.47	142.26	142.01	142.00	142.04	141.94	141.60	141.53
BH18-17A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	25-Mar-15	6-Apr-15	6-May-15	24-Jun-15	16-Jul-15	21-Aug-15	18-Sep-15	9-Oct-15	6-Nov-15	7-Dec-15	13-Jan-16	3-Feb-16	18-Mar-16	13-Apr-16	10-May-16	3-Jun-16	4-Jul-16	3-Aug-16	19-Sep-16
BH99-1	--	144.74	144.77	145.26	144.52	145.21	145.87	145.27	145.58	145.60	145.64	145.61	145.93	145.60	145.57	145.56	145.54	146.03	146.34
BH99-2A	--	134.87	134.16	134.14	133.31	135.16	134.73	133.33	134.18	134.28	134.31	134.26	135.96	135.23	135.29	135.26	135.21	134.87	134.34
BH99-2B	--	145.61	144.68	144.80	144.13	145.31	144.94	144.20	144.29	144.25	144.27	144.30	145.53	145.24	145.17	145.02	144.97	144.86	144.73
BH99-3A	--	135.13	134.53	134.61	133.87	135.23	135.05	133.94	134.37	134.36	134.42	134.37	135.72	135.34	135.26	135.14	135.16	136.38	137.48
BH99-3B	--	127.11	126.28	126.27	126.09	127.74	127.00	126.39	126.70	126.89	126.92	126.90	128.84	127.48	127.37	127.30	127.35	127.08	126.54
BH99-3C	--	140.10	137.59	138.07	136.68	138.90	139.53	137.36	137.67	137.66	137.69	137.71	140.80	140.23	140.22	140.16	140.13	139.81	138.67
BH99-3D	--	140.61	138.80	139.04	138.21	140.70	140.06	138.81	139.22	139.16	139.18	139.20	140.86	140.66	140.77	140.59	140.58	140.57	140.60
BH99-4A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7A	--	134.76	134.05	134.05	133.22	135.13	134.60	133.18	133.31	133.29	133.32	133.29	136.49	135.50	135.47	135.43	135.30	135.14	134.34
BH03-7B	--	135.79	135.22	135.20	134.28	136.10	135.72	134.34	134.74	134.72	134.75	134.74	136.80	136.36	136.30	136.26	135.96	135.81	135.49
BH03-7C	--	145.42	145.11	145.98	145.70	145.93	145.84	145.58	145.72	145.75	145.75	145.65	145.03	144.99	144.96	144.90	144.79	144.84	144.97
BH03-7D	--	145.44	145.14	146.00	145.73	145.96	145.86	145.60	145.73	145.75	145.76	145.76	145.06	144.71	144.76	144.75	144.71	144.86	145.01
BH03-8A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9A	--	138.49	138.57	138.59	138.55	138.50	138.51	138.50	138.49	138.51	138.54	138.52	138.69	138.63	138.62	138.60	138.55	138.53	138.55
BH03-9B	--	138.45	138.46	138.49	138.48	138.50	138.52	138.52	138.53	138.54	138.58	138.57	138.57	138.54	138.57	138.59	138.59	138.61	138.60
BH03-9C	--	138.79	138.56	138.51	138.42	138.65	138.55	138.50	138.53	138.59	138.63	138.61	138.83	138.70	138.66	138.65	138.65	138.61	138.58
BH05-10A	133.94	--	--	135.26	--	--	135.72	--	135.51	--	--	--	136.46	--	135.62	--	--	135.33	135.25
BH05-10B	133.95	--	--	135.27	--	--	135.73	--	135.51	--	--	--	136.48	--	135.62	--	--	135.36	135.27
BH05-10C	137.19	--	--	138.41	--	--	138.75	--	138.64	--	--	--	139.30	--	138.64	--	--	138.00	137.88
BH05-11	140.39	--	--	141.17	--	--	141.43	--	141.34	--	--	--	142.45	--	141.32	--	--	141.00	140.91
BH05-12A	Damaged	--	--	Damaged	--	--	Damaged	--	Damaged	--	--	--	Damaged	--	Damaged	--	--	Damaged	Damaged
BH05-12B	Damaged	--	--	Damaged	--	--	Damaged	--	Damaged	--	--	--	Damaged	--	Damaged	--	--	Damaged	Damaged
BH05-12C	Damaged	--	--	Damaged	--	--	Damaged	--	Damaged	--	--	--	Damaged	--	Damaged	--	--	Damaged	Damaged
BH13-16A	--	130.54	129.79	129.96	129.38	129.00	129.11	128.89	129.00	129.01	129.04	129.00	130.48	130.26	130.19	130.16	130.10	129.89	129.24
BH13-16B	--	134.15	133.64	133.59	133.00	133.64	133.84	133.11	133.42	133.38	133.42	133.40	134.46	134.21	134.13	134.03	133.92	133.72	133.16
BH13-16C	--	142.46	142.11	142.23	141.75	141.94	142.04	141.67	141.78	141.72	141.75	141.74	142.46	142.45	142.47	142.41	142.40	142.23	141.45
BH13-16D	--	142.80	142.36	142.43	141.99	142.51	142.47	141.88	142.19	142.16	142.14	142.16	142.83	142.78	142.80	142.75	142.73	142.42	142.03
BH18-17A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	12-Oct-16	8-Nov-16	9-Dec-16	4-Jan-17	3-Feb-17	14-Mar-17	7-Apr-17	5-May-17	2-Jun-17	20-Jul-17	2-Aug-17	5-Sep-17	2-Oct-17	2-Nov-17	1-Dec-17	4-Jan-18	2-Feb-18	2-Mar-18	22-Mar-18
BH99-1	146.20	146.27	146.25	146.32	145.87	145.82	146.70	146.26	145.57	145.70	145.63	145.73	145.70	145.75	145.58	145.14	145.43	145.56	--
BH99-2A	134.45	134.39	134.40	134.60	133.88	134.82	136.44	135.80	134.85	134.88	134.83	134.86	134.87	134.89	134.47	133.40	133.68	135.29	--
BH99-2B	144.78	144.77	144.97	145.34	144.76	144.87	145.71	145.43	144.95	144.90	144.90	144.87	144.84	144.92	145.00	143.91	144.17	145.17	--
BH99-3A	137.25	137.39	137.44	137.54	137.43	137.45	137.62	137.56	137.45	137.34	137.39	137.55	137.46	137.59	137.51	135.48	136.27	--	137.12
BH99-3B	126.88	126.77	126.84	127.01	126.38	126.45	128.53	127.82	126.49	126.70	126.68	126.52	126.61	126.67	126.44	125.60	126.65	--	125.82
BH99-3C	138.93	138.78	139.77	139.42	138.82	139.74	140.92	140.49	139.80	139.75	139.73	139.77	139.68	139.74	140.18	137.63	138.49	--	138.76
BH99-3D	140.58	140.56	140.60	140.64	139.91	140.03	141.09	140.69	140.41	140.38	140.30	140.36	140.28	140.32	140.65	138.37	138.69	--	139.78
BH99-4A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7A	134.83	134.61	134.36	134.52	133.72	134.86	137.01	136.09	134.84	134.87	134.89	134.98	134.88	135.02	134.31	133.10	133.30	135.06	--
BH03-7B	135.60	135.59	135.56	135.75	134.97	135.99	136.96	136.41	135.90	135.97	135.89	136.03	135.92	135.98	135.48	134.31	135.30	136.12	--
BH03-7C	144.96	144.95	144.97	144.99	144.99	144.99	145.02	144.94	145.02	144.98	144.95	144.97	144.95	144.92	144.99	Frozen	Frozen	144.98	--
BH03-7D	145.01	145.02	145.01	145.02	145.01	145.07	145.04	145.05	145.04	145.01	144.97	144.99	145.03	144.96	145.01	145.00	145.01	145.02	--
BH03-8A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9A	138.54	138.54	138.51	138.61	138.62	138.63	138.76	138.69	138.76	138.71	138.67	138.69	138.69	138.71	138.67	138.69	138.65	138.70	--
BH03-9B	138.60	138.59	138.61	138.67	138.56	138.64	138.62	138.65	138.68	138.61	138.63	138.63	138.67	138.77	138.70	138.72	138.68	138.73	--
BH03-9C	138.61	138.61	138.65	138.74	138.67	138.72	139.18	139.07	138.73	138.72	138.70	138.71	138.72	138.79	138.67	138.54	138.67	138.78	--
BH05-10A	--	--	135.48	--	--	135.80	--	--	135.74	--	--	135.78	--	135.76	--	--	--	135.91	--
BH05-10B	--	--	135.51	--	--	135.82	--	--	135.77	--	--	135.78	--	135.88	--	--	--	135.94	--
BH05-10C	--	--	138.65	--	--	138.97	--	--	139.12	--	--	139.09	--	139.05	--	--	--	139.20	--
BH05-11	--	--	141.71	--	--	142.06	--	--	142.03	--	--	142.07	--	142.02	--	--	--	Frozen	--
BH05-12A	--	--	Damaged	--	--	Damaged	--	--	Damaged	--	--	Damaged	--	Damaged	--	--	--	Damaged	--
BH05-12B	--	--	Damaged	--	--	Damaged	--	--	Damaged	--	--	Damaged	--	Damaged	--	--	--	Damaged	--
BH05-12C	--	--	Damaged	--	--	Damaged	--	--	Damaged	--	--	Damaged	--	Damaged	--	--	--	Damaged	--
BH13-16A	129.50	129.39	129.11	130.75	130.50	130.11	130.33	130.10	129.64	129.37	129.33	129.74	129.38	129.62	128.57	130.53	130.51	129.45	--
BH13-16B	133.40	133.29	133.54	133.55	133.11	133.94	133.76	133.43	133.16	132.79	132.74	132.48	131.43	132.62	132.40	131.57	131.56	132.52	--
BH13-16C	141.76	141.62	142.13	142.18	142.29	142.37	142.39	142.33	142.22	142.23	142.20	141.98	141.53	142.14	142.27	141.82	141.84	142.39	--
BH13-16D	142.18	142.14	142.54	142.70	142.57	142.65	142.88	142.74	142.68	142.52	142.49	142.35	141.71	142.45	142.56	142.06	142.26	142.79	--
BH18-17A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-17D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	3-Apr-18	1-May-18	15-Jun-18	9-Jul-18	18-Jul-18	22-Aug-18	23-Aug-18	11-Sep-18	17-Sep-18	5-Oct-18	18-Oct-18	22-Nov-18	23-Nov-18	11-Dec-18	11-Jan-19	15-Feb-19	27-Feb-19	27-Mar-19	4-Apr-19
BH99-1	145.82	145.90	145.17	142.30	--	--	146.11	--	145.66	--	145.89	--	145.69	145.78	145.59	145.73	--	145.65	--
BH99-2A	133.78	133.83	134.44	132.94	--	--	134.87	--	132.93	--	133.48	--	133.76	134.33	133.61	133.04	--	135.20	--
BH99-2B	144.20	144.25	144.20	143.33	--	--	144.88	--	143.22	--	144.03	--	144.54	144.76	144.15	144.47	--	145.11	--
BH99-3A	136.25	136.14	137.46	135.17	--	--	137.46	--	135.74	--	137.44	--	137.45	137.45	137.45	137.46	--	137.54	--
BH99-3B	126.75	126.95	125.93	125.62	--	--	125.47	--	125.78	--	125.93	--	125.98	126.15	125.76	125.91	--	126.92	--
BH99-3C	138.46	138.48	139.49	137.20	--	--	137.94	--	138.10	--	139.17	--	138.71	139.58	138.38	138.52	--	140.61	--
BH99-3D	138.45	138.59	140.57	137.93	--	--	140.38	--	138.25	--	139.55	--	140.07	139.92	138.97	140.23	--	140.66	--
BH99-4A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7A	133.29	133.39	133.98	132.63	--	--	134.68	--	132.90	--	133.42	--	133.72	134.68	134.05	134.16	--	135.65	--
BH03-7B	135.27	135.29	Danaged	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7C	144.67	144.70	Dry	Dry	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7D	145.00	145.04	145.02	145.01	--	--	145.00	--	144.97	--	144.92	--	144.88	145.00	144.98	144.97	--	145.00	--
BH03-8A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9A	138.73	138.79	138.71	138.64	--	--	138.63	--	138.66	--	138.55	--	138.60	138.64	138.64	138.63	--	138.63	--
BH03-9B	138.77	138.84	138.77	138.76	--	--	138.77	--	138.76	--	138.71	--	138.76	138.78	138.74	138.78	--	138.79	--
BH03-9C	138.81	138.84	138.68	138.44	--	--	138.64	--	138.56	--	138.69	--	138.62	138.67	138.62	138.64	--	138.91	--
BH05-10A	--	--	135.40	--	134.01	135.66	--	134.37	--	135.46	--	135.04	--	135.63	135.11	--	134.51	136.12	136.46
BH05-10B	--	--	135.44	--	134.04	135.69	--	134.39	--	135.48	--	135.05	--	135.66	135.15	--	134.55	136.14	136.47
BH05-10C	--	--	138.78	--	137.46	138.38	--	137.53	--	138.15	--	137.09	--	138.67	138.33	--	138.09	139.31	139.71
BH05-11	--	--	141.68	--	141.11	141.72	--	--	--	141.73	--	--	--	142.26	--	--	--	Frozen	Frozen
BH05-12A	--	--	Damaged	--	Damaged	Damaged	--	Damaged	--	Damaged	--	Damaged	--	Damaged	Damaged	--	Damaged	Damaged	Damaged
BH05-12B	--	--	Damaged	--	Damaged	Damaged	--	Damaged	--	Damaged	--	Damaged	--	Damaged	Damaged	--	Damaged	Damaged	Damaged
BH05-12C	--	--	Damaged	--	Damaged	Damaged	--	Damaged	--	Damaged	--	Damaged	--	Damaged	Damaged	--	Damaged	Damaged	Damaged
BH13-16A	129.80	129.71	128.73	128.86	--	--	128.36	--	128.46	--	128.22	--	128.12	128.37	129.62	129.73	--	129.17	--
BH13-16B	132.51	132.70	132.17	131.23	--	--	132.15	--	131.29	--	131.61	--	131.80	132.13	131.66	131.30	--	132.29	--
BH13-16C	142.41	142.50	142.17	141.57	--	--	141.96	--	141.63	--	142.08	--	142.18	142.32	142.17	141.79	--	142.47	--
BH13-16D	142.79	142.79	142.43	141.76	--	--	142.35	--	141.86	--	142.30	--	142.43	142.55	142.45	142.10	--	142.78	--
BH18-17A	--	--	--	--	--	--	--	--	--	--	136.70	--	136.42	136.42	136.37	136.23	--	136.23	--
BH18-17B	--	--	--	--	--	--	--	--	--	--	136.63	--	136.81	136.92	136.79	136.66	--	137.02	--
BH18-17C	--	--	--	--	--	--	--	--	--	--	136.63	--	136.84	136.95	136.83	136.72	--	137.05	--
BH18-17D	--	--	--	--	--	--	--	--	--	--	137.80	--	Frozen	Frozen	Frozen	Frozen	--	Frozen	--
SQAT20-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SQAT20-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	16-Apr-19	13-May-19	22-May-19	14-Jun-19	27-Jun-19	16-Jul-19	25-Jul-19	30-Aug-19	20-Sep-19	7-Oct-19	18-Oct-19	8-Nov-19	6-Dec-19	10-Jan-20	3-Feb-20	5-Feb-20	12-Mar-20	24-Mar-20	2-Apr-20
BH99-1	145.05	145.61	--	145.04	--	144.62	--	145.58	145.77	--	146.65	146.28	145.81	145.68	--	144.74	145.89	--	145.52
BH99-2A	136.12	135.39	--	135.05	--	Monitoring wells decommissioned.			--	--	--	--	--	--	--	--	--	--	--
BH99-2B	145.20	144.74	--	145.44	--				--	--	--	--	--	--	--	--	--	--	--
BH99-3A	137.52	137.43	--	137.90	--	137.13	--	136.92	136.67	--	137.49	137.40	137.41	137.43	--	137.32	137.56	--	137.46
BH99-3B	127.84	125.48	--	126.13	--	125.00	--	124.72	124.53	--	125.76	124.95	124.60	124.62	--	124.56	126.22	--	125.76
BH99-3C	140.82	140.27	--	139.55	--	138.00	--	139.41	137.50	--	140.02	139.95	138.83	138.77	--	138.79	140.74	--	140.63
BH99-3D	140.78	140.57	--	140.63	--	138.67	--	140.61	138.49	--	140.58	140.56	139.72	139.70	--	139.52	140.74	--	140.61
BH99-4A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7A	136.75	135.68	--	135.46	--	133.96	--	133.95	133.14	--	135.42	135.09	134.12	133.98	--	133.89	136.32	--	135.85
BH03-7B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7D	144.97	144.94	--	144.99	--	144.94	--	144.99	144.67	--	144.95	144.94	144.93	144.08	--	143.80	144.99	--	144.93
BH03-8A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9A	138.70	138.74	--	138.71	--	138.65	--	138.70	138.48	--	138.47	138.48	138.55	138.74	--	138.60	138.59	--	138.68
BH03-9B	138.82	138.83	--	138.85	--	138.81	--	138.83	138.78	--	138.80	138.81	138.78	138.78	--	138.84	138.84	--	138.84
BH03-9C	139.04	138.74	--	138.79	--	138.60	--	138.63	138.51	--	138.71	138.69	138.60	138.59	--	138.54	138.95	--	138.85
BH05-10A	--	--	136.06	--	135.43	--	134.42	--	--	134.23	--	--	--	--	135.06	--	--	--	--
BH05-10B	--	--	136.08	--	135.32	--	134.44	--	--	134.24	--	--	--	--	135.09	--	--	--	--
BH05-10C	--	--	139.40	--	138.81	--	137.97	--	--	137.70	--	--	--	--	138.45	--	--	--	--
BH05-11	--	--	141.89	--	--	--	141.57	--	--	141.10	--	--	--	--	142.05	--	--	--	--
BH05-12A	--	--	Damaged	--	Damaged	--	Damaged	--	--	Damaged	--	--	--	--	Damaged	--	--	--	--
BH05-12B	--	--	Damaged	--	Damaged	--	Damaged	--	--	Damaged	--	--	--	--	Damaged	--	--	--	--
BH05-12C	--	--	Damaged	--	Damaged	--	Damaged	--	--	Damaged	--	--	--	--	Damaged	--	--	--	--
BH13-16A	129.21	129.46	--	128.27	--	128.71	--	127.85	126.84	--	128.25	128.15	128.08	129.54	--	128.71	129.22	--	129.00
BH13-16B	132.50	132.21	--	132.12	--	131.42	--	131.20	130.91	--	131.64	131.99	131.49	131.39	--	131.47	132.37	--	132.25
BH13-16C	142.51	142.43	--	142.22	--	142.08	--	141.70	141.60	--	141.51	142.28	142.14	142.18	--	142.12	142.46	--	142.44
BH13-16D	142.83	142.73	--	142.70	--	142.24	--	142.04	141.92	--	142.49	142.55	142.40	142.57	--	142.41	142.79	--	142.79
BH18-17A	136.39	136.42	--	136.35	--	136.23	--	135.97	135.85	--	135.74	136.00	136.11	136.12	--	136.23	136.19	--	136.34
BH18-17B	137.32	137.03	--	136.87	--	136.64	--	136.34	136.25	--	136.63	136.88	136.81	136.66	--	136.75	137.00	--	137.13
BH18-17C	137.34	137.07	--	136.91	--	136.69	--	136.43	136.29	--	136.59	136.94	136.82	136.72	--	136.75	137.08	--	137.25
BH18-17D	137.92	137.85	--	137.88	--	137.82	--	137.82	137.74	--	137.84	137.92	Frozen	Frozen	--	Frozen	Frozen	--	137.86
SQAT20-25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	135.67	--
SQAT20-26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	135.22	--
SQAT20-27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	134.29	--
SQAT20-29	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	139.64	--

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	8-May-20	28-May-20	2-Jun-20	22-Jul-20	10-Aug-20	24-Aug-20	10-Sep-20	29-Oct-20	24-Nov-20	10-Dec-20	11-Jan-21	24-Feb-21	23-Mar-21	7-Apr-21	27-May-21	10-Jun-21	12-Jul-21	19-Aug-21	20-Sep-21
BH99-1	144.88	--	145.63	132.91	--	134.84	134.99	134.29	133.54	134.50	134.07	132.79	133.84	135.14	133.98	133.36	134.80	131.85	132.89
BH99-2A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-2B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-3A	137.38	--	137.40	134.08	--	137.44	137.46	137.44	137.44	137.43	137.45	134.69	137.46	137.46	137.21	137.04	137.44	137.66	136.42
BH99-3B	125.16	--	125.07	124.49	--	125.35	125.38	125.26	124.78	125.56	124.81	124.66	125.76	125.47	124.72	124.58	125.16	125.38	125.58
BH99-3C	139.81	--	138.09	137.92	--	138.97	138.71	139.54	139.04	140.32	138.77	137.58	140.11	140.32	138.22	138.92	139.56	138.87	137.95
BH99-3D	139.99	--	138.83	138.80	--	140.61	140.61	140.57	140.59	140.63	139.66	137.90	140.63	140.60	138.81	139.10	140.08	139.27	138.96
BH99-4A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-4D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-5C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH99-6C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7A	134.86	--	134.20	Monitoring wells decommissioned.			--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7B	--	--	--				--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7C	--	--	--				--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-7D	144.91	--	143.82				--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-8C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH03-9A	138.72	--	138.70	138.42	--	138.40	138.47	138.50	138.41	138.50	138.53	138.46	138.54	138.58	138.68	138.57	138.48	138.49	138.48
BH03-9B	138.89	--	138.83	138.79	--	138.85	138.92	138.86	138.83	138.78	138.87	138.99	138.84	138.78	138.81	138.82	138.91	138.52	138.13
BH03-9C	138.73	--	138.60	138.30	--	138.64	138.60	138.61	138.52	138.58	138.54	138.48	138.74	138.36	138.48	138.46	138.55	138.51	138.48
BH05-10A	--	135.12	--	--	135.60	--	--	--	134.38	--	--	--	135.78	--	--	134.33	--	--	134.95
BH05-10B	--	135.15	--	--	135.63	--	--	--	134.40	--	--	--	135.79	--	--	134.34	--	--	134.98
BH05-10C	--	138.83	--	--	138.78	--	--	--	137.90	--	--	--	139.14	--	--	138.05	--	--	138.13
BH05-11	--	142.13	--	--	141.98	--	--	--	141.61	--	--	--	142.30	--	--	141.37	--	--	141.22
BH05-12A	--	Damaged	--	--	Damaged	--	--	--	Damaged	--	--	--	Damaged	--	--	Damaged	--	--	Damaged
BH05-12B	--	Damaged	--	--	Damaged	--	--	--	Damaged	--	--	--	Damaged	--	--	Damaged	--	--	Damaged
BH05-12C	--	Damaged	--	--	Damaged	--	--	--	Damaged	--	--	--	Damaged	--	--	Damaged	--	--	Damaged
BH13-16A	128.37	--	128.55	127.74	--	128.72	128.74	127.08	127.95	128.13	128.50	128.38	128.04	128.05	128.49	128.00	128.96	128.70	128.39
BH13-16B	131.86	--	131.54	130.60	--	131.70	127.94	131.66	130.83	131.67	131.28	131.47	131.71	131.83	131.33	130.99	131.88	131.81	131.53
BH13-16C	142.34	--	142.05	141.04	--	142.19	142.16	142.19	141.76	142.26	142.18	142.12	142.32	142.38	142.04	141.67	141.97	141.94	141.69
BH13-16D	142.73	--	143.31	142.07	--	142.51	142.44	142.54	142.06	142.58	142.44	142.30	142.73	142.65	142.24	141.88	142.44	142.40	142.10
BH18-17A	136.37	--	136.32	135.86	--	135.98	136.12	136.23	136.23	136.29	136.35	136.21	136.25	136.29	136.38	136.31	136.18	136.16	--
BH18-17B	136.97	--	136.72	136.09	--	136.84	136.93	136.98	136.80	137.01	136.91	136.68	137.02	137.08	136.79	136.63	136.49	136.40	--
BH18-17C	136.96	--	136.76	137.32	--	136.89	136.98	137.02	136.85	137.04	136.97	136.73	137.07	137.12	136.84	136.67	136.73	136.72	--
BH18-17D	137.84	--	137.83	137.70	--	137.87	137.87	137.87	137.84	Frozen	Frozen	Frozen	137.86	137.83	137.79	137.75	137.83	137.83	--
SQAT20-25	135.26	--	134.56	134.73	--	135.02	134.86	135.11	134.50	135.20	134.80	134.57	135.55	135.20	134.47	134.16	135.00	134.49	134.26
SQAT20-26	135.15	--	134.63	128.82	--	134.91	134.78	135.09	134.60	135.31	135.16	134.69	135.39	135.17	133.80	133.58	135.13	133.85	133.62
SQAT20-27	134.23	--	134.09	134.47	--	134.25	134.23	134.25	134.12	134.24	134.17	134.11	134.27	134.29	130.31	129.22	134.19	133.57	131.95
SQAT20-29	139.39	--	139.20	136.50	--	138.62	138.61	138.82	138.56	138.74	138.50	138.14	138.69	138.63	138.41	137.45	138.53	138.23	137.73

STITTSVILLE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	28-Oct-21	19-Nov-21	13-Dec-21	18-Jan-22	18-Feb-22	16-Mar-22	22-Apr-22	12-May-22	22-Jun-22	27-Jul-22
BH99-1	134.09	134.89	135.12	132.21	133.50	135.10	Damaged	--	--	--
BH99-2A	--	--	--	--	--	--	--	--	--	--
BH99-2B	--	--	--	--	--	--	--	--	--	--
BH99-3A	137.45	137.30	137.37	135.99	135.86	135.49	Blocked	133.92	135.27	135.32
BH99-3B	125.38	125.36	125.41	124.38	124.76	Blocked	Blocked	Blocked	Blocked	Blocked
BH99-3C	140.14	140.37	140.26	137.72	138.86	140.13	140.33	140.07	139.38	140.30
BH99-3D	140.57	140.73	140.58	138.39	139.35	140.59	140.59	140.58	140.61	140.63
BH99-4A	--	--	--	--	--	--	--	--	--	--
BH99-4B	--	--	--	--	--	--	--	--	--	--
BH99-4C	--	--	--	--	--	--	--	--	--	--
BH99-4D	--	--	--	--	--	--	--	--	--	--
BH99-5A	--	--	--	--	--	--	--	--	--	--
BH99-5B	--	--	--	--	--	--	--	--	--	--
BH99-5C	--	--	--	--	--	--	--	--	--	--
BH99-6A	--	--	--	--	--	--	--	--	--	--
BH99-6B	--	--	--	--	--	--	--	--	--	--
BH99-6C	--	--	--	--	--	--	--	--	--	--
BH03-7A	--	--	--	--	--	--	--	--	--	--
BH03-7B	--	--	--	--	--	--	--	--	--	--
BH03-7C	--	--	--	--	--	--	--	--	--	--
BH03-7D	--	--	--	--	--	--	--	--	--	--
BH03-8A	--	--	--	--	--	--	--	--	--	--
BH03-8B	--	--	--	--	--	--	--	--	--	--
BH03-8C	--	--	--	--	--	--	--	--	--	--
BH03-9A	138.43	138.57	138.57	138.64	138.59	138.60	138.64	138.65	138.64	138.63
BH03-9B	138.86	138.82	138.87	138.91	139.32	139.23	138.90	138.93	138.90	138.95
BH03-9C	138.64	138.75	138.73	138.53	138.80	138.78	138.78	138.59	138.78	138.74
BH05-10A	--	--	136.20	--	--	--	135.02	--	--	136.07
BH05-10B	--	--	136.19	--	--	--	135.03	--	--	136.07
BH05-10C	--	--	139.10	--	--	--	138.75	--	--	138.91
BH05-11	--	--	140.79	--	--	--	141.04	--	--	141.27
BH05-12A	--	--	Damaged	--	--	--	Damaged	--	--	Damaged
BH05-12B	--	--	Damaged	--	--	--	Damaged	--	--	Damaged
BH05-12C	--	--	Damaged	--	--	--	Damaged	--	--	Damaged
BH13-16A	127.62	127.81	128.78	129.97	129.00	128.95	128.60	127.55	128.69	128.12
BH13-16B	131.95	132.26	132.13	130.53	131.03	132.18	132.27	131.02	131.60	131.49
BH13-16C	142.21	142.24	142.27	141.91	141.53	142.20	142.43	142.22	142.05	142.07
BH13-16D	142.58	142.69	142.72	142.16	142.41	142.79	142.78	142.43	142.66	142.60
BH18-17A	136.05	136.30	136.34	136.91	136.14	136.23	136.40	136.43	136.26	136.32
BH18-17B	136.86	137.12	137.06	136.68	136.80	136.98	137.15	136.90	136.85	136.99
BH18-17C	136.90	137.16	137.10	136.70	136.83	137.01	137.16	136.97	136.91	137.03
BH18-17D	137.87	137.93	137.81	Frozen	Frozen	137.83	137.90	137.82	137.91	137.93
SQAT20-25	134.26	135.89	135.92	134.45	134.94	135.34	135.77	134.96	135.50	135.70
SQAT20-26	133.62	135.55	135.50	Frozen	Frozen	135.45	135.40	134.60	134.89	135.36
SQAT20-27	131.95	133.76	134.37	134.14	134.19	134.21	134.27	134.09	134.24	133.99
SQAT20-29	137.73	139.07	139.03	Frozen	Frozen	138.99	138.92	138.52	138.78	137.46

Moore Quarry

MOORE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	19-Jun-06	29-Sep-06	15-Jan-07	1-Feb-07	27-Jul-07	29-Oct-07	9-Jan-08	23-May-08	12-Jan-09	8-Apr-09	21-Jul-09	6-Oct-09	23-Feb-10	1-Apr-10	2-Jun-10	12-Oct-10	7-Mar-11	6-Jun-11	27-Sep-11
BH05-13A	134.50	134.30	134.75	134.42	134.19	133.82	134.51	134.61	134.27	134.71	134.17	134.00	133.98	134.58	132.92	134.23	134.37	134.14	134.06
BH05-13B	135.09	134.37	135.09	134.57	134.72	134.59	134.36	134.46	135.35	135.70	135.57	135.13	135.21	135.68	135.45	135.28	135.96	135.65	135.61
BH05-13C	141.94	141.66	142.11	141.84	141.63	141.53	138.73	138.89	141.93	142.27	141.89	141.56	141.66	141.94	141.52	141.58	141.84	141.85	141.79
BH05-14A	135.23	134.98	134.80	134.97	134.90	134.56	134.90	135.01	134.79	135.21	134.89	134.59	134.34	135.01	134.09	134.49	134.43	134.27	134.20
BH05-14B	135.07	134.78	134.67	134.87	134.63	134.22	134.81	134.91	134.70	135.12	134.61	134.42	134.37	134.91	134.26	134.62	134.69	134.57	134.53
BH05-14C	136.16	135.45	135.83	135.92	135.39	135.37	135.87	135.94	135.71	136.16	135.82	135.44	135.42	135.93	135.32	135.78	135.89	135.66	135.62
BH05-15A	134.19	134.26	133.83	Frozen	134.02	133.63	Frozen	133.47	132.45	132.71	132.37	132.21	131.56	133.59	131.41	131.28	131.22	130.88	130.77
BH05-15B	134.18	134.27	133.81	Frozen	134.02	133.62	Frozen	133.42	132.45	132.71	132.39	132.20	131.55	133.48	130.40	131.30	131.24	130.89	130.79
BH05-15C	134.83	134.39	133.09	132.97	134.15	133.76	132.89	134.10	133.81	134.14	133.81	133.67	133.30	134.20	133.20	133.46	133.59	133.34	133.29
BH14-17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH14-17A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH14-18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MP14-19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MP14-20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MP14-21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MP14-22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

MOORE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	1-Dec-11	8-Mar-12	21-Jun-12	17-Sep-12	10-Oct-12	16-Nov-12	12-Dec-12	4-Jan-13	25-Feb-13	13-Mar-13	3-Apr-13	13-May-13	4-Jun-13	10-Jul-13	20-Aug-13	23-Sep-13	21-Oct-13	8-Nov-13	6-Dec-13
BH05-13A	134.02	134.17	133.48	133.46	133.42	133.75	133.66	133.78	133.86	133.63	134.11	134.13	134.05	134.05	133.70	134.45	134.53	134.48	134.52
BH05-13B	135.58	135.92	135.45	135.14	135.28	135.62	136.14	136.43	136.59	136.10	136.07	136.10	136.10	136.09	135.12	136.66	136.77	136.72	136.75
BH05-13C	141.74	141.90	141.58	141.29	141.34	141.81	141.77	141.84	141.92	141.74	141.89	141.94	141.86	141.84	141.66	142.01	141.94	141.89	141.87
BH05-14A	134.22	134.21	133.67	133.76	133.99	133.90	134.06	134.05	134.05	134.04	134.31	134.33	134.02	134.01	133.96	134.63	134.61	134.57	134.53
BH05-14B	134.51	134.61	133.93	133.90	133.86	134.19	134.10	134.22	134.29	134.08	134.53	134.55	134.07	134.07	134.12	134.88	134.97	134.92	134.89
BH05-14C	135.55	136.26	135.23	135.03	135.04	135.42	135.63	135.61	135.57	135.59	135.77	135.80	135.47	135.45	135.38	136.03	136.07	136.04	135.98
BH05-15A	130.74	130.91	130.62	130.71	130.66	130.77	130.83	130.75	130.69	130.80	130.81	130.84	130.78	130.76	130.60	131.15	131.08	131.04	130.99
BH05-15B	130.78	130.94	130.63	130.73	130.70	130.80	130.82	130.76	130.71	130.79	130.83	130.86	130.78	130.76	130.60	131.17	131.09	131.04	130.99
BH05-15C	133.18	132.72	133.02	133.09	133.12	133.35	133.38	133.36	133.38	133.35	133.53	133.58	133.32	133.26	133.27	133.85	133.85	133.81	133.78
BH14-17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH14-17A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH14-18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MP14-19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MP14-20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MP14-21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MP14-22	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

MOORE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	9-Jan-14	4-Feb-14	10-Mar-14	2-Apr-14	5-May-14	27-Jun-14	28-Jul-14	22-Aug-14	17-Sep-14	3-Oct-14	14-Nov-14	7-Dec-14	21-Jan-15	27-Feb-15	25-Mar-15	6-Apr-15	6-May-15	24-Jun-15	16-Jul-15
BH05-13A	134.56	134.53	134.56	134.59	134.53	134.61	134.53	134.38	134.23	133.94	133.95	133.97	133.77	133.38	134.00	134.57	134.27	134.05	133.46
BH05-13B	136.77	136.75	136.77	136.80	136.72	141.73	136.58	141.34	141.41	141.42	141.41	141.21	141.32	141.11	141.25	141.40	141.60	141.36	141.07
BH05-13C	141.93	141.91	141.53	141.57	141.51	142.10	141.54	141.83	141.82	141.74	141.79	141.69	141.73	141.50	141.51	141.75	141.93	141.75	141.46
BH05-14A	134.55	134.50	134.40	134.37	134.31	134.99	134.22	134.54	134.43	134.20	134.07	134.17	133.92	133.40	134.14	134.74	134.46	134.36	133.74
BH05-14B	134.92	134.90	134.92	134.91	134.87	135.09	134.83	134.83	134.70	134.42	134.42	134.44	134.23	133.84	134.49	134.98	134.69	134.50	133.93
BH05-14C	136.03	136.00	136.03	136.06	136.02	136.06	135.89	135.99	135.84	135.54	135.81	135.62	135.45	135.22	135.36	136.01	135.79	135.70	135.18
BH05-15A	131.01	130.99	130.96	130.92	130.88	131.43	130.81	131.16	130.82	130.69	130.65	130.63	130.67	130.57	130.84	131.20	130.98	130.75	130.41
BH05-15B	131.02	131.01	131.00	130.98	130.95	131.43	130.88	131.17	130.82	130.67	130.66	130.62	130.67	130.59	130.85	131.18	130.97	130.75	130.42
BH05-15C	133.77	133.74	133.73	133.71	133.66	133.98	133.58	133.92	133.67	133.43	133.44	133.39	133.26	132.90	133.52	133.93	133.68	133.51	133.04
BH14-17	--	--	--	--	--	--	133.51	--	--	--	--	133.49	--	Frozen	Frozen	Frozen	134.01	133.67	133.25
BH14-17A	--	--	--	--	--	--	133.73	--	--	--	--	133.70	--	133.15	133.51	133.80	133.60	133.82	133.39
BH14-18	--	--	--	--	--	--	133.14	--	--	--	--	133.09	--	Frozen	133.60	133.54	133.42	133.20	132.85
MP14-19	--	--	--	--	--	--	133.14	133.37	133.35	133.31	133.32	133.22	--	Frozen	Frozen	Frozen	133.19	133.17	Dry
MP14-20	--	--	--	--	--	--	133.54	--	--	--	--	133.61	--	Frozen	Frozen	Frozen	133.61	133.61	133.25
MP14-21	--	--	--	--	--	--	133.12	133.23	133.17	133.11	133.15	133.05	--	Frozen	Frozen	Frozen	133.04	133.06	132.79
MP14-22	--	--	--	--	--	--	133.46	--	--	--	--	133.41	--	Frozen	133.54	Frozen	133.39	Dry	Dry
BH18-18A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

MOORE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	21-Aug-15	18-Sep-15	9-Oct-15	6-Nov-15	7-Dec-15	13-Jan-16	3-Feb-16	18-Mar-16	13-Apr-16	10-May-16	3-Jun-16	4-Jul-16	3-Aug-16	19-Sep-16	12-Oct-16	8-Nov-16	9-Dec-16	4-Jan-17	3-Feb-17
BH05-13A	134.03	134.12	133.62	133.87	133.83	133.76	133.73	135.04	134.80	133.83	133.82	133.80	133.82	133.80	133.82	133.83	134.43	134.63	134.28
BH05-13B	141.05	141.25	141.11	141.20	141.23	141.21	141.18	141.88	141.76	141.22	141.18	141.12	141.08	141.00	141.06	141.03	141.61	141.72	141.61
BH05-13C	141.37	141.59	141.51	141.54	141.43	141.40	141.39	142.28	142.17	141.56	141.51	141.50	141.46	141.37	141.45	141.44	141.69	142.04	141.98
BH05-14A	134.00	134.48	133.75	133.96	133.89	133.82	133.79	135.23	134.96	133.89	133.78	133.74	133.70	133.65	133.67	133.66	134.66	134.73	134.42
BH05-14B	134.48	134.57	134.07	134.18	134.12	134.08	134.05	135.47	135.24	134.12	134.08	133.42	133.52	134.24	133.48	133.52	134.90	135.07	134.75
BH05-14C	135.02	135.42	135.06	135.23	135.18	135.16	135.19	136.17	136.10	135.23	135.19	136.05	135.62	134.80	135.29	135.27	135.95	136.07	135.95
BH05-15A	130.59	130.86	130.40	130.69	130.63	130.59	130.55	131.49	131.07	130.58	130.56	130.55	130.52	130.43	130.45	130.45	130.95	130.93	130.71
BH05-15B	130.61	130.87	130.42	130.69	130.66	130.62	130.58	131.50	131.06	130.66	130.65	130.58	130.51	130.44	130.47	130.48	130.96	130.94	130.74
BH05-15C	133.40	133.62	133.08	133.38	133.35	133.30	133.29	134.19	133.98	133.35	133.33	133.29	133.22	133.10	133.23	133.22	133.79	133.90	133.64
BH14-17	133.98	133.68	133.40	133.53	133.54	133.54	133.52	134.14	133.98	133.49	133.41	133.40	133.36	133.32	133.34	133.35	133.85	133.93	133.79
BH14-17A	133.44	133.74	133.74	133.73	133.69	133.69	133.68	133.96	133.97	133.69	133.65	133.63	133.58	133.47	133.53	133.50	133.90	133.95	133.88
BH14-18	133.20	133.26	132.97	133.11	133.13	133.08	133.04	133.60	133.40	133.08	133.02	133.03	133.02	133.02	133.03	133.03	133.32	133.37	133.25
MP14-19	133.23	133.16	133.20	133.18	133.16	133.14	133.12	Frozen	133.48	133.05	--	133.23	133.18	133.10	133.14	133.12	133.21	133.22	133.22
MP14-20	133.63	133.59	133.59	133.60	133.57	133.52	133.49	Frozen	133.65	133.53	133.48	133.52	133.47	133.43	133.47	133.46	133.64	133.65	133.65
MP14-21	133.09	133.11	133.07	133.09	133.06	133.04	132.96	Frozen	133.17	133.05	132.98	133.00	132.96	132.90	132.97	132.95	133.15	133.16	Frozen
MP14-22	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Frozen	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
BH18-18A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

MOORE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	14-Mar-17	7-Apr-17	5-May-17	2-Jun-17	20-Jul-17	1-Aug-17	5-Sep-17	2-Oct-17	2-Nov-17	1-Dec-17	2-Jan-18	2-Feb-18	2-Mar-18	3-Apr-18	15-Jun-18	18-Jul-18	22-Aug-18	11-Sep-18	5-Oct-18
BH05-13A	134.72	135.21	134.80	134.65	134.73	134.77	134.91	134.78	134.83	134.48	133.83	134.10	134.80	134.82	134.44	133.21	134.40	133.82	134.39
BH05-13B	141.79	142.17	142.01	141.71	141.81	141.79	141.99	141.79	141.82	141.65	141.48	141.58	141.72	141.71	141.36	140.84	141.44	141.11	141.18
BH05-13C	142.08	142.55	142.30	142.00	142.04	141.98	142.10	142.04	142.02	141.96	141.82	141.86	142.06	142.04	141.70	141.31	141.69	141.50	141.52
BH05-14A	134.88	135.35	135.08	134.83	134.90	134.89	135.09	134.92	134.90	134.70	134.01	134.31	134.93	134.90	134.53	133.32	134.40	133.94	134.42
BH05-14B	135.21	135.65	135.38	135.12	135.21	135.19	135.51	135.13	135.18	134.94	134.32	134.67	135.24	135.26	134.90	133.65	134.85	134.26	134.83
BH05-14C	135.89	136.22	136.13	136.01	136.05	136.04	136.14	135.95	135.99	136.05	135.67	135.84	136.10	136.08	135.74	134.94	135.62	135.22	135.57
BH05-15A	131.02	131.87	131.62	131.06	131.15	131.19	131.22	131.26	131.25	130.96	130.55	130.73	131.27	131.26	130.80	130.05	130.83	130.49	130.71
BH05-15B	131.05	131.88	131.61	131.08	131.15	131.16	131.15	131.24	131.30	130.96	130.57	130.84	131.28	131.28	130.83	130.06	130.83	130.49	130.75
BH05-15C	133.87	134.35	134.05	133.89	133.92	133.91	133.89	133.88	133.91	133.82	133.35	133.48	134.00	133.99	133.67	132.55	133.65	133.17	133.65
BH14-17	133.94	134.22	134.15	133.93	134.00	134.01	133.96	133.99	134.01	133.90	133.62	133.78	134.05	134.01	134.02	133.34	134.02	133.82	133.98
BH14-17A	133.88	134.02	133.96	133.91	133.96	133.98	133.92	133.94	133.96	133.95	133.81	133.80	Feozen	134.04	133.67	132.80	133.64	133.33	133.62
BH14-18	133.35	133.90	133.56	133.31	133.44	133.43	133.48	133.49	133.55	133.30	133.13	133.24	133.43	133.44	133.21	132.22	133.19	132.90	133.19
MP14-19	Frozen	Frozen	133.33	133.22	133.25	133.23	133.27	133.24	133.29	133.23	133.15	133.14	133.63	133.51	133.23	132.96	133.23	133.11	133.20
MP14-20	Frozen	133.69	133.67	133.60	133.64	133.66	133.64	133.65	133.63	133.63	133.58	133.59	Frozen	133.88	132.98	132.99	133.60	133.44	133.59
MP14-21	Frozen	133.39	133.17	133.13	133.17	133.15	133.14	133.15	133.15	133.16	133.05	133.05	Frozen	133.36	133.08	Dry	133.09	132.86	133.05
MP14-22	Dry	133.83	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	--
BH18-18A	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BH18-18D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

MOORE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	22-Nov-18	11-Dec-18	11-Jan-19	27-Feb-19	27-Mar-19	4-Apr-19	22-May-19	27-Jun-19	25-Jul-19	23-Aug-19	9-Sep-19	7-Oct-19	8-Nov-19	10-Dec-19	10-Jan-20	3-Feb-20	12-Mar-20	7-Apr-20	28-May-20
BH05-13A	134.33	134.67	134.26	134.33	134.88	134.97	134.77	134.36	133.68	134.03	133.86	133.43	134.73	134.47	134.31	134.40	--	134.80	134.03
BH05-13B	141.58	141.65	141.44	141.46	141.60	141.71	141.61	141.29	141.05	140.94	140.88	140.91	141.50	141.49	141.49	141.45	--	141.87	141.37
BH05-13C	141.89	142.02	141.90	141.91	141.58	142.20	141.93	141.77	141.50	141.30	141.35	141.29	141.92	141.86	141.87	141.90	--	142.19	141.81
BH05-14A	134.52	134.85	134.56	134.43	135.13	135.18	135.02	134.59	133.81	133.96	133.13	133.46	133.94	134.60	134.43	134.56	135.27	135.05	134.31
BH05-14B	134.80	135.11	134.72	134.78	135.33	135.30	135.26	134.83	134.13	134.45	133.15	133.89	135.16	134.91	134.78	134.86	135.52	135.26	134.49
BH05-14C	135.94	135.98	135.83	135.92	136.15	136.22	136.03	135.66	134.22	135.11	135.84	134.86	135.96	134.86	135.91	135.95	136.22	136.12	135.62
BH05-15A	130.84	130.98	130.90	130.87	131.58	131.67	131.01	130.72	130.34	130.52	131.28	130.33	131.15	130.85	130.60	130.87	131.72	131.27	130.75
BH05-15B	130.85	130.99	130.91	130.86	131.56	131.66	131.05	130.72	130.35	130.47	131.56	130.30	131.12	130.90	130.87	130.90	131.77	131.29	130.76
BH05-15C	133.67	133.84	133.72	133.65	134.20	134.27	133.94	133.55	132.98	133.25	132.23	132.77	133.87	133.69	133.66	133.68	134.33	134.01	133.48
BH14-17	134.02	134.02	133.84	133.48	Frozen	Frozen	134.04	133.74	133.21	133.61	133.37	133.44	134.02	133.89	133.93	133.94	134.22	134.02	133.63
BH14-17A	133.66	133.76	Frozen	Frozen	133.98	134.04	133.86	133.78	133.29	133.06	133.39	133.02	133.80	133.70	133.67	133.64	133.91	133.85	133.46
BH14-18	133.24	133.29	133.41	133.32	133.69	133.61	133.31	133.16	132.69	133.00	133.71	132.77	133.35	133.30	133.36	133.35	133.64	133.39	133.16
MP14-19	133.22	133.22	Frozen	Frozen	Frozen	Frozen	133.19	133.16	Dry	133.04	Dry	Dry	133.19	133.11	Frozen	Frozen	Frozen	133.19	133.02
MP14-20	133.59	133.59	133.53	Frozen	Frozen	133.59	133.54	133.49	133.05	133.41	133.27	133.14	133.55	133.46	Frozen	Frozen	Frozen	133.52	133.28
MP14-21	--	Frozen	Frozen	Frozen	Frozen	Frozen	133.04	133.03	Dry	132.84	132.85	Dry	133.12	Frozen	Frozen	Frozen	Frozen	Frozen	133.00
MP14-22	--	Frozen	Frozen	Frozen	133.63	Dry	Dry	Dry	Dry	--	Dry	Dry	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen	Dry
BH18-18A	136.46	135.45	Frozen	133.79	133.79	133.79	133.79	133.79	133.79	133.79	133.79	133.79	133.79	133.79	133.79	133.79	133.79	133.79	133.79
BH18-18B	134.28	134.62	Frozen	134.70	134.70	134.70	134.70	134.70	134.70	134.70	134.70	134.70	134.70	134.70	134.70	134.70	134.70	134.70	134.70
BH18-18C	138.78	138.81	Frozen	138.79	138.79	138.79	138.79	138.79	138.79	138.79	138.79	138.79	138.79	138.79	138.79	138.79	138.79	138.79	138.79
BH18-18D	138.82	138.85	Frozen	138.82	138.82	138.82	138.82	138.82	138.82	138.82	138.82	138.82	138.82	138.82	138.82	138.82	138.82	138.82	138.82

MOORE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	15-Jun-20	13-Jul-20	10-Aug-20	10-Sep-20	9-Oct-20	24-Nov-20	10-Dec-20	11-Jan-21	24-Feb-21	23-Mar-21	7-Apr-21	27-May-21	10-Jun-21	12-Jul-21	19-Aug-21	20-Sep-21	6-Oct-21	30-Nov-21	13-Dec-21
BH05-13A	133.96	133.02	134.34	134.04	134.30	133.80	134.52	134.24	133.40	134.65	134.70	133.97	133.94	134.27	133.84	133.56	134.32	134.44	134.86
BH05-13B	141.20	140.83	141.35	141.31	141.13	141.33	141.53	141.50	141.24	141.59	142.01	141.28	141.17	141.40	141.16	140.84	141.19	141.42	141.70
BH05-13C	141.51	141.30	141.64	141.74	141.52	141.79	141.95	141.92	141.68	142.04	141.68	141.71	141.62	141.06	141.30	141.21	141.60	141.78	142.07
BH05-14A	134.07	133.19	134.56	134.52	134.20	133.92	134.72	134.49	133.60	134.78	134.89	134.08	134.04	134.38	133.11	133.58	134.46	134.60	135.05
BH05-14B	134.42	132.48	134.79	134.76	134.49	134.27	134.94	134.69	133.92	135.08	135.16	134.42	134.22	134.69	133.40	133.98	134.77	134.96	135.32
BH05-14C	135.36	134.91	135.50	135.78	135.65	135.76	135.95	135.83	135.48	136.09	136.02	135.51	135.43	135.18	134.79	134.67	135.35	135.59	136.13
BH05-15A	130.55	130.12	131.02	130.88	130.69	130.64	131.00	130.85	130.52	131.19	131.06	130.63	130.56	130.64	130.35	130.31	130.88	131.01	131.20
BH05-15B	130.56	130.12	131.02	130.88	130.69	130.64	131.04	130.89	130.55	131.20	131.10	130.67	130.63	130.73	130.14	130.35	130.88	130.96	131.22
BH05-15C	133.28	132.54	133.65	133.68	133.44	133.29	133.79	133.62	133.02	133.92	133.88	133.34	133.29	132.50	132.47	132.81	133.65	133.87	134.07
BH14-17	133.56	133.29	133.80	133.97	133.93	133.96	133.95	Frozen	133.84	134.16	133.97	133.58	133.59	133.64	132.95	133.30	133.82	133.90	Frozen
BH14-17A	133.35	132.78	133.58	133.64	133.54	133.48	133.76	133.64	133.33	133.85	133.84	133.37	133.36	133.48	133.15	132.98	133.60	133.79	133.93
BH14-18	133.06	132.56	133.23	133.22	133.18	133.10	133.68	133.23	132.88	133.37	133.30	133.08	133.01	133.09	132.35	132.69	133.23	133.39	133.45
MP14-19	132.97	Dry	133.05	133.15	133.13	133.15	133.16	133.11	Frozen	Frozen	133.15	Dry	133.11	133.38	Dry	Dry	133.04	132.83	133.08
MP14-20	133.21	Dry	133.41	133.51	133.49	133.50	133.51	Frozen	Frozen	Frozen	133.79	133.19	133.23	133.29	Dry	Dry	133.40	133.41	133.41
MP14-21	132.93	Dry	Dry	133.03	133.00	132.99	Frozen	Frozen	Frozen	Frozen	133.07	132.92	133.01	132.88	Dry	Dry	132.99	133.05	Dry
MP14-22	Dry			Dry	Dry	Dry	Dry	Frozen	Frozen	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
BH18-18A	133.79	133.79	133.79	133.79	133.79	133.79	133.79	133.79	133.79	133.79	133.79	133.79	133.79	133.88	133.74	133.26	133.66	133.96	134.36
BH18-18B	134.70	134.70	134.70	134.70	134.70	134.70	134.70	134.70	134.70	134.70	134.70	134.70	134.70	134.19	133.99	133.48	134.25	134.00	134.81
BH18-18C	138.79	138.79	138.79	138.79	138.79	138.79	138.79	138.79	138.79	138.79	138.79	138.79	138.79	138.55	138.39	138.22	138.70	138.74	138.82
BH18-18D	138.82	138.82	138.82	138.82	138.82	138.82	138.82	138.82	138.82	138.82	138.82	138.82	138.82	138.64	138.43	138.28	138.53	138.63	138.75

MOORE QUARRY GROUNDWATER ELEVATIONS (metres above sea level)

	18-Jan-22	18-Feb-22	16-Mar-22	22-Apr-22	12-May-22	22-Jun-22	27-Jul-22
BH05-13A	134.68	134.36	134.79	134.85	134.13	134.09	134.27
BH05-13B	141.62	141.41	141.57	141.85	141.60	141.34	141.40
BH05-13C	141.73	141.71	141.87	142.14	141.90	141.80	141.06
BH05-14A	133.82	134.23	134.90	135.02	134.42	134.61	134.38
BH05-14B	133.98	134.83	135.22	135.29	134.59	135.08	134.69
BH05-14C	135.47	135.53	135.88	136.12	135.77	136.06	135.18
BH05-15A	130.41	130.69	130.96	131.07	130.66	130.86	130.64
BH05-15B	130.43	130.70	130.97	131.05	130.65	130.86	130.73
BH05-15C	133.07	133.73	133.97	133.99	133.62	133.81	133.50
BH14-17	Frozen	Frozen	Frozen	134.03	133.69	133.88	133.63
BH14-17A	133.20	133.74	Frozen	133.91	133.64	133.88	133.49
BH14-18	133.44	133.44	133.51	134.13	133.22	133.24	133.09
MP14-19	133.12	133.18	133.15	133.17	133.05	133.14	133.02
MP14-20	Frozen	Frozen	Frozen	133.47	133.36	133.46	133.29
MP14-21	Frozen	Frozen	Frozen	133.08	132.98	133.04	132.88
MP14-22	Frozen	Frozen	Frozen	Dry	Dry	Dry	Dry
BH18-18A	133.68	133.52	133.79	134.04	134.05	134.31	133.88
BH18-18B	134.61	134.30	134.70	134.33	134.46	134.01	134.19
BH18-18C	138.75	138.73	138.79	138.75	138.73	138.68	138.55
BH18-18D	138.73	138.70	138.82	138.79	138.79	138.78	138.64

APPENDIX E

Results of Field and Laboratory Chemical and Physical Analyses

Parameter	Unit	PWQO (1)	SS-1 20-Jan-2000	SS-1 15-May-2000	SS-1 17-Sep-2000	SS-1 28-May-2001	SS-1 29-Jun-2001	SS-1 23-Jul-2001	SS-1 18-Aug-2001 (2)	SS-1 26-Aug-2001 (2)	SS-1 21-Sep-2001 (2)	SS-1 20-Oct-2001	SS-1 17-Nov-2001	SS-1 13-Dec-2001	SS-1 07-Jan-2002 (3)	SS-1 01-Feb-2002 (3)
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- (21)	460000	--	190000	140000	162000	159000	--	--	--	180000	218000	189000	--	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	<20	<20	<20	--	--	--	<20	<20	<20	--	--
Ammonia Nitrogen	ug/l	--	3170	--	30	30	<20	400	--	--	--	90	50	30	--	--
Bicarbonate	ug/l	--	--	--	--	139000	161000	158000	--	--	--	179000	217000	187000	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	50000	--	2000	2000	3000	9000	--	--	--	2000	2000	<1000	--	--
Carbonate (CO3)	ug/l	--	--	--	--	<2000	<2000	<2000	--	--	--	<2000	<2000	<2000	--	--
Chemical Oxygen Demand	ug/l	--	90000	--	54000	37000	47000	88000	--	--	--	27000	20000	46000	--	--
Chloride	ug/l	--	8000	--	2000	<1000	1000	5000	--	--	--	2000	2000	2000	--	--
Chromium (III)	ug/l	8.9 (22)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	43	22	33	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	280	370	--	280	295	225	--	--	--	200	210	520	--	--
Dissolved Organic Carbon	ug/l	--	28300	--	19100	14000	12600	28300	--	--	--	7600	11300	10700	--	--
Hardness, Calcium Carbonate	ug/l	--	507000	--	175000	121000	157000	151000	--	--	--	198000	243000	213000	--	--
Nitrate as N	ug/l	--	<100	--	<100	<100	<100	<100	--	--	--	<100	<100	<100	--	--
Nitrite as N	ug/l	--	<100	--	<100	<100	<100	<100	--	--	--	<100	<100	<100	--	--
Nitrogen, Total Kjeldahl	ug/l	--	12900	--	890	690	790	3050	--	--	--	430	590	360	--	--
Nitrogen, Organic	ug/l	--	--	--	--	660	790	2650	--	--	--	340	540	330	--	--
pH (Field)	-	6.5 - 8.5	6.9	7.2	7.84	7.64	7.65	7.4	--	--	--	7.3	7.4	7.7	--	--
Phosphate	ug/l	--	--	--	--	<30	<30	<30	--	--	--	<30	<30	<30	--	--
Phosphorus	ug/l	-- (23)	1000	--	30	20	30	180	--	--	--	20	<10	10	--	--
Sulphate	ug/l	--	3000	--	4000	<1000	3000	4000	--	--	--	23000	14000	11000	--	--
Temperature (Field)	deg c	-- (24)	1	--	--	16	21	25	--	--	--	10	4	2	--	--
Total Dissolved Solids	ug/l	--	504000	--	244000	164000	200000	200000	--	--	--	272000	292000	211000	--	--
Total Suspended Solids	ug/l	--	630000	18000	6000	38000	82000	78000	--	--	--	5000	49000	2000	--	--
Turbidity	ntu	-- (25)	>100	4.9	2.1	4.3	6.2	21	--	--	--	3.5	6.1	1	--	--
Metals																
Aluminum, dissolved	ug/l	-- (26)	50	--	<50	<50	<50	<50	--	--	--	<50	<50	<50	--	--
Barium	ug/l	--	30	--	10	<10	20	20	--	--	--	10	10	<10	--	--
Beryllium	ug/l	-- (27)	<10	--	<2	<2	<2	<2	--	--	--	<2	<2	<2	--	--
Boron	ug/l	200 (28)	<10	--	<10	<10	10	20	--	--	--	<10	<50	<50	--	--
Cadmium	ug/l	0.2 (29)	<0.15	--	<0.1	**0.3**	<0.1	<0.1	--	--	--	0.1	<0.1	<0.1	--	--
Calcium	ug/l	--	198000	--	70000	45000	61000	57000	--	--	--	76000	94000	85000	--	--
Chromium	ug/l	-- (30)	<10	--	<1	3	<1	5	--	--	--	2	1	<1	--	--
Cobalt	ug/l	0.9	0.5	--	<0.2	<0.2	<0.2	<0.2	--	--	--	<0.2	<0.2	<0.2	--	--
Copper	ug/l	5	<5	--	**<10**	<1	<1	<1	--	--	--	<1	<1	3	--	--
Hexavalent Chromium	ug/l	1 (22)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	**500**	--	60	110	**530**	**480**	--	--	--	140	100	70	--	--
Lead	ug/l	-- (31)	3	--	<1	<1	<1	<1	--	--	--	1	<1	1	--	--
Magnesium	ug/l	--	3000	--	<1000	2000	1000	2000	--	--	--	2000	2000	<1000	--	--
Manganese	ug/l	--	280	--	<10	40	90	20	--	--	--	40	90	40	--	--
Mercury	ug/l	0.2 (32)	<0.2	--	<0.1	<0.1	<0.1	<0.1	--	--	--	<0.1	<0.1	<0.1	--	--
Molybdenum	ug/l	40	<10	--	<10	<10	<10	<10	--	--	--	<10	<10	<10	--	--
Nickel	ug/l	25	<10	--	<10	<10	<10	<10	--	--	--	<10	<10	<10	--	--
Potassium	ug/l	--	<1000	--	<1000	<1000	<1000	2000	--	--	--	<1000	<1000	<1000	--	--
Silicon	ug/l	--	3800	--	1400	300	1040	1060	--	--	--	790	850	990	--	--
Silver	ug/l	0.1	<0.1	--	<0.1	**0.5**	<0.1	<0.1	--	--	--	<0.1	<0.1	<0.1	--	--
Sodium	ug/l	--	3000	--	8000	5000	<2000	4000	--	--	--	<2000	3000	<2000	--	--
Strontium	ug/l	--	158	--	93	75	107	116	--	--	--	86	87	78	--	--
Sulfur	ug/l	--	<3000	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 (33)	**<2**	--	**<1**	**<1**	**<1**	**<1**	--	--	--	**<1**	**<1**	**<1**	--	--
Tin	ug/l	--	<50	--	<10	<10	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	<10	--	<10	<10	<10	<10	--	--	--	<10	<10	<10	--	--
Vanadium	ug/l	6	**<10**	--	<1	<1	<1	<1	--	--	--	1	<1	<1	--	--
Zinc	ug/l	30 (29)	<10	--	<10	<10	<10	<10	--	--	--	<10	<10	<10	--	--
Phenols																
Phenolics, Total Recoverable	ug/l	1 (34)	<1	--	<1	<1	<1	<1	--	--	--	<1	<1	<1	--	--

Parameter	Unit	PWQO [1]	SS-1 23-Mar-2002 [3]	SS-1 21-Apr-2002	SS-1 18-May-2002	SS-1 10-Jun-2002	SS-1 27-Jul-2002	SS-1 12-Aug-2002	SS-1 25-Sep-2002 [2]	SS-1 31-Oct-2002	SS-1 25-Nov-2002	SS-1 15-Jan-2003 [4]	SS-1 12-Feb-2003 [4]	SS-1 15-Mar-2003 [4]	SS-1 28-Apr-2003 [4]	SS-1 24-May-2003 [4]
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	168000	155000	176000	184000	153000	--	209000	144000	--	--	--	--	--
Ammonia, unionized (Field)	ug/l	20	--	<20	<20	<20	<20	<20	--	<20	<20	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	130	30	100	50	20	--	3230	120	--	--	--	--	--
Bicarbonate	ug/l	--	--	168000	155000	176000	184000	153000	--	209000	144000	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	2000	2000	<1000	4000	<1000	--	<1000	<1000	--	--	--	--	--
Carbonate (CO3)	ug/l	--	--	<2000	<2000	<2000	<5000	<2000	--	<2000	<2000	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	39000	45000	39000	34000	52000	--	19000	30000	--	--	--	--	--
Chloride	ug/l	--	--	2000	1000	<1000	1000	<1000	--	28000	8000	--	--	--	--	--
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	390	320	280	370	290	--	390	390	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	12000	14600	15600	15900	18600	--	6700	10300	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	160000	167000	181000	180000	154000	--	401000	203000	--	--	--	--	--
Nitrate as N	ug/l	--	--	<100	<100	<100	<100	<100	--	11200	660	--	--	--	--	--
Nitrite as N	ug/l	--	--	<100	<100	<100	<100	<100	--	1380	<100	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	650	580	550	770	750	--	6590	640	--	--	--	--	--
Nitrogen, Organic	ug/l	--	--	520	550	450	720	730	--	3360	520	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	7.6	7.5	7.3	7.7	7.3	--	7.4	7.3	--	--	--	--	--
Phosphate	ug/l	--	--	<30	<30	<30	<30	60	--	<30	40	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	30	<10	40	30	110	--	10	20	--	--	--	--	--
Sulphate	ug/l	--	--	9000	5000	3000	3000	2000	--	145000	48000	--	--	--	--	--
Temperature (Field)	deg c	-- [24]	--	16	10	19	22	26	--	4	0	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	214000	200000	221000	220000	183000	--	552000	257000	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	3000	44000	9000	30000	13000	--	6000	<2000	--	--	--	--	--
Turbidity	ntu	-- [25]	--	1.2	1.5	1.8	3.9	1.8	--	1	1.5	--	--	--	--	--
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	<50	<50	<50	<10	<10	--	<10	<10	--	--	--	--	--
Barium	ug/l	--	--	10	<10	<10	10	<10	--	50	10	--	--	--	--	--
Beryllium	ug/l	-- [27]	--	<2	<2	<2	<1	<1	--	<1	<1	--	--	--	--	--
Boron	ug/l	200 [28]	--	<50	<50	<50	<20	40	--	130	<50	--	--	--	--	--
Cadmium	ug/l	0.2 [29]	--	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	--	--	--	--	--
Calcium	ug/l	--	--	64000	67000	71000	72000	60000	--	106000	73000	--	--	--	--	--
Chromium	ug/l	-- [30]	--	<1	3	<1	2	<1	--	<1	<1	--	--	--	--	--
Cobalt	ug/l	0.9	--	<0.2	<0.2	<0.2	0.3	<0.2	--	0.4	<0.2	--	--	--	--	--
Copper	ug/l	5	--	<1	<1	2	<1	5	--	1	<1	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	100	30	130	140	110	--	<10	10	--	--	--	--	--
Lead	ug/l	-- [31]	--	<1	<1	<1	<1	<1	--	<1	<1	--	--	--	--	--
Magnesium	ug/l	--	--	<1000	<1000	1000	<1000	1000	--	33000	5000	--	--	--	--	--
Manganese	ug/l	--	--	40	<10	20	35	26	--	12	11	--	--	--	--	--
Mercury	ug/l	0.2 [32]	--	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	--	--	--	--	--
Molybdenum	ug/l	40	--	<10	<10	<10	<5	7	--	5	<5	--	--	--	--	--
Nickel	ug/l	25	--	<10	<10	<10	<5	<5	--	<5	<5	--	--	--	--	--
Potassium	ug/l	--	--	<1000	<1000	<1000	<1000	<1000	--	11000	1000	--	--	--	--	--
Silicon	ug/l	--	--	340	610	150	890	440	--	2200	1400	--	--	--	--	--
Silver	ug/l	0.1	--	**<10**	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	--	--	--	--	--
Sodium	ug/l	--	--	<2000	<2000	<2000	<2000	<2000	--	19000	4000	--	--	--	--	--
Strontium	ug/l	--	--	71	66	86	92	89	--	3260	353	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	--	**<1**	**<1**	**<1**	**<1**	**<1**	--	**<1**	**<1**	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	<10	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	<10	<10	<10	<10	<10	--	<10	<10	--	--	--	--	--
Vanadium	ug/l	6	--	<1	<1	<1	<1	<1	--	<1	<1	--	--	--	--	--
Zinc	ug/l	30 [29]	--	<10	<10	<10	<5	<5	--	<5	<5	--	--	--	--	--
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	<1	<1	<1	<1	<1	--	<1	<1	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-1 24-Jun-2003 [4]	SS-1 16-Jul-2003 [4]	SS-1 14-Aug-2003	SS-1 30-Sep-2003 [4]	SS-1 30-Oct-2003	SS-1 19-Nov-2003	SS-1 23-Dec-2003 [4]	SS-1 27-Jan-2004 [4]	SS-1 20-Feb-2004 [4]	SS-1 24-Mar-2004 [4]	SS-1 12-Apr-2004	SS-1 12-May-2004	SS-1 28-Jun-2004	SS-1 19-Jul-2004
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	117000	--	125000	143000	--	--	--	--	160000	228000	238000	237000
Ammonia, unionized (Field)	ug/l	20	--	--	<20	--	<20	<20	--	--	--	--	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	--	--	<20	--	30	30	--	--	--	--	<30	2520	870	590
Bicarbonate	ug/l	--	--	--	117000	--	125000	143000	--	--	--	--	194000	272000	288000	284000
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	<1000	--	<1000	<1000	--	--	--	--	700	700	2800	11800
Carbonate (CO3)	ug/l	--	--	--	<2000	--	<2000	<2000	--	--	--	--	<1000	<1000	<1000	<1000
Chemical Oxygen Demand	ug/l	--	--	--	<5000	--	<5000	15000	--	--	--	--	10000	5000	28000	54000
Chloride	ug/l	--	--	--	31000	--	36000	8000	--	--	--	--	45200	30400	24500	38500
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	380	--	400	445	--	--	--	--	480	510	495	520
Dissolved Organic Carbon	ug/l	--	--	--	2200	--	1800	7200	--	--	--	--	2700	2400	6400	13000
Hardness, Calcium Carbonate	ug/l	--	--	--	232000	--	294000	190000	--	--	--	--	249994	321100	351670	329700
Nitrate as N	ug/l	--	--	--	3560	--	4210	<100	--	--	--	--	1200	4200	<200	<200
Nitrite as N	ug/l	--	--	--	<100	--	<100	<100	--	--	--	--	<200	<200	<200	<200
Nitrogen, Total Kjeldahl	ug/l	--	--	--	410	--	420	280	--	--	--	--	450	2370	1560	1700
Nitrogen, Organic	ug/l	--	--	--	410	--	390	250	--	--	--	--	420	0	690	1110
pH (Field)	-	6.5 - 8.5	--	--	7.3	--	7.4	7.2	--	--	--	--	7.2	7.2	7.1	7.2
Phosphate	ug/l	--	--	--	<30	--	<30	<30	--	--	--	--	<1000	<1000	<1000	<1000
Phosphorus	ug/l	-- [23]	--	--	<10	--	<10	<10	--	--	--	--	10	7	40	54
Sulphate	ug/l	--	--	--	97000	--	121000	39000	--	--	--	--	71800	124000	129000	113000
Temperature (Field)	deg c	-- [24]	--	--	21	--	3	4	--	--	--	--	3	8	16	20
Total Dissolved Solids	ug/l	--	--	--	333000	--	408000	247000	--	--	--	--	354000	508000	426000	466000
Total Suspended Solids	ug/l	--	--	--	<2000	--	<2000	2000	--	--	--	--	2000	2000	9000	11000
Turbidity	ntu	-- [25]	--	--	0.7	--	1.6	2.6	--	--	--	--	1.9	0.5	11.3	6.3
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	--	10	--	<10	20	--	--	--	--	<5	<5	<5	5
Barium	ug/l	--	--	--	90	--	90	30	--	--	--	--	62	152	111	137
Beryllium	ug/l	-- [27]	--	--	<1	--	<1	<1	--	--	--	--	<1	<1	<1	<1
Boron	ug/l	200 [28]	--	--	40	--	30	10	--	--	--	--	19	**298**	**262**	**364**
Cadmium	ug/l	0.2 [29]	--	--	<0.1	--	<0.1	<0.1	--	--	--	--	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	--	--	78000	--	103000	71000	--	--	--	--	85500	78000	89500	78100
Chromium	ug/l	-- [30]	--	--	1	--	<1	1	--	--	--	--	<5	<5	<5	<5
Cobalt	ug/l	0.9	--	--	<0.2	--	<0.2	<0.2	--	--	--	--	<0.1	0.2	0.1	0.2
Copper	ug/l	5	--	--	<1	--	1	<1	--	--	--	--	0.6	1.2	4.3	1.9
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	<10	--	20	40	--	--	--	--	90	<30	**690**	**310**
Lead	ug/l	-- [31]	--	--	<1	--	<1	<1	--	--	--	--	<0.5	<0.5	<0.5	<0.5
Magnesium	ug/l	--	--	--	9000	--	9000	3000	--	--	--	--	8840	30700	31200	32800
Manganese	ug/l	--	--	--	<5	--	<5	10	--	--	--	--	23	16	348	174
Mercury	ug/l	0.2 [32]	--	--	<0.1	--	<0.1	<0.1	--	--	--	--	<0.05	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	<5	--	<5	<5	--	--	--	--	<1	7	1	<1
Nickel	ug/l	25	--	--	1	--	<5	<5	--	--	--	--	<1	1	<1	2
Potassium	ug/l	--	--	--	2000	--	2000	1000	--	--	--	--	1500	7600	5700	10200
Silicon	ug/l	--	--	--	1300	--	900	1300	--	--	--	--	840	3370	3390	5590
Silver	ug/l	0.1	--	--	<0.1	--	<0.1	<0.1	--	--	--	--	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	--	--	14000	--	19000	4000	--	--	--	--	21000	33300	27600	36800
Strontium	ug/l	--	--	--	1120	--	967	409	--	--	--	--	764	3880	3380	3380
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	--	--	**<1**	--	**<1**	**<1**	--	--	--	--	0.07	0.29	<0.05	<0.05
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	<10	--	<10	<10	--	--	--	--	<5	<5	<5	<5
Vanadium	ug/l	6	--	--	<1	--	<1	<1	--	--	--	--	<0.5	<0.5	<0.5	<0.5
Zinc	ug/l	30 [29]	--	--	<1	--	<10	<10	--	--	--	--	<5	24	11	**54**
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	<1	--	<1	<1	--	--	--	--	<1	<1	<1	**5**

Parameter	Unit	PWQO [1]	SS-1 17-Aug-2004	SS-1 30-Sep-2004	SS-1 07-Oct-2004 [4]	SS-1 23-Nov-2004 [4]	SS-1 09-Dec-2004 [4]	SS-1 14-Jan-2005 [4]	SS-1 11-Feb-2005 [4]	SS-1 14-Mar-2005 [4]	SS-1 15-Apr-2005 [4]	SS-1 29-May-2005 [4]	SS-1 12-Jun-2005 [4]	SS-1 12-Jul-2005 [4]	SS-1 14-Aug-2005 [4]
General Chemistry															
Alkalinity (Total as CaCO3)	ug/l	-- [21]	134000	209000	--	--	--	--	--	--	--	--	--	--	--
Ammonia, unionized (Field)	ug/l	20	<20	<20	--	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	100	380	--	--	--	--	--	--	--	--	--	--	--
Bicarbonate	ug/l	--	159000	248000	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	1200	<500	--	--	--	--	--	--	--	--	--	--	--
Carbonate (CO3)	ug/l	--	1000	1000	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	20000	9000	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	63500	65300	--	--	--	--	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	600	823	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	4000	4100	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	429000	389000	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	2500	2000	--	--	--	--	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	<200	<200	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	820	600	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Organic	ug/l	--	720	220	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.3	7.9	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	<1000	<1000	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	8	5	--	--	--	--	--	--	--	--	--	--	--
Sulphate	ug/l	--	262000	159000	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [24]	21	14.1	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	662000	598000	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	4000	9000	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	-- [25]	0.6	1.8	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, dissolved	ug/l	-- [26]	<5	<5	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	115	168	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/l	-- [27]	<1	<1	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**325**	**223**	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/l	0.2 [29]	<0.1	<0.1	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	108000	101000	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/l	-- [30]	<5	<5	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	0.1	0.3	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	0.9	<0.5	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	40	80	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- [31]	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	38900	33200	--	--	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	14	6	--	--	--	--	--	--	--	--	--	--	--
Mercury	ug/l	0.2 [32]	<0.1	<0.1	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/l	40	3	2	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	<1	2	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	7900	6100	--	--	--	--	--	--	--	--	--	--	--
Silicon	ug/l	--	1160	4200	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	<0.1	<0.1	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	35700	37400	--	--	--	--	--	--	--	--	--	--	--
Strontium	ug/l	--	4700	4370	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	0.16	0.13	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	<5	<5	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	<0.5	<0.5	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	<5	<5	--	--	--	--	--	--	--	--	--	--	--
Phenols															
Phenolics, Total Recoverable	ug/l	1 [34]	<1	<1	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-1 24-Sep-2005 [4]	SS-1 24-Oct-2005 [4]	SS-1 16-Nov-2005 [4]	SS-1 29-Dec-2005 [4]	SS-1 19-Jan-2006 [4]	SS-1 15-Feb-2006 [4]	SS-1 30-Mar-2006 [4]	SS-1 11-Apr-2006 [4]	SS-1 12-May-2006 [4]	SS-1 20-Jun-2006 [4]	SS-1 24-Jul-2006	SS-1 14-Aug-2006	SS-1 29-Sep-2006	SS-1 25-Oct-2006
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	--	--	--	--	--	--	120000	154000	175000	179000
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	100	20	600	110
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--	--	--	--	--	--	<1000	<1000	<1000	2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	5000	12000	<5000	19000
Chloride	ug/l	--	--	--	--	--	--	--	--	--	--	--	37000	35000	30000	25000
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	500	395	470	485
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	2900	5500	3300	7100
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	285000	318000	363000	311000
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	1390	<100	4120	2420
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	<100	<100	240	<100
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	350	300	940	630
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--	--	--	--	--	--	7.3	7.5	7.5	7.3
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	--	--	--	--	--	--	50	<10	20	10
Sulphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	157000	157000	211000	157000
Temperature (Field)	deg c	-- [24]	--	--	--	--	--	--	--	--	--	--	10	10	7	3
Total Dissolved Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	435000	465000	569000	493000
Total Suspended Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	2000	3000	2000	<2000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	<10	10	<10	<10
Barium	ug/l	--	--	--	--	--	--	--	--	--	--	--	60	40	80	60
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1
Boron	ug/l	200 [28]	--	--	--	--	--	--	--	--	--	--	60	30	**230**	160
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	--	--	--	--	--	--	--	--	--	--	91000	106000	101000	90000
Chromium	ug/l	-- [30]	--	--	--	--	--	--	--	--	--	--	1	<1	<1	<1
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	<0.2	<0.2	<0.2	<0.2
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	--	--	--	--	--	--	<30	120	<30	<30
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1
Magnesium	ug/l	--	--	--	--	--	--	--	--	--	--	--	14000	13000	27000	21000
Manganese	ug/l	--	--	--	--	--	--	--	--	--	--	--	20	70	<10	<10
Mercury	ug/l	0.2 [32]	--	--	--	--	--	--	--	--	--	--	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	<5	<5	<5	<5
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	<5	<5	<5	<5
Potassium	ug/l	--	--	--	--	--	--	--	--	--	--	--	2000	2000	7000	5000
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	600	1200	2700	1400
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	--	--	--	--	--	--	--	--	--	--	20000	19000	31000	21000
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	1630	860	3820	2840
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	52333	52300	70300	52300
Thallium	ug/l	0.3 [33]	--	--	--	--	--	--	--	--	--	--	<0.1	<0.1	0.1	<0.1
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	<10	<10	<10	<10
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	<1	1	<1	<1
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	<10	<10	<10	<10
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	<1	<1	<1	<1

Parameter	Unit	PWQO [1]	SS-1 14-Nov-2006	SS-1 12-Dec-2006	SS-1 31-Jan-2007	SS-1 27-Feb-2007	SS-1 30-Mar-2007	SS-1 26-Apr-2007	SS-1 29-May-2007 T-2	SS-1 26-Jun-2007	SS-1 23-Jul-2007 [4]	SS-1 28-Aug-2007	SS-1 28-Sep-2007 [4]	SS-1 25-Oct-2007	SS-1 29-Nov-2007	SS-1 18-Dec-2007	SS-1 08-Jan-2008 [3]
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	174000	204000	290000	271000	201000	175000	186000	189000	--	162000	--	211000	180000	275000	--
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	--	<20	--	<20	<20	<20	--
Ammonia Nitrogen	ug/l	--	550	550	1380	1490	500	180	100	90	--	60	--	120	390	430	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	2000	1000	1000	<1000	<1000	2000	--	<1000	--	<1000	<1000	2000	--
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	<5000	<5000	7000	10000	11000	<5000	14000	20000	--	8000	--	10000	<5000	6000	--
Chloride	ug/l	--	32000	35000	47000	57000	39000	42000	42000	45000	--	44000	--	40000	49000	56000	--
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	500	490	450	595	565	360	610	600	--	750	--	475	480	395	--
Dissolved Organic Carbon	ug/l	--	3000	2800	4200	2600	2700	3400	7800	11400	--	6400	--	4400	3200	5200	--
Hardness, Calcium Carbonate	ug/l	--	381000	357000	463000	334000	363000	373000	361000	324000	--	431000	--	482000	444000	476000	--
Nitrate as N	ug/l	--	4540	2410	1420	3020	2140	2160	570	<100	--	2680	--	2900	3110	140	--
Nitrite as N	ug/l	--	170	160	260	2300	<100	<100	<100	<100	--	240	--	110	<100	<100	--
Nitrogen, Total Kjeldahl	ug/l	--	940	730	1550	2210	690	460	730	1040	--	910	--	480	560	800	--
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.3	7.4	7.3	7.4	7.3	7.3	7.4	7.3	--	7.3	--	7.4	7.4	7.3	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	30	20	20	40	20	30	20	20	--	50	--	<20	20	20	--
Sulphate	ug/l	--	188000	168000	198000	229000	171000	191000	235000	188000	--	364000	--	313000	339000	256000	--
Temperature (Field)	deg c	-- [24]	3	1	1	1	5	5	8	12	--	24	--	9	1	1	--
Total Dissolved Solids	ug/l	--	548000	538000	689000	728000	560000	556000	606000	565000	--	798000	--	777000	805000	754000	--
Total Suspended Solids	ug/l	--	<2000	6000	39000	31000	5000	<2000	2000	2000	--	5000	--	<2000	8000	10000	--
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	<10	<10	<10	<10	<10	<10	<10	<10	--	<10	--	<10	<10	<10	--
Barium	ug/l	--	80	90	120	90	100	80	90	70	--	110	--	80	110	170	--
Beryllium	ug/l	-- [27]	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	--	<1	<1	<1	--
Boron	ug/l	200 [28]	**220**	180	**340**	**630**	**270**	160	**320**	**310**	--	**390**	--	**250**	**310**	**320**	--
Cadmium	ug/l	0.2 [29]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	<0.1	0.1	<0.1	--
Calcium	ug/l	--	100000	90000	113000	76000	96000	100000	87000	82000	--	110000	--	132000	112000	123000	--
Chromium	ug/l	-- [30]	1	3	1	4	2	2	3	<1	--	1	--	2	1	2	--
Cobalt	ug/l	0.9	0.2	0.4	0.6	0.3	0.4	0.3	0.4	0.4	--	0.3	--	0.3	0.5	0.9	--
Copper	ug/l	5	<1	<1	1	1	<1	2	2	1	--	3	--	<1	1	1	--
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	50	110	200	80	40	30	120	170	--	40	--	80	40	170	--
Lead	ug/l	-- [31]	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	--	<1	<1	2	--
Magnesium	ug/l	--	32000	32000	44000	35000	30000	30000	35000	29000	--	38000	--	37000	40000	41000	--
Manganese	ug/l	--	10	<10	670	30	<10	<10	80	100	--	20	--	60	10	630	--
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	--
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	<5	<5	<5	--	7	--	<5	9	<5	--
Nickel	ug/l	25	<5	<5	<5	<5	6	6	<5	<5	--	<5	--	<5	5	<5	--
Potassium	ug/l	--	6000	6000	9000	8000	6000	6000	6000	5000	--	7000	--	6000	7000	6000	--
Silicon	ug/l	--	3500	3600	5100	5000	4500	2400	1000	500	--	2200	--	3000	4400	5300	--
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	--
Sodium	ug/l	--	29000	26000	41000	98000	44000	42000	53000	50000	--	79000	--	63000	64000	59000	--
Strontium	ug/l	--	3800	3760	5280	5070	4800	3890	3690	2800	--	5000	--	3290	6360	5300	--
Sulfur	ug/l	--	62700	56000	66000	76300	57000	63700	78300	62700	--	121300	--	104300	113000	85300	--
Thallium	ug/l	0.3 [33]	<0.1	0.1	<0.1	0.1	0.3	**0.6**	**0.6**	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	<10	<10	10	<10	<10	<10	<10	<10	--	<10	--	<10	<10	<10	--
Vanadium	ug/l	6	<1	<1	1	1	3	<1	<1	<1	--	2	--	2	1	1	--
Zinc	ug/l	30 [29]	<10	<10	<10	<10	<10	<10	<10	<10	--	10	--	<10	<10	**250**	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	--	<1	<1	<1	--

Parameter	Unit	PWQO [1]	SS-1 06-Feb-2008 [4]	SS-1 31-Mar-2008	SS-1 25-Apr-2008	SS-1 22-May-2008	SS-1 25-Jun-2008	SS-1 09-Jul-2008	SS-1 08-Aug-2008	SS-1 26-Sep-2008 [5]	SS-1 23-Oct-2008 [4]	SS-1 20-Nov-2008 [4]	SS-1 22-Dec-2008 [4]	SS-1 20-Jan-2009 [4] SS-1	SS-1 24-Feb-2009 [4] SS-1	SS-1 31-Mar-2009 T-2
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	177000	166000	209000	155000	162000	156000	--	--	--	--	--	--	181000
Ammonia, unionized (Field)	ug/l	20	--	<20	<20	<20	<20	<20	<20	--	--	--	--	--	--	<20
Ammonia Nitrogen	ug/l	--	--	130	50	<50	170	200	130	--	--	--	--	--	--	180
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	<2000	<2000	<2000	<2000	2000	<2000	--	--	--	--	--	--	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	8000	10000	16000	6000	9000	8000	--	--	--	--	--	--	5000
Chloride	ug/l	--	--	76000	36000	38000	44000	38000	39000	--	--	--	--	--	--	59000
Chromium (III)	ug/l	8.9 [22]	--	<5	<5	<5	<5	<5	<5	--	--	--	--	--	--	<5
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	490	420	470	600	495	490	--	--	--	--	--	--	810
Dissolved Organic Carbon	ug/l	--	--	2500	2800	3100	2700	2700	2300	--	--	--	--	--	--	2000
Hardness, Calcium Carbonate	ug/l	--	--	340000	330000	390000	400000	360000	360000	--	--	--	--	--	--	400000
Nitrate as N	ug/l	--	--	800	800	300	1800	1200	600	--	--	--	--	--	--	2600
Nitrite as N	ug/l	--	--	20	30	<10	60	20	30	--	--	--	--	--	--	30
Nitrogen, Total Kjeldahl	ug/l	--	--	600	800	800	700	800	500	--	--	--	--	--	--	600
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	7.3	7.4	7.3	7.6	7.4	7.3	--	--	--	--	--	--	8
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	19	4	8	6	16	<2	--	--	--	--	--	--	4
Sulphate	ug/l	--	--	183000	184000	205000	239000	235000	286000	--	--	--	--	--	--	290000
Temperature (Field)	deg c	-- [24]	--	2	6	18	17	18	20	--	--	--	--	--	--	4
Total Dissolved Solids	ug/l	--	--	590000	520000	521000	610000	590000	580000	--	--	--	--	--	--	640000
Total Suspended Solids	ug/l	--	--	<10000	<10000	<10000	<10000	<10000	<10000	--	--	--	--	--	--	<10000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	84	99	120	110	120	120	--	--	--	--	--	--	87
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	--	160	190	**210**	**260**	**270**	**300**	--	--	--	--	--	--	**290**
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	--	86000	87000	89000	94000	100000	95000	--	--	--	--	--	--	110000
Chromium	ug/l	-- [30]	--	<5	<5	<5	<5	<5	<5	--	--	--	--	--	--	<5
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	--	<1	1	1	2	<1	<1	--	--	--	--	--	--	<1
Hexavalent Chromium	ug/l	1 [22]	--	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**	--	--	--	--	--	--	**<5**
Iron	ug/l	300	--	<100	<100	<100	<100	<100	<100	--	--	--	--	--	--	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	27000	27000	33000	31000	35000	32000	--	--	--	--	--	--	37000
Manganese	ug/l	--	--	8	7	7	7	31	28	--	--	--	--	--	--	5
Mercury	ug/l	0.2 [32]	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--	--	--	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	--	4400	5300	5300	6100	6300	6100	--	--	--	--	--	--	6800
Silicon	ug/l	--	--	3100	2400	3000	3000	3500	3600	--	--	--	--	--	--	3400
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	--	60000	40000	36000	47000	41000	42000	--	--	--	--	--	--	59000
Strontium	ug/l	--	--	3200	3600	4100	4900	4700	4800	--	--	--	--	--	--	5400
Sulfur	ug/l	--	--	55000	60000	71000	96000	91000	91000	--	--	--	--	--	--	86000
Thallium	ug/l	0.3 [33]	--	<0.05	0.06	0.06	0.1	0.08	0.07	--	--	--	--	--	--	0.08
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-1 20-Apr-2009 SS-1	SS-1 22-May-2009 SS-1	SS-1 23-Jun-2009 T-2	SS-1 27-Jul-2009 SS-1	SS-1 13-Aug-2009 SS-1	SS-1 24-Sep-2009 [4] SS-1	SS-1 15-Oct-2009 [6] SS-1	SS-1 18-Nov-2009 SS-1	SS-1 10-Dec-2009 SS-1	SS-1 20-Jan-2010 [4] SS-1	SS-1 03-Feb-2010 [4] SS-1	SS-1 31-Mar-2010 SS-1	SS-1 06-Apr-2010 SS-1	SS-1 06-May-2010 [4] SS-1	SS-1 02-Jun-2010 SS-1
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	125000	66000	170000	116000	150000	--	208000	182000	166000	--	--	176000	168000	--	153000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	--	<20	<20	<20	--	--	<20	<20	--	<20
Ammonia Nitrogen	ug/l	--	190	<50	80	370	<50	--	560	720	690	--	--	100	200	--	180
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	5000	<2000	<2000	<2000	--	<2000	<2000	<2000	--	--	<2000	<2000	--	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	7000	27000	16000	11000	<4000	--	12000	6000	<4000	--	--	14000	9000	--	10000
Chloride	ug/l	--	59000	52000	77000	49000	53000	--	61000	59000	52000	--	--	52000	58000	--	81000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	--	<5	<5	<5	--	--	<5	<5	--	**13**
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	605	745	615	965	1000	--	1080	1105	985	--	--	980	955	--	1090
Dissolved Organic Carbon	ug/l	--	1900	7300	4700	1900	1800	--	2700	2300	1700	--	--	2400	1800	--	2300
Hardness, Calcium Carbonate	ug/l	--	280000	250000	420000	390000	400000	--	480000	410000	370000	--	--	350000	330000	--	430000
Nitrate as N	ug/l	--	2000	<100	200	<100	2200	--	2800	3700	4600	--	--	1100	1200	--	1100
Nitrite as N	ug/l	--	20	<10	10	<10	<10	--	100	250	110	--	--	50	50	--	10
Nitrogen, Total Kjeldahl	ug/l	--	1200	1400	800	800	600	--	1300	1300	900	--	--	900	700	--	600
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.9	8.2	7.8	7.8	8.0	--	7.9	7.9	8.0	--	--	7.9	7.9	--	7.8
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	12	44	18	4	11	--	14	<2	<2	--	--	<2	<2	--	<2
Sulphate	ug/l	--	180000	260000	300000	370000	310000	--	330000	360000	320000	--	--	260000	300000	--	370000
Temperature (Field)	deg c	-- [24]	9	13	17	20.0	19	--	7	4	2	--	--	5	10.1	--	18
Total Dissolved Solids	ug/l	--	510000	510000	695000	680000	665000	--	752000	745000	735000	--	--	580000	678000	--	780000
Total Suspended Solids	ug/l	--	<10000	10000	11000	2000	5000	--	3000	<1000	2000	--	--	5000	2000	--	<1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	57	56	99	57	66	--	84	83	47	--	--	71	61	--	63
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	130	**270**	**370**	**330**	**280**	--	**360**	**430**	**330**	--	--	**260**	**370**	--	**450**
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	84000	52000	100000	92000	110000	--	110000	110000	86000	--	--	97000	100000	--	120000
Chromium	ug/l	-- [30]	<5	<5	<5	<5	<5	--	<5	<5	<5	--	--	<5	<5	--	<5
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	<1	<1	1	<1	1	--	<1	<1	<1	--	--	<1	<1	--	<1
Hexavalent Chromium	ug/l	1 [22]	**<5**	**<5**	**<5**	**<5**	**<5**	--	**<5**	**<5**	**<5**	--	--	<0.5	**<5**	--	<0.5
Iron	ug/l	300	<100	<100	**400**	<100	<100	--	<100	200	<100	--	--	<100	<100	--	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	21000	28000	39000	29000	34000	--	44000	39000	32000	--	--	30000	35000	--	42000
Manganese	ug/l	--	5	2	210	<2	24	--	61	49	6	--	--	20	16	--	8
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	--	--	<0.1	<0.1	--	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	4300	5600	7800	8300	8300	--	8000	8200	6300	--	--	5400	6600	--	8000
Silicon	ug/l	--	1900	<50	2800	2200	2700	--	4100	3500	2800	--	--	2400	2800	--	2900
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	46000	60000	77000	89000	56000	--	75000	94000	79000	--	--	68000	86000	--	87000
Strontium	ug/l	--	3000	3300	5600	4400	4800	--	6700	6200	5800	--	--	4500	5800	--	7200
Sulfur	ug/l	--	59000	81000	99000	110000	100000	--	98000	110000	100000	--	--	85000	100000	--	130000
Thallium	ug/l	0.3 [33]	0.07	0.05	0.07	0.16	0.17	--	0.11	0.05	0.11	--	--	0.06	0.09	--	0.13
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-1 07-Jul-2010 SS-1	SS-1 18-Aug-2010 SS-1	SS-1 19-Aug-2010 SS-1	SS-1 29-Sep-2010 SS-1	SS-1 28-Oct-2010 SS-1	SS-1 22-Nov-2010 SS-1	SS-1 09-Dec-2010 SS-1	SS-1 12-Jan-2011 SS-1	SS-1 23-Feb-2011 [7] SS-1	SS-1 30-Mar-2011 SS-1	SS-1 14-Apr-2011 [8] SS-1	SS-1 12-May-2011 SS 1	SS-1 20-Jun-2011 S-2	SS-1 19-Jul-2011 SS-1	SS-1 26-Aug-2011 [4] SS-1
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	147000	152000	--	96000	142000	138000	145000	179000	141000	197000	162000	147000	147000	133000	--
Ammonia, unionized (Field)	ug/l	20	<20	--	--	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	--
Ammonia Nitrogen	ug/l	--	<50	--	<50	<50	<50	<50	150	190	330	220	<50	<50	<50	390	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	--	<2000	<2000	<2000	<2000	<2000	3000	<2000	4000	<2000	<2000	<2000	--
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	15000	--	14000	<4000	<4000	<4000	8000	11000	8000	10000	10000	13000	23000	9000	--
Chloride	ug/l	--	83000	66000	--	43000	63000	60000	44000	73000	57000	62000	22000	66000	70000	45000	--
Chromium (III)	ug/l	8.9 [22]	<5	<5	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	885	970	--	805	980	950	54	685	785	1095	1100	1105	1147	1105	--
Dissolved Organic Carbon	ug/l	--	2200	3400	--	1900	2200	2400	3000	2600	2000	2100	3800	2500	3700	2500	--
Hardness, Calcium Carbonate	ug/l	--	450000	470000	--	330000	470000	430000	380000	450000	350000	470000	320000	440000	460000	430000	--
Nitrate as N	ug/l	--	1200	600	--	1700	1700	1700	1300	1000	1100	500	200	1200	800	700	--
Nitrite as N	ug/l	--	10	10	--	20	<10	10	20	10	20	<10	<10	10	10	<10	--
Nitrogen, Total Kjeldahl	ug/l	--	400	--	500	400	400	400	400	700	600	500	400	500	600	800	--
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.9	7.9	--	7.7	7.9	8	7.81	8.0	8.0	7.8	8.0	7.6	8.01	7.5	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	<2	--	6	6	<2	5	17	13	11	9	12	12	28	12	--
Sulphate	ug/l	--	360000	320000	--	270000	340000	320000	260000	300000	230000	290000	130000	330000	380000	350000	--
Temperature (Field)	deg c	-- [24]	25	25	--	14	6	3	0.1	1	1	2	8	13	21.4	20	--
Total Dissolved Solids	ug/l	--	792000	710000	--	548000	726000	634000	550000	694000	548000	684000	402000	688000	838000	680000	--
Total Suspended Solids	ug/l	--	2000	<1000	--	<1000	3000	2000	11000	4000	1000	2000	4000	1000	1000	2000	--
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	74	76	--	50	56	54	60	74	61	74	46	58	74	63	--
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**450**	**300**	--	**210**	**290**	**230**	150	**300**	**220**	**290**	130	**260**	**290**	**270**	--
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	140000	130000	--	100000	140000	130000	120000	130000	91000	120000	89000	120000	140000	130000	--
Chromium	ug/l	-- [30]	<5	<5	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	<0.50	<0.50	0.7	<0.5	<0.5	<0.5	<0.5	--
Copper	ug/l	5	<1	<1	--	<1	<1	<1	1	2	<1	<1	<1	1	<1	2	--
Hexavalent Chromium	ug/l	1 [22]	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	**<5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
Iron	ug/l	300	<100	200	--	<100	<100	<100	<100	<100	<100	100	<100	<100	<100	<100	--
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	47000	35000	--	26000	42000	35000	29000	42000	29000	45000	18000	35000	46000	35000	--
Manganese	ug/l	--	16	29	--	21	12	11	16	16	12	12	13	6	25	30	--
Mercury	ug/l	0.2 [32]	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	9200	7300	--	5800	7900	6100	5400	7100	5400	6500	3300	6600	8200	7600	--
Silicon	ug/l	--	3400	2000	--	1800	2700	2300	1800	3500	2400	3800	700	2200	2800	2300	--
Silver	ug/l	0.1	--	--	--	--	--	--	--	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	--
Sodium	ug/l	--	82000	56000	--	49000	72000	60000	46000	72000	54000	60000	28000	71000	81000	65000	--
Strontium	ug/l	--	7600	6100	--	4800	6400	5600	4800	6800	5000	7300	3200	6100	7300	6000	--
Sulfur	ug/l	--	140000	120000	--	94000	140000	110000	91000	99000	80000	110000	52000	110000	130000	130000	--
Thallium	ug/l	0.3 [33]	0.15	0.12	--	0.09	0.09	0.06	0.06	0.07	0.07	0.08	0.06	0.10	0.08	0.10	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-1	SS-1	SS-1	SS-1	SS-1	SS-1	SS-1	SS-1	SS-1	SS-1	SS-1	SS-1	SS-1	SS-1	SS-1
			21-Sep-2011	28-Oct-2011	14-Nov-2011 [9]	08-Dec-2011 [9]	11-Jan-2012	06-Feb-2012	13-Mar-2012 [9]	10-Apr-2012	24-May-2012	29-Jun-2012	20-Jul-2012 [2]	29-Aug-2012	26-Sep-2012	10-Oct-2012	28-Nov-2012
			S-2	SS-1	SS-1	SS - 1	SS -1	SS- 1	SS-1	SS-1	SS-1	T-3	s-1	SS-1	SS-1	SS-1	SS-1
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	122000	142000	157000	135000	186000	214000	110000	170000	150000	160000	--	140000	150000	170000	180000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	--	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	100	<50	710	200	70	140	190	<50	<50	<50	--	<50	180	330	80
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	--	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	10000	10000	6000	7000	10000	11000	13000	4000	8700	9700	--	8300	12000	10000	16000
Chloride	ug/l	--	87000	60000	71000	45000	66000	73000	42000	68000	42000	80000	--	74000	41000	58000	65000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	1102	1050	1035	1080	1105	995	805	900	920	1102	--	1020	1125	1170	1180
Dissolved Organic Carbon	ug/l	--	1700	2300	2000	1700	1700	2000	2100	1900	3400	2500	--	2300	3000	2200	1900
Hardness, Calcium Carbonate	ug/l	--	550000	510000	540000	450000	540000	570000	290000	450000	470000	560000	--	540000	520000	600000	590000
Nitrate as N	ug/l	--	1200	1700	1300	2300	1200	500	1200	1200	580	490	--	320	910	840	810
Nitrite as N	ug/l	--	<10	20	<10	30	<10	<10	11	<10	<10	13	--	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	500	300	1000	500	300	400	800	360	230	530	--	240	780	830	360
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.51	7.6	7.5	7.5	7.8	7.8	7.7	7.7	7.7	8.08	--	7.8	7.8	8	7.8
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	23	6	11	12	14	5	19	<2	12	6	--	3	7	<2	11
Sulphate	ug/l	--	500000	380000	390000	330000	360000	340000	200000	330000	310000	400000	--	400000	400000	430000	420000
Temperature (Field)	deg c	-- [24]	17.3	12	5	2	1	0	1	7	15	21.8	--	23	9	8	2
Total Dissolved Solids	ug/l	--	1030000	872000	896000	780000	896000	906000	512000	774000	708000	874000	--	980000	908000	968000	1020000
Total Suspended Solids	ug/l	--	1000	2000	3000	<1000	<1000	1000	5000	<1000	3000	<1000	--	<1000	3000	<1000	<1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	55	56	55	50	54	62	41	56	63	56	--	61	60	55	48
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**350**	**280**	**330**	**230**	**350**	**370**	120	**240**	190	**320**	--	**380**	**260**	**320**	**320**
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	150000	150000	150000	130000	150000	160000	91000	120000	130000	140000	--	150000	150000	160000	160000
Chromium	ug/l	-- [30]	<5	<5	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.5	<0.5	<0.5	<0.50	0.54	0.87	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	<1	<1	<1	<1.0	<1.0	<1.0	5.0	**5.4**	<1.0	<1.0	--	<1.0	<1.0	<1.0	1.6
Hexavalent Chromium	ug/l	1 [22]	<0.5	<0.5	0.7	0.7	<0.5	<0.5	0.9	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5
Iron	ug/l	300	<100	<100	<100	<100	<100	150	<100	<100	140	<100	--	<100	<100	<100	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	44000	41000	49000	38000	52000	55000	22000	38000	32000	46000	--	48000	38000	51000	55000
Manganese	ug/l	--	3	8	4	4.2	11	24	6.1	4.6	18	5.2	--	2.7	17	5.4	4.9
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	9400	7400	7800	6800	7300	7800	4700	6000	5400	7800	--	8500	7000	7700	7000
Silicon	ug/l	--	2700	2500	3200	2700	3700	4500	1800	2600	2100	3000	--	3200	2000	3200	3100
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	73000	63000	77000	59000	79000	84000	45000	59000	43000	67000	--	68000	56000	70000	81000
Strontium	ug/l	--	7200	6700	7800	6300	8000	7900	4000	6600	5200	7900	--	7800	7000	7700	8200
Sulfur	ug/l	--	170000	150000	140000	130000	150000	140000	70000	110000	110000	150000	--	150000	160000	160000	170000
Thallium	ug/l	0.3 [33]	0.15	0.08	0.06	0.080	0.073	0.058	0.065	0.068	0.064	0.090	--	0.14	0.090	0.070	<0.050
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-1 17-Dec-2012 SS-1	SS-1 16-Jan-2013 [9] SS-1	SS-1 26-Feb-2013 SS-1	SS-1 25-Mar-2013 SS-1	SS-1 01-Apr-2013 [4] ss1	SS-1 10-May-2013 SS-1	SS-1 21-Jun-2013 SS-1	SS-1 29-Jul-2013 SS-1	SS-1 14-Aug-2013 SS-1	SS-1 26-Sep-2013 SS-1	SS-1 25-Oct-2013 SS-1	SS-1 22-Nov-2013 [10] SS-1	SS-1 23-Dec-2013 SS-1	SS-1 09-Jan-2014 [4] s1	SS-1 04-Feb-2014 [4] s1
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	190000	140000	180000	170000	--	100000	120000	120000	130000	130000	140000	180000	180000	--	--
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	--	<20	<20	<20	<20	<20	<20	<20	<20	--	--
Ammonia Nitrogen	ug/l	--	150	160	230	64	--	80	80	110	<50	<50	140	<50	140	--	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	--	--
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	<4000	8800	12000	8100	--	8900	4900	5100	5400	6900	4600	5300	<4000	--	--
Chloride	ug/l	--	67000	67000	72000	47000	--	43000	62000	57000	47000	46000	63000	64000	69000	--	--
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	--	<5	<5	<5	<5	<5	<5	<5	<5	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	1190	920	982	897	--	880	1033	801	1043	1025	1010	1191	1277	--	--
Dissolved Organic Carbon	ug/l	--	2000	1700	2500	2700	--	1500	1700	2000	2000	1900	1500	2400	2200	--	--
Hardness, Calcium Carbonate	ug/l	--	670000	550000	540000	410000	--	330000	450000	450000	430000	410000	480000	530000	530000	--	--
Nitrate as N	ug/l	--	570	1100	510	850	--	1500	1800	1000	720	820	1400	610	690	--	--
Nitrite as N	ug/l	--	<10	<10	<10	19	--	11	<10	<10	<10	<10	<10	<10	<10	--	--
Nitrogen, Total Kjeldahl	ug/l	--	480	680	800	830	--	580	310	610	200	290	430	260	310	--	--
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.9	7.7	7.30	7.13	--	8.1	7.71	7.22	7.10	**3.93**	7.4	7.64	7.10	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	2	8	50	13	--	9	<2	7	3	2	<2	<2	7	--	--
Sulphate	ug/l	--	430000	380000	350000	270000	--	270000	350000	350000	340000	360000	370000	380000	390000	--	--
Temperature (Field)	deg c	-- [24]	1	1	2.5	1.6	--	20	17.8	20.2	17.6	13.2	6	3.0	0.4	--	--
Total Dissolved Solids	ug/l	--	1010000	874000	830000	560000	--	566000	758000	806000	734000	800000	852000	912000	916000	--	--
Total Suspended Solids	ug/l	--	1000	6000	8000	3000	--	<1000	2000	1000	2000	<1000	<1000	1000	8000	--	--
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	52	48	53	45	--	47	52	58	47	48	50	52	54	--	--
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**330**	**250**	**220**	140	--	140	**230**	**240**	**230**	**240**	**260**	**260**	**260**	--	--
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	180000	140000	140000	130000	--	97000	130000	140000	130000	130000	150000	150000	150000	--	--
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	<5.0	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	--
Cobalt	ug/l	0.9	<0.50	0.52	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--
Copper	ug/l	5	<1.0	<1.0	<1.0	2.8	--	<1.0	<1.0	<1.0	<1.0	<1.0	2.6	<1.0	<1.0	--	--
Hexavalent Chromium	ug/l	1 [22]	<0.5	**1.3**	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--
Iron	ug/l	300	<100	260	**310**	250	--	<100	<100	<100	<100	<100	<100	<100	<100	--	--
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	64000	43000	40000	30000	--	24000	32000	36000	31000	33000	42000	43000	50000	--	--
Manganese	ug/l	--	5.1	10	52	52	--	<2.0	2.2	4.7	15	8.4	4.2	18	26	--	--
Mercury	ug/l	0.2 [32]	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	--
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	7900	6900	5800	5100	--	6100	7700	8100	6800	7200	7900	6500	7000	--	--
Silicon	ug/l	--	3700	2600	3200	2400	--	1500	2000	2500	2100	2300	2700	2700	3300	--	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	--
Sodium	ug/l	--	92000	72000	60000	48000	--	45000	54000	52000	46000	47000	56000	59000	70000	--	--
Strontium	ug/l	--	9900	7100	6900	4500	--	4100	5900	6300	5600	5600	6600	7200	7400	--	--
Sulfur	ug/l	--	160000	150000	130000	95000	--	90000	120000	130000	120000	140000	140000	140000	160000	--	--
Thallium	ug/l	0.3 [33]	0.070	0.064	<0.050	<0.050	--	0.087	0.087	0.12	0.11	0.089	0.087	<0.050	<0.050	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-1 26-Mar-2014 [10] SS-1	SS-1 22-Apr-2014 [9] SS-1	SS-1 21-May-2014 SS-1	SS-1 19-Jun-2014 SS-1	SS-1 15-Jul-2014 SS-1	SS-1 25-Aug-2014 SS-1	SS-1 23-Sep-2014 SS-1	SS-1 27-Oct-2014 SS-1	SS-1 20-Nov-2014 [10] SS-1	SS-1 09-Dec-2014 [11] SS-1	SS-1 16-Mar-2015 SS-1	SS-1 07-Apr-2015 SS-1	SS-1 21-May-2015 [10] SS-1	SS-1 23-Jun-2015 [10] SS-1
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	190000	110000	130000	160000	130000	100000	150000	150000	150000	160000	140000	150000	150000	140000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	250	2300	<50	110	<50	<50	<50	72	73	<50	120	78	<50	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	11000	7300	5900	5500	4700	<4000	7100	<4000	<4000	6200	17000	7900	8400	13000
Chloride	ug/l	--	70000	36000	46000	71000	43000	35000	45000	47000	70000	67000	39000	58000	83000	85000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	1293	1080	1130	1131	928	1220	1140	1046	1193	1233	785	967	1005	1181
Dissolved Organic Carbon	ug/l	--	2000	2000	2500	2100	2400	1400	2500	2200	1900	1800	4100	1700	2300	3100
Hardness, Calcium Carbonate	ug/l	--	530000	310000	420000	490000	420000	350000	460000	460000	520000	560000	320000	430000	540000	520000
Nitrate as N	ug/l	--	600	1450	1350	1400	1020	960	770	870	960	1320	430	960	1030	780
Nitrite as N	ug/l	--	<10	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	510	2300	510	600	490	510	600	240	260	190	340	290	350	520
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.60	7.6	7.8	7.58	7.91	7.9	7.8	7.67	8.24	7.46	8.19	7.24	7.8	8.11
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	20	<2	7	5	9	3	7	7	15	10	56	6	11	13
Sulphate	ug/l	--	370000	210000	280000	350000	300000	310000	340000	360000	380000	410000	190000	300000	360000	360000
Temperature (Field)	deg c	-- [24]	1.5	7	8	17.2	18.6	20	20	9.2	0.2	0.9	1.2	2.5	13	23.5
Total Dissolved Solids	ug/l	--	908000	492000	630000	1000000	652000	590000	762000	670000	798000	894000	474000	652000	898000	962000
Total Suspended Solids	ug/l	--	56000	5000	4000	2000	3000	2000	1000	2000	5000	3000	92000	4000	2000	3000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	48	37	55	58	58	49	49	52	50	47	35	39	51	58
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**230**	96	140	**230**	190	160	**210**	200	**240**	**240**	97	160	**210**	**210**
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	170000	87000	110000	150000	130000	110000	140000	160000	160000	160000	120000	120000	150000	160000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.50	0.58	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	280	<100	<100	<100	<100	<100	<100	<100	<100	<100	240	<100	<100	110
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	47000	19000	26000	38000	29000	26000	33000	36000	44000	47000	19000	32000	42000	40000
Manganese	ug/l	--	23	4.3	4.0	9.5	9.7	3.1	5.5	9.3	5.8	4.6	13	8.5	2.8	11
Mercury	ug/l	0.2 [32]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	6300	5000	6800	8000	8000	7900	8000	7600	8200	7800	3700	5300	8000	8700
Silicon	ug/l	--	3400	1300	1600	2300	2700	1800	2200	2400	2800	2800	1700	2200	2500	1800
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	58000	28000	41000	60000	43000	33000	45000	47000	61000	61000	27000	44000	60000	52000
Strontium	ug/l	--	6700	3100	4200	5800	4800	4000	5100	5900	6500	6600	2700	4600	5900	5700
Sulfur	ug/l	--	140000	77000	100000	120000	100000	110000	120000	130000	150000	150000	67000	97000	140000	--
Thallium	ug/l	0.3 [33]	0.063	<0.050	0.063	0.076	0.083	0.10	0.069	0.068	0.066	0.073	<0.050	0.054	0.079	0.11
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-1 22-Jul-2015 [12] SS-1	SS-1 28-Aug-2015 [10] SS-1	SS-1 25-Sep-2015 [9] SS-1	SS-1 27-Oct-2015 [10] SS-1	SS-1 20-Nov-2015 SS-1	SS-1 10-Dec-2015 [10] SS-1	SS-1 26-Jan-2016 [10] SS-1	SS-1 23-Feb-2016 SS-1	SS-1 21-Mar-2016 [9] SS-1	SS-1 26-Apr-2016 [9] SS-1	SS-1 31-May-2016 SS-1	SS-1 30-Jun-2016 [13] SS-1	SS-1 13-Jul-2016 SS-1	SS-1 04-Aug-2016 SS-1
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	140000	110000	110000	140000	140000	140000	140000	170000	100000	140000	160000	160000	120000	110000
Ammonia, unionized (Field)	ug/l	20	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<50	<50	<50	190	<50	<50	250	290	580	<50	<50	300	<50	85
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	3000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	<4000	4000	<4000	5100	7600	5400	<4000	9700	<4000	8000	7800	41000	12000	7200
Chloride	ug/l	--	94000	72000	58000	80000	67000	75000	74000	68000	46000	74000	110000	98000	84000	86000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	1345	1100	1080	1267	1105	1262	1224	500	736	1068	1228	695	885	945
Dissolved Organic Carbon	ug/l	--	2000	1300	1400	1700	2000	1800	1400	2800	1400	2300	1800	8800	1700	2100
Hardness, Calcium Carbonate	ug/l	--	600000	500000	470000	580000	520000	540000	520000	490000	300000	440000	570000	720000	520000	540000
Nitrate as N	ug/l	--	810	960	1050	490	560	690	1130	810	1170	1200	750	<100	1150	1020
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10	<10	13	<10	13	<10	<10	<10	14	12
Nitrogen, Total Kjeldahl	ug/l	--	380	350	230	<500 [35]	330	200	600	520	860	170	210	1200	350	310
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.14	7.49	7.6	6.63	8.11	8.10	7.55	7.47	7.71	8.03	7.20	7.8	7.7	7.8
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	15	8	<4	<4	4	19	7	38	11	9	<4	100	8	6
Sulphate	ug/l	--	430000	380000	360000	420000	380000	380000	360000	360000	200000	320000	390000	450000	390000	420000
Temperature (Field)	deg c	-- [24]	22.1	20.2	15	7.9	6.6	5.4	2.4	0	3.7	7.8	20.9	24	23	21
Total Dissolved Solids	ug/l	--	944000	1060000	786000	968000	872000	958000	836000	802000	408000	642000	970000	1120000	974000	1050000
Total Suspended Solids	ug/l	--	1000	<2000	<1000	<1000	2000	2000	4000	43000	4000	2000	1000	10000	2000	2000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	53	44	43	45	41	43	43	45	38	43	44	84	50	52
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**260**	**230**	170	**230**	160	190	180	150	82	130	190	**250**	**220**	**220**
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	170000	150000	140000	160000	150000	160000	150000	160000	93000	130000	150000	200000	160000	160000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.50	0.62	0.58	<0.50	<0.50	<0.50	**1.3**	<0.50	**1.7**	0.95	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	<100	<100	<100	<100	<100	<100	<100	**430**	<100	<100	<100	**550**	<100	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	47000	39000	32000	45000	35000	40000	41000	37000	20000	31000	45000	44000	40000	41000
Manganese	ug/l	--	<2.0	2.8	2.2	3.0	5.7	6.1	5.9	18	3.2	3.6	2.1	23	<2.0	3.1
Mercury	ug/l	0.2 [32]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	10000	9700	8800	8500	6400	7300	10000	6500	6800	7600	8700	8500	11000	12000
Silicon	ug/l	--	2700	2200	1900	2400	1900	2300	2400	2500	1500	1900	2600	2700	2300	2300
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	61000	46000	36000	53000	41000	51000	53000	47000	36000	46000	63000	62000	51000	49000
Strontium	ug/l	--	6800	5700	4500	6800	4700	5700	5600	4700	2700	4700	6600	6400	5700	5900
Sulfur	ug/l	--	160000	160000	130000	140000	110000	140000	140000	120000	72000	110000	150000	170000	140000	160000
Thallium	ug/l	0.3 [33]	0.12	0.14	0.079	0.067	0.051	0.055	0.067	<0.050	<0.050	0.056	0.080	0.10	0.14	0.11
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO (1)	SS-1 20-Sep-2016 SS-1	SS-1 26-Oct-2016 (9) SS-1	SS-1 11-Nov-2016 (9) SS-1	SS-1 14-Dec-2016 SS-1	SS-1 23-Jan-2017 SS-1	SS-1 14-Feb-2017 SS-1	SS-1 27-Mar-2017 (14) SS-1	SS-1 21-Apr-2017 (14) SS-1	SS-1 23-May-2017 SS-1	SS-1 26-Jun-2017 SS-1	SS-1 21-Jul-2017 SS-1	SS-1 11-Aug-2017 SS-1	SS-1 08-Sep-2017 SS-1	SS-1 17-Oct-2017 (15) SS-1
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- (21)	120000	150000	130000	160000	150000	180000	140000	120000	150000	140000	120000	130000	120000	130000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<50	<50	<50	770	980	<50	250	84	<50	150	<50	340	<50	610 (36)
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	4200	11000	<4000	4000	4300	<4000	<4000	5800	5900	<4000	<4000	<4000	<4000	<4000
Chloride	ug/l	--	48000	45000	66000	47000	81000	98000	85000	74000	110000	120000	70000	98000	92000	97000
Chromium (III)	ug/l	8.9 (22)	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	1049	1005	1167	985	1249	1060	970	1054	1287	1238	1099	1312	1165	1209
Dissolved Organic Carbon	ug/l	--	1700	2600	1300	2600	1500	1700	1600	1600	1600	1600	1400	1900	1500	1600
Hardness, Calcium Carbonate	ug/l	--	500000	470000	610000	580000	540000	590000	400000	430000	590000	600000	500000	570000	520000	520000
Nitrate as N	ug/l	--	660	720	1470	1020	910	710	1190	2420	1820	710	1720	1310	870	790
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10	<10	<10	19	<10	<10	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	300	<100	230	1100	1300	220	310	310	440	610	340	640	150	600 (36)
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.06	7.8	7.60	7.6	6.60	7.7	7.66	7.24	7.36	7.15	7.53	7.82	7.41	7.71
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- (23)	14	<4	<4	33	9	<4	<4	<4	7	4	<4	<4	<4	<4
Sulphate	ug/l	--	350000	310000	420000	370000	390000	410000	270000	300000	370000	380000	380000	400000	360000	380000
Temperature (Field)	deg c	-- (24)	20.1	17	7.4	2	2.1	1	3.3	7.5	11.3	14.7	17.9	20.3	16.0	12.1
Total Dissolved Solids	ug/l	--	828000	798000	950000	816000	900000	1030000	678000	716000	962000	1080000	826000	1010000	882000	875000
Total Suspended Solids	ug/l	--	6000	3000	2000	17000	6000	<1000	2000	3000	2000	4000	2000	<1000	2000	6000
Turbidity	ntu	-- (25)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum, dissolved	ug/l	-- (26)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	44	43	36	44	43	42	37	43	45	48	46	46	47	44
Beryllium	ug/l	-- (27)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 (28)	190	150	190	140	190	**210**	130	120	190	200	160	**210**	200	**210**
Cadmium	ug/l	0.2 (29)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	150000	140000	150000	160000	160000	170000	110000	130000	170000	170000	140000	150000	160000	150000
Chromium	ug/l	-- (30)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	<1.0	<1.0	1.4	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hexavalent Chromium	ug/l	1 (22)	<0.50	0.63	0.56	<0.50	<0.50	<0.50	0.71	0.65	<0.50	<0.50	<0.50	<0.50	0.86	0.63
Iron	ug/l	300	<100	<100	**1500**	290	150	280	<100	<100	<100	<100	<100	<100	<100	<100
Lead	ug/l	-- (31)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	34000	32000	41000	35000	43000	48000	31000	30000	44000	45000	35000	41000	41000	40000
Manganese	ug/l	--	5.4	2.3	6.1	29	8.1	9.8	4.1	2.5	3.7	4.7	<2.0	<2.0	2.5	2.9
Mercury	ug/l	0.2 (32)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	9900	9300	10000	7300	9100	8600	8700	9900	8400	8500	10000	12000	13000	13000
Silicon	ug/l	--	2100	2000	2300	2000	2800	3000	2100	2000	2500	2600	2200	2500	2500	2600
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	39000	39000	50000	41000	55000	63000	50000	43000	53000	49000	40000	54000	53000	55000
Strontium	ug/l	--	5000	4500	5800	4400	6000	6500	4400	4100	5800	6300	5000	5800	6000	5800
Sulfur	ug/l	--	130000	120000	160000	130000	150000	150000	88000	110000	140000	140000	130000	140000	140000	140000
Thallium	ug/l	0.3 (33)	0.096	0.052	0.082	<0.050	0.065	0.069	0.060	0.10	0.055	0.068	0.088	0.10	0.096	0.095
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 (29)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																
Phenolics, Total Recoverable	ug/l	1 (34)	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-1 17-Nov-2017 SS-1	SS-1 07-Dec-2017 [14] SS-1	SS-1 22-Jan-2018 SS-1	SS-1 16-Feb-2018 SS-1	SS-1 13-Mar-2018 SS-1	SS-1 24-Apr-2018 SS-1	SS-1 18-May-2018 SS-1	SS-1 22-Jun-2018 SS-1	SS-1 18-Jul-2018 SS-1	SS-1 24-Aug-2018 SS-1	SS-1 18-Sep-2018 SS-1	SS-1 24-Oct-2018 SS-1	SS-1 20-Nov-2018 SS-1	SS-1 18-Dec-2018 SS-1	SS-1 25-Jan-2019 SS-1
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	130000	150000	190000	205000	148000	124000	136000	126000	133000	116000	130000	149000	159000	174000	201000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<50	<50	70	100	160	1260	150	290	50	70	380	<20	80	50	1090
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<1000	<1000	<1000	<1000	<1000	<1000	2000	<1000	<1000	<1000	<1000	1000	<1000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	<4000	<4000	5000	<5000	<5000	<5000	5000	<5000	<5000	6000	<5000	<5000	<5000	<5000	<5000
Chloride	ug/l	--	73000	86000	75000	102000	91000	120000	105000	28000	164000	115000	127000	119000	113000	111000	111000
Chromium (III)	ug/l	8.9 [22]	<5	<5	**<10**	<1	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	<1
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	1135	1257	1201	1343	1116	1100	1254	1333	1467	1258	1335	1314	1304	1315	1328
Dissolved Organic Carbon	ug/l	--	1600	1700	1900	1400	1600	1800	1500	2000	7200	1300	4800	1800	1900	1800	2400
Hardness, Calcium Carbonate	ug/l	--	500000	550000	566000	588000	475000	431000	536000	562000	543000	455000	568000	499000	615000	571000	526000
Nitrate as N	ug/l	--	1300	940	280	330	780	1010	1090	120	340	910	350	1160	1540	1230	440
Nitrite as N	ug/l	--	10	<10	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	220	160	300	200	300	1800	200	200	420	100	3400	200	1900	200	1300
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.33	7.06	**6.42**	6.6	7.75	7.96	7.81	8.05	7.72	7.03	7.49	7.28	6.80	7.03	6.59
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	<4	7	<2	<2	12	54	5	6	4	6	3	<2	3	7	2
Sulphate	ug/l	--	340000	370000	389000	405000	305000	430000	371000	81000	425000	434000	452000	451000	450000	407000	352000
Temperature (Field)	deg c	-- [24]	5.2	4.6	1.1	1.2	1.9	7.8	12.1	18.0	23.2	18.9	20.2	8.3	3.9	2.8	1.3
Total Dissolved Solids	ug/l	--	735000	890000	780000	987000	748000	791000	903000	890000	1050000	945000	994000	1020000	994000	966000	959000
Total Suspended Solids	ug/l	--	<1000	6000	4000	4000	4000	5000	<1000	5000	2000	3000	2000	<1000	9000	29000	3000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	40	39	50	40	40	40	40	50	50	60	50	<10	50	40	40
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	200	200	**270**	**280**	200	160	180	**210**	**260**	**260**	**270**	<10	**260**	**250**	**240**
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	140000	150000	151000	158000	134000	118000	147000	156000	148000	126000	155000	134000	167000	151000	138000
Chromium	ug/l	-- [30]	<5.0	<5.0	<1	<1	1	3	2	6	2	1	<1	<1	<1	2	<1
Cobalt	ug/l	0.9	<0.50	<0.50	0.3	0.3	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.5	0.5	0.9
Copper	ug/l	5	<1.0	<1.0	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	**1.4**	0.96	**<10**	<1	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	<1
Iron	ug/l	300	<100	<100	30	50	270	40	<30	40	<30	30	<30	<30	50	130	40
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	37000	41000	46000	47000	34000	33000	41000	42000	42000	34000	44000	40000	48000	47000	44000
Manganese	ug/l	--	<2.0	3.0	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	20
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	14000	12000	8000	10000	10000	11000	14000	19000	19000	16000	16000	16000	12000	13000	11000
Silicon	ug/l	--	2400	2600	3000	3200	2600	2500	2800	2700	2400	2200	2600	2400	2900	3200	3300
Silver	ug/l	0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	48000	55000	51000	69000	59000	55000	65000	66000	77000	66000	74000	78000	72000	65000	75000
Strontium	ug/l	--	4800	5900	6910	6990	5720	5770	5760	6140	7140	6640	6150	<1	9030	6790	6810
Sulfur	ug/l	--	130000	140000	130000	135000	96000	109000	112000	117000	144000	183000	157000	167000	158000	149000	132000
Thallium	ug/l	0.3 [33]	0.089	0.080	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-1 21-Feb-2019 [16] SS-1	SS-1 13-Mar-2019 SS-1	SS-1 17-Apr-2019 SS-1	SS-1 24-May-2019 SS - 1	SS-1 21-Jun-2019 SS-1	SS-1 18-Jul-2019 SS-1	SS-1 21-Aug-2019 SS-1	SS-1 18-Sep-2019 SS-1	SS-1 29-Oct-2019 SS-1	SS-1 19-Nov-2019 SS-1	SS-1 18-Dec-2019 SS-1	SS-1 15-Jan-2020 SS-1	SS-1 19-Feb-2020 SS-1	SS-1 19-Mar-2020 SS-1	SS-1 03-Apr-2020 SS-1
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	209000	195000	74000	128000	116000	155000	160000	152000	74000	146000	123000	85000	205000	94000	93000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	50	70	160	46	14	50	50	20	100	<10	<10	18	35	97	24
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	2000	2000	<1000	<1000	<1000	2000	<1000	2000	4000	1000	2000	2000	2000	<1000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	7000	<5000	<5000	5000	7000	<5000	<5000	<5000	7000	<5000	8000	<5000	6000	<5000	<5000
Chloride	ug/l	--	145000	126000	49000	95000	157000	115000	129000	114000	60000	92000	66000	34000	90000	57000	72000
Chromium (III)	ug/l	8.9 [22]	<1	<1	3	2	<1	<1	<1	<1	3	1	2	3	**<10**	**<10**	**<10**
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	1344	1347	698	1171	1288	1257	1351	1297	993	1467	1066	632	1275	770	974
Dissolved Organic Carbon	ug/l	--	1800	2300	800	<500	1000	600	11700	1600	1200	1800	1500	1300	1800	1600	1800
Hardness, Calcium Carbonate	ug/l	--	513000	487000	266000	507000	514000	510000	565000	678000	374000	561000	426000	269000	564000	335000	382000
Nitrate as N	ug/l	--	460	550	1370	3000	1810	630	720	740	1450	1680	690	590	180	1570	1800
Nitrite as N	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	200	<100	200	300	290	200	200	<100	200	<100	298	234	391	421	399
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	6.77	6.76	6.74	8 [37]	6.65	6.72	7.31	6.77	7.67	7.69	8.12	7.95	7.78	8.22	7.94
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	4	3	6	<2	<2	13	3	2	4	<2	5	16	<2	9	<2
Sulphate	ug/l	--	422000	377000	176000	367000	403000	386000	412000	448000	297000	440000	304000	187000	379000	214000	289000
Temperature (Field)	deg c	-- [24]	1.5	1.9	6.5	10.3	12.9	15.8	17.6	15.6	9.4	3.7	2.7	1.1	2.9	2.7	6.0
Total Dissolved Solids	ug/l	--	973000	966000	453000	763000	952000	786000	1030000	1020000	614000	1040000	728000	415000	959000	502000	648000
Total Suspended Solids	ug/l	--	2000	4000	14000	2000	2000	6000	3000	2000	9000	4000	7000	66000	3000	17000	2000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	40	40	40	50	50	50	60	60	40	50	40	30	50	40	40
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**260**	**260**	60	180	**230**	**280**	**320**	**270**	120	**250**	160	100	**320**	90	120
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	138000	129000	80000	142000	140000	135000	152000	189000	107000	152000	116000	78000	145000	101000	110000
Chromium	ug/l	-- [30]	<1	<1	3	2	1	<1	<1	<1	3	1	2	3	<1	4	5
Cobalt	ug/l	0.9	0.8	0.5	0.2	0.2	0.4	0.3	0.4	0.4	0.2	0.4	0.3	0.7	0.7	0.3	0.2
Copper	ug/l	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	**<10**	<1
Iron	ug/l	300	40	40	70	<30	<30	130	<30	<30	70	<30	60	**340**	60	160	40
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	41000	40000	16000	37000	40000	42000	45000	50000	26000	44000	33000	18000	49000	20000	26000
Manganese	ug/l	--	10	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	20	10	<10	<10
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	11000	10000	11000	14000	18000	12000	14000	18000	11000	17000	11000	6000	10000	10000	13000
Silicon	ug/l	--	3300	3200	1700	2400	2300	2700	3000	2700	2200	2800	2500	2700	3600	3300	2300
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	80000	79000	31000	59000	82000	63000	73000	74000	41000	70000	47000	26000	70000	40000	46000
Strontium	ug/l	--	7160	7410	2190	5270	6030	6860	8220	8130	3520	7000	5110	2590	8510	3520	3730
Sulfur	ug/l	--	134000	129000	74000	131000	150000	150000	159000	169000	106000	164000	119000	61700	165000	78000	107000
Thallium	ug/l	0.3 [33]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-1 08-May-2020 SS-1	SS-1 01-Jun-2020 SS-1	SS-1 21-Jul-2020 SS-1	SS-1 25-Aug-2020 SS-1	SS-1 17-Sep-2020 SS-1	SS-1 23-Oct-2020 SS-1	SS-1 26-Nov-2020 SS-1	SS-1 11-Dec-2020 SS-1	SS-1 08-Jan-2021 SS-1	SS-1 18-Feb-2021 SS-1	SS-1 22-Mar-2021 SS-1	SS-1 09-Apr-2021 [17] SS-1	SS-1 28-May-2021 SS-1	SS-1 28-Jun-2021 SS-1	SS-1 15-Jul-2021 SS-1
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	149000	173000	153000	176000	120000	128000	156000	139000	141000	190000	176000	132000	181000	108000	137000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<10	26	16	50	<10	<10	870	<10	<10	80	28	<10	<10	<10	<10
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	2000	9000	6000	5000	5000	6000	3000	1000	3000	6000	<1000	1000	<1000	2000	1000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	16000	<5000	11000	6000	<5000	<5000	<5000	<5000	5000	<5000	<5000	<5000	7000	<5000	<5000
Chloride	ug/l	--	83000	98000	125000	88000	75000	84000	89000	74000	80000	108000	74000	100000	119000	108000	89000
Chromium (III)	ug/l	8.9 [22]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	1075	1294	1220	1154	1297	637	1210	1286	1256	1428	1183	1235	1348	1233	1199
Dissolved Organic Carbon	ug/l	--	2700	2600	3300	3400	1600	1500	2600	1300	1400	1700	1600	1400	2400	1200	1500
Hardness, Calcium Carbonate	ug/l	--	436000	522000	577000	485000	535000	488000	539000	564000	535000	629000	452000	529000	642000	511000	583000
Nitrate as N	ug/l	--	360	<100	320	320	670	1340	900	2340	1330	540	830	2750	660	1100	500
Nitrite as N	ug/l	--	<100	<100	<100	<100	<100	<500	<100	<100	<100	<100	<100	<500	<500	<100	<500
Nitrogen, Total Kjeldahl	ug/l	--	422	2520	479	391	1970	637	341	302	193	379	<100	374	132	1070	462
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.61	7.80	8.09	8.10	7.77	7.47	7.75	7.38	7.34	7.51	7.28	7.46	7.74	7.81	7.50
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	6	16	8	34	3	3	10	3	6	8	2	2	<2	14	6
Sulphate	ug/l	--	278000	357000	382000	340000	480000	430000	442000	448000	482000	460000	367000	427000	498000	414000	444000
Temperature (Field)	deg c	-- [24]	5.1	10.8	15.9	17.4	15.5	11.0	0.9	4.8	4.1	3.5	5.2	8.1	13.4	17.4	17.0
Total Dissolved Solids	ug/l	--	689000	882000	1010000	854000	924000	903000	938000	903000	896000	1010000	854000	868000	1010000	868000	889000
Total Suspended Solids	ug/l	--	20000	52000	6000	15000	22000	5000	28000	9000	10000	22000	8000	4000	<1000	20000	11000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	50	50	60	60	50	40	40	40	40	30	40	50	40	40	40
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	150	**260**	**280**	**270**	**220**	**240**	**220**	190	**220**	**280**	170	170	**290**	**220**	**250**
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	130000	143000	160000	138000	145000	141000	150000	155000	145000	166000	120000	146000	168000	142000	161000
Chromium	ug/l	-- [30]	<1	<1	<1	<1	<1	1	<1	2	<1	<1	<1	2	<1	<1	<1
Cobalt	ug/l	0.9	<0.2	0.5	0.5	0.8	<0.2	0.3	0.2	0.3	0.7	0.6	0.4	0.2	0.3	0.6	0.2
Copper	ug/l	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	<1	<1	<0.5	<0.50	0.8	**1.5**	<1	**1.5**	0.54	<0.5	<0.5	**1.2**	<0.5	0.6	0.6
Iron	ug/l	300	70	140	50	**480**	<30	30	100	50	90	100	30	<30	<30	120	80
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	27000	40000	43000	34000	42000	33000	40000	43000	42000	52000	37000	40000	54000	38000	44000
Manganese	ug/l	--	<10	10	10	100	<10	<10	10	<10	<10	10	<10	<10	<10	<10	<10
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	12000	13000	15000	11000	16000	13000	15000	14000	13000	13000	8000	15000	13000	16000	14000
Silicon	ug/l	--	1000	3000	3900	5000	2600	3800	3200	3200	3300	2700	3500	3500	3800	3200	3200
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	52000	70000	85000	60000	58000	63000	68000	60000	67000	80000	54000	64000	75000	70000	59000
Strontium	ug/l	--	4100	7590	7890	6660	6100	6050	5920	5670	6170	6090	5920	5970	6590	4650	5680
Sulfur	ug/l	--	108000	149000	170000	122000	180000	145000	157000	179000	153000	180000	138000	152000	170000	149000	171000
Thallium	ug/l	0.3 [33]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-1 11-Aug-2021 SS-1	SS-1 28-Sep-2021 SS1	SS-1 27-Oct-2021 SS1	SS-1 11-Nov-2021 SS1	SS-1 19-Nov-2021 SS1	SS-1 15-Dec-2021 SS1	SS-1 25-Jan-2022 [18] SS1	SS-1 24-Feb-2022 [4] 1	SS-1 17-Mar-2022 [19] SW1	SS-1 28-Apr-2022 SS1	SS-1 26-May-2022 [20] SS1	SS-1 24-Jun-2022 SS1	SS-1 25-Jul-2022 SS1
General Chemistry															
Alkalinity (Total as CaCO3)	ug/l	-- [21]	146000	164000	88000	--	110000	135000	197000	--	101000	122000	140000	108000	91000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	--	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<10	16	21	<10	81	<10	<10	--	137	26	34	156	<20
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	1000	1000	<1000	--	1000	3000	<1000	--	<1000	<1000	<1000	4000	1000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	<5000	<5000	<5000	<5000	<5000	<5000	<5000	--	<5000	5000	11000	<5000	5000
Chloride	ug/l	--	90000	125000	48000	76000	69000	62000	83000	--	69000	107000	127000	90000	76000
Chromium (III)	ug/l	8.9 [22]	<1	<1	<1	<1	**<10**	<1	<1	--	<1	<1	<1	<1.0	<1
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	1307	1283	836	1278	1137	1152	1575	--	754	1171	1230	1060	1034
Dissolved Organic Carbon	ug/l	--	2200	2000	1300	2100	2000	2100	<500	--	2400	2500	1800	2100	1700
Hardness, Calcium Carbonate	ug/l	--	552000	590000	353000	--	495000	507000	585000	--	305000	569000	623000	519000	472000
Nitrate as N	ug/l	--	<500	<100	1310	1450	1520	800	600	--	850	1960	1390	2160	1430
Nitrite as N	ug/l	--	<500	<100	<100	<100	<100	<100	<500	--	<100	<100	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	232	1320	218	225	1950	505	208	--	225	243	386	348	379
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.37	7.73	8.21	8.07	8.07	7.71	7.69	--	8.48	7.87	7.71	7.42	7.70
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	3	5	6	<2	4	<2	<2	--	6	<2	<2	3	6
Sulphate	ug/l	--	422000	496000	264000	434000	371000	387000	443000	--	210000	405000	478000	440000	379000
Temperature (Field)	deg c	-- [24]	17.7	12.9	9.4	8.8	6.5	4.2	1.5	--	3.6	7.5	15.7	17.5	22
Total Dissolved Solids	ug/l	--	966000	1060000	593000	--	812000	767000	1010000	--	520000	910000	1020000	833000	728000
Total Suspended Solids	ug/l	--	3000	6000	12000	--	13000	3000	<1000	--	7000	6000	<1000	<1000	4000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	40	40	40	40	40	30	40	--	40	40	40	40	40
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**260**	**320**	100	150	140	170	**220**	--	80	160	**240**	**210**	190
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	152000	162000	105000	--	142000	137000	164000	--	89000	162000	172000	147000	138000
Chromium	ug/l	-- [30]	<1	<1	2	1	1	<1	<1	--	<1	1	<1	<1	<1
Cobalt	ug/l	0.9	0.4	**1.0**	<0.2	<0.2	0.2	<0.2	0.5	--	0.3	0.3	0.3	0.2	0.2
Copper	ug/l	5	<1	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.50	**1.5**	1	**1.1**	0.6	<0.50	--	0.7	**1.1**	<0.5	<0.50	<0.5
Iron	ug/l	300	50	70	110	<30	60	40	50	--	80	50	<30	40	60
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	42000	45000	22000	--	34000	40000	52000	--	20000	40000	47000	37000	31000
Manganese	ug/l	--	<10	20	<10	<10	<10	<10	10	--	10	<10	<10	<10	<10
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	16000	16000	12000	--	15000	13000	13000	--	7000	16000	15000	14000	12000
Silicon	ug/l	--	3800	3400	2200	2400	2200	2500	4000	--	1900	2700	3600	2700	2900
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	67000	94000	30000	--	51000	49000	63000	--	41000	64000	70000	53000	40000
Strontium	ug/l	--	6580	8340	2790	4800	3960	4680	6620	--	2760	5070	6740	5200	4900
Sulfur	ug/l	--	156000	170000	113000	167000	167000	151000	162000	--	70800	147000	155000	139000	144000
Thallium	ug/l	0.3 [33]	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	0.1	0.1
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols															
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-2 17-Sep-2000	SS-2 28-May-2001	SS-2 29-Jun-2001	SS-2 23-Jul-2001 [2]	SS-2 26-Aug-2001 [2]	SS-2 21-Sep-2001 [2]	SS-2 20-Oct-2001	SS-2 17-Nov-2001	SS-2 13-Dec-2001 [38]	SS-2 07-Jan-2002 [3]	SS-2 01-Feb-2002 [3]	SS-2 23-Mar-2002 [3]	SS-2 21-Apr-2002	SS-2 18-May-2002
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	185000	180000	237000	--	--	--	139000	161000	--	--	--	--	147000	132000
Ammonia, unionized	ug/l	20	--	<20	<20	--	--	--	<20	<20	<20	--	--	--	<20	<20
Ammonia Nitrogen	ug/l	--	20	70	620	--	--	--	40	30	30	--	--	--	30	50
Bicarbonate	ug/l	--	--	180000	236000	--	--	--	139000	160000	--	--	--	--	147000	132000
Biochemical Oxygen Demand, 5 Day	ug/l	--	2000	2000	5000	--	--	--	1000	3000	1000	--	--	--	1000	1000
Carbonate (CO3)	ug/l	--	--	<2000	<2000	--	--	--	<2000	<2000	--	--	--	--	<2000	<2000
Chemical Oxygen Demand	ug/l	--	49000	40000	45000	--	--	--	27000	19000	15000	--	--	--	25000	28000
Chloride, dissolved	ug/l	--	46000	98000	252000	--	--	--	151000	132000	72000	--	--	--	96000	92000
Color	color unit	--	36	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	710	690	--	--	--	405	420	502	--	--	--	860	710
Dissolved Organic Carbon	ug/l	--	19100	14600	13900	--	--	--	8000	9800	8300	--	--	--	8800	10500
Hardness, Calcium Carbonate	ug/l	--	161000	184000	214000	--	--	--	231000	196000	196000	--	--	--	151000	152000
Nitrate as N	ug/l	--	<100	<100	<100	--	--	--	<100	<100	<100	--	--	--	<100	<100
Nitrite as N	ug/l	--	<100	<100	<100	--	--	--	<100	<100	<100	--	--	--	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	890	990	2230	--	--	--	740	510	330	--	--	--	590	800
Nitrogen, Organic	ug/l	--	--	920	1610	--	--	--	700	480	300	--	--	--	590	750
pH (Field)	-	6.5 - 8.5	7.88	7.38	7.4	--	--	--	7.6	7.7	7.3	--	--	--	7.4	7.3
Phosphate	ug/l	--	--	<30	<30	--	--	--	30	<30	<30	--	--	--	<30	<30
Phosphorus	ug/l	-- [23]	60	60	140	--	--	--	20	10	<10	--	--	--	30	30
Sulphate, dissolved	ug/l	--	5000	4000	6000	--	--	--	71000	27000	24000	--	--	--	17000	10000
Temperature (Field)	deg c	-- [24]	--	15	23	--	--	--	11	4	3	--	--	--	17	12
Total Dissolved Solids	ug/l	--	320000	436000	724000	--	--	--	564000	520000	--	--	--	--	420000	397000
Total Suspended Solids	ug/l	--	19000	6000	31000	--	--	--	6000	10000	33000	--	--	--	6000	<2000
Turbidity	ntu	-- [25]	13.4	3.9	3.3	--	--	--	0.9	1.2	1.2	--	--	--	1.4	0.7
Metals																
Aluminum, dissolved	ug/l	-- [26]	250	<50	<50	--	--	--	<50	<50	<50	--	--	--	<50	180
Barium	ug/l	--	20	40	60	--	--	--	30	20	20	--	--	--	20	20
Beryllium	ug/l	-- [27]	<2	<2	<2	--	--	--	<2	<2	<2	--	--	--	<2	<2
Boron	ug/l	200 [28]	10	<10	20	--	--	--	<10	<50	<50	--	--	--	<50	<50
Cadmium	ug/l	0.2 [29]	<0.1	**0.3**	<0.1	--	--	--	<0.1	<0.1	<0.1	--	--	--	<0.1	<0.1
Calcium	ug/l	--	61000	67000	79000	--	--	--	84000	72000	72000	--	--	--	59000	56000
Chromium	ug/l	-- [30]	<1	3	2	--	--	--	1	2	1	--	--	--	<1	2
Cobalt	ug/l	0.9	<0.2	0.2	<0.2	--	--	--	<0.2	<0.2	<0.2	--	--	--	<0.2	0.3
Copper	ug/l	5	**<10**	<1	<1	--	--	--	<1	2	<1	--	--	--	<1	1
Iron	ug/l	300	**570**	**680**	**1710**	--	--	--	60	70	30	--	--	--	40	**430**
Lead	ug/l	-- [31]	<1	<1	<1	--	--	--	<1	<1	<1	--	--	--	<1	2
Magnesium	ug/l	--	2000	4000	4000	--	--	--	5000	4000	4000	--	--	--	1000	3000
Manganese	ug/l	--	30	110	320	--	--	--	<10	<10	<10	--	--	--	<10	120
Mercury, dissolved	ug/l	0.2 [32]	<0.1	<0.1	<0.1	--	--	--	<0.1	<0.1	<0.1	--	--	--	<0.1	<0.1
Molybdenum	ug/l	40	<10	<10	<10	--	--	--	<10	<10	<10	--	--	--	<10	<10
Nickel	ug/l	25	<10	<10	<10	--	--	--	<10	<10	<10	--	--	--	<10	<10
Potassium	ug/l	--	<1000	<1000	<1000	--	--	--	<1000	<1000	1000	--	--	--	<1000	<1000
Silicon	ug/l	--	2070	400	1070	--	--	--	1480	1040	1020	--	--	--	20	200
Silver	ug/l	0.1	<0.1	**0.6**	<0.1	--	--	--	<0.1	<0.1	<0.1	--	--	--	**<10**	<0.1
Sodium	ug/l	--	40000	58000	171000	--	--	--	85000	77000	57000	--	--	--	55000	60000
Strontium	ug/l	--	207	510	1830	--	--	--	295	265	218	--	--	--	296	265
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	**<1**	**<1**	**<1**	--	--	--	**<1**	**<1**	**<1**	--	--	--	**<1**	**<1**
Tin	ug/l	--	<10	<10	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	10	<10	<10	--	--	--	<10	<10	<10	--	--	--	<10	<10
Vanadium	ug/l	6	<1	2	<1	--	--	--	<1	<1	<1	--	--	--	<1	2
Zinc	ug/l	30 [29]	<10	**280**	<10	--	--	--	<10	<10	<10	--	--	--	<10	<10
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	<1	<1	<1	--	--	--	<1	<1	<1	--	--	--	<1	<1

Parameter	Unit	PWQO [1]	SS-2 10-Jun-2002	SS-2 27-Jul-2002	SS-2 12-Aug-2002 [2]	SS-2 25-Sep-2002 [2]	SS-2 31-Oct-2002	SS-2 25-Nov-2002	SS-2 15-Jan-2003 [4]	SS-2 12-Feb-2003 [4]	SS-2 15-Mar-2003 [4]	SS-2 28-Apr-2003 [4]	SS-2 24-May-2003 [4]	SS-2 24-Jun-2003 [4]	SS-2 16-Jul-2003 [4]	SS-2 14-Aug-2003
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	129000	202000	--	--	139000	129000	--	--	--	--	--	--	--	163000
Ammonia, unionized	ug/l	20	<20	<20	--	--	<20	<20	--	--	--	--	--	--	--	<20
Ammonia Nitrogen	ug/l	--	90	330	--	--	90	<20	--	--	--	--	--	--	--	30
Bicarbonate	ug/l	--	129000	202000	--	--	139000	129000	--	--	--	--	--	--	--	163000
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	2000	--	--	<1000	<1000	--	--	--	--	--	--	--	<1000
Carbonate (CO3)	ug/l	--	<2000	<5000	--	--	<2000	<2000	--	--	--	--	--	--	--	<2000
Chemical Oxygen Demand	ug/l	--	37000	46000	--	--	39000	27000	--	--	--	--	--	--	--	50000
Chloride, dissolved	ug/l	--	81000	94000	--	--	115000	68000	--	--	--	--	--	--	--	59000
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	720	700	--	--	530	610	--	--	--	--	--	--	--	420
Dissolved Organic Carbon	ug/l	--	16100	18800	--	--	14600	13300	--	--	--	--	--	--	--	18000
Hardness, Calcium Carbonate	ug/l	--	137000	200000	--	--	360000	191000	--	--	--	--	--	--	--	202000
Nitrate as N	ug/l	--	<100	<100	--	--	590	130	--	--	--	--	--	--	--	<100
Nitrite as N	ug/l	--	<100	<100	--	--	<100	<100	--	--	--	--	--	--	--	<100
Nitrogen, Total Kjeldahl	ug/l	--	920	1190	--	--	1660	680	--	--	--	--	--	--	--	1200
Nitrogen, Organic	ug/l	--	830	860	--	--	1570	660	--	--	--	--	--	--	--	1170
pH (Field)	-	6.5 - 8.5	7.1	7.5	--	--	7.4	7.1	--	--	--	--	--	--	--	7.5
Phosphate	ug/l	--	40	190	--	--	<30	<30	--	--	--	--	--	--	--	50
Phosphorus	ug/l	-- [23]	20	30	--	--	40	10	--	--	--	--	--	--	--	20
Sulphate, dissolved	ug/l	--	5000	9000	--	--	172000	60000	--	--	--	--	--	--	--	38000
Temperature (Field)	deg c	-- [24]	20	20	--	--	4	2	--	--	--	--	--	--	--	20
Total Dissolved Solids	ug/l	--	350000	448000	--	--	608000	378000	--	--	--	--	--	--	--	362000
Total Suspended Solids	ug/l	--	7000	10000	--	--	5000	<2000	--	--	--	--	--	--	--	3000
Turbidity	ntu	-- [25]	5.1	2.8	--	--	1.2	0.7	--	--	--	--	--	--	--	0.9
Metals																
Aluminum, dissolved	ug/l	-- [26]	190	<10	--	--	<10	<10	--	--	--	--	--	--	--	20
Barium	ug/l	--	20	40	--	--	60	30	--	--	--	--	--	--	--	30
Beryllium	ug/l	-- [27]	<2	<1	--	--	<1	<1	--	--	--	--	--	--	--	<1
Boron	ug/l	200 [28]	<50	<20	--	--	<50	<50	--	--	--	--	--	--	--	20
Cadmium	ug/l	0.2 [29]	<0.1	<0.1	--	--	<0.1	<0.1	--	--	--	--	--	--	--	<0.1
Calcium	ug/l	--	50000	75000	--	--	136000	70000	--	--	--	--	--	--	--	76000
Chromium	ug/l	-- [30]	<1	7	--	--	<1	<1	--	--	--	--	--	--	--	3
Cobalt	ug/l	0.9	<0.2	0.5	--	--	0.5	<0.2	--	--	--	--	--	--	--	<0.2
Copper	ug/l	5	2	1	--	--	3	<1	--	--	--	--	--	--	--	<1
Iron	ug/l	300	**490**	**370**	--	--	160	50	--	--	--	--	--	--	--	140
Lead	ug/l	-- [31]	<1	<1	--	--	<1	<1	--	--	--	--	--	--	--	<1
Magnesium	ug/l	--	3000	3000	--	--	5000	4000	--	--	--	--	--	--	--	3000
Manganese	ug/l	--	40	175	--	--	66	<5	--	--	--	--	--	--	--	5
Mercury, dissolved	ug/l	0.2 [32]	<0.1	<0.1	--	--	<0.1	<0.1	--	--	--	--	--	--	--	<0.1
Molybdenum	ug/l	40	<10	<5	--	--	<5	<5	--	--	--	--	--	--	--	<5
Nickel	ug/l	25	<10	<5	--	--	<5	<5	--	--	--	--	--	--	--	1
Potassium	ug/l	--	<1000	<1000	--	--	1000	<1000	--	--	--	--	--	--	--	<1000
Silicon	ug/l	--	530	2530	--	--	800	1400	--	--	--	--	--	--	--	2500
Silver	ug/l	0.1	<0.1	<0.1	--	--	<0.1	<0.1	--	--	--	--	--	--	--	<0.1
Sodium	ug/l	--	48000	65000	--	--	67000	41000	--	--	--	--	--	--	--	37000
Strontium	ug/l	--	248	388	--	--	562	244	--	--	--	--	--	--	--	343
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	**<1**	**<1**	--	--	**<1**	**<1**	--	--	--	--	--	--	--	**<1**
Tin	ug/l	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	<10	<10	--	--	<10	<10	--	--	--	--	--	--	--	<10
Vanadium	ug/l	6	<1	3	--	--	1	<1	--	--	--	--	--	--	--	2
Zinc	ug/l	30 [29]	<10	<5	--	--	<5	<5	--	--	--	--	--	--	--	1
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	<1	<1	--	--	<1	<1	--	--	--	--	--	--	--	<1

Parameter	Unit	PWQO [1]	SS-2 30-Sep-2003 [4]	SS-2 30-Oct-2003	SS-2 19-Nov-2003	SS-2 23-Dec-2003 [4]	SS-2 27-Jan-2004 [4]	SS-2 20-Feb-2004 [4]	SS-2 24-Mar-2004 [4]	SS-2 12-Apr-2004	SS-2 12-May-2004	SS-2 28-Jun-2004	SS-2 19-Jul-2004	SS-2 17-Aug-2004	SS-2 30-Sep-2004	SS-2 07-Oct-2004 [4]
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	136000	138000	--	--	--	--	157000	172000	220000	166000	198000	190000	--
Ammonia, unionized	ug/l	20	--	<20	<20	--	--	--	--	<20	<20	<20	<20	<20	<20	--
Ammonia Nitrogen	ug/l	--	--	30	30	--	--	--	--	30	420	130	40	60	40	--
Bicarbonate	ug/l	--	--	136000	138000	--	--	--	--	190000	205000	266000	198000	234000	227000	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	<1000	<1000	--	--	--	--	1400	2400	1400	3400	6600	600	--
Carbonate (CO3)	ug/l	--	--	<2000	<2000	--	--	--	--	<1000	<1000	<1000	<1000	2000	<1000	--
Chemical Oxygen Demand	ug/l	--	--	31000	24000	--	--	--	--	11000	51000	42000	74000	69000	41000	--
Chloride, dissolved	ug/l	--	--	65000	55000	--	--	--	--	61600	88600	166000	704000	331000	63600	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	540	600	--	--	--	--	710	880	610	600	710	539	--
Dissolved Organic Carbon	ug/l	--	--	11600	10000	--	--	--	--	8400	19000	14400	19400	17000	16100	--
Hardness, Calcium Carbonate	ug/l	--	--	177000	167000	--	--	--	--	179014	202700	254384	220500	279000	190000	--
Nitrate as N	ug/l	--	--	<100	<100	--	--	--	--	<200	<200	<200	<200	<200	<200	--
Nitrite as N	ug/l	--	--	<100	<100	--	--	--	--	<200	<200	<200	<2000	<200	<200	--
Nitrogen, Total Kjeldahl	ug/l	--	--	560	600	--	--	--	--	500	6020	850	1430	1490	720	--
Nitrogen, Organic	ug/l	--	--	530	570	--	--	--	--	470	5600	720	1390	1430	680	--
pH (Field)	-	6.5 - 8.5	--	7.1	6.9	--	--	--	--	6.9	7	7	6.9	7.1	7.4	--
Phosphate	ug/l	--	--	<30	<30	--	--	--	--	<1000	<1000	<1000	<1000	<1000	<1000	--
Phosphorus	ug/l	-- [23]	--	20	<10	--	--	--	--	19	353	32	52	38	25	--
Sulphate, dissolved	ug/l	--	--	36000	51000	--	--	--	--	20500	12600	9300	12300	35800	7300	--
Temperature (Field)	deg c	-- [24]	--	3	5	--	--	--	--	5	9	13	19	23	9.1	--
Total Dissolved Solids	ug/l	--	--	263000	335000	--	--	--	--	310000	390000	492000	1438000	814000	346000	--
Total Suspended Solids	ug/l	--	--	2000	3000	--	--	--	--	1000	6000	9000	8000	11000	4000	--
Turbidity	ntu	-- [25]	--	1.4	1.3	--	--	--	--	0.7	1.6	1.1	2.2	5.8	1.3	--
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	<10	10	--	--	--	--	<5	13	18	14	13	13	--
Barium	ug/l	--	--	20	20	--	--	--	--	27	32	38	63	58	23	--
Beryllium	ug/l	-- [27]	--	<1	<1	--	--	--	--	<1	<1	<1	<1	<1	<1	--
Boron	ug/l	200 [28]	--	<10	<10	--	--	--	--	<5	10	11	11	11	<5	--
Cadmium	ug/l	0.2 [29]	--	<0.1	<0.1	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Calcium	ug/l	--	--	66000	62000	--	--	--	--	65800	74900	94800	76600	103000	71100	--
Chromium	ug/l	-- [30]	--	1	1	--	--	--	--	<5	<5	<5	<5	<5	<5	--
Cobalt	ug/l	0.9	--	<0.2	<0.2	--	--	--	--	<0.1	<0.1	<0.1	0.3	0.3	<0.1	--
Copper	ug/l	5	--	1	1	--	--	--	--	<0.5	2.6	2.2	3.4	2.2	**14.7**	--
Iron	ug/l	300	--	50	40	--	--	--	--	30	90	170	**900**	**550**	110	--
Lead	ug/l	-- [31]	--	<1	<1	--	--	--	--	<0.5	<0.5	<0.5	1.3	<0.5	<0.5	--
Magnesium	ug/l	--	--	3000	3000	--	--	--	--	3540	3840	4240	7070	5230	2870	--
Manganese	ug/l	--	--	<5	<10	--	--	--	--	<5	18	56	101	312	6	--
Mercury, dissolved	ug/l	0.2 [32]	--	<0.1	<0.1	--	--	--	--	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	--
Molybdenum	ug/l	40	--	<5	<5	--	--	--	--	<1	<1	<1	<1	<1	<1	--
Nickel	ug/l	25	--	<5	<5	--	--	--	--	<1	<1	<1	1	<1	<1	--
Potassium	ug/l	--	--	1000	1000	--	--	--	--	500	700	400	500	500	300	--
Silicon	ug/l	--	--	1100	1200	--	--	--	--	<50	260	1290	2210	1520	1220	--
Silver	ug/l	0.1	--	<0.1	<0.1	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Sodium	ug/l	--	--	46000	35000	--	--	--	--	28700	47900	97800	476000	208000	34500	--
Strontium	ug/l	--	--	252	250	--	--	--	--	233	292	647	1480	734	236	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	--	**<1**	**<1**	--	--	--	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	<10	<10	--	--	--	--	<5	<5	<5	19	<5	<5	--
Vanadium	ug/l	6	--	<1	<1	--	--	--	--	<0.5	0.6	<0.5	<5	0.7	<0.5	--
Zinc	ug/l	30 [29]	--	<10	10	--	--	--	--	<5	<5	11	**39**	28	<5	--
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	<1	<1	--	--	--	--	<1	<1	<1	<1	1	<1	--

Parameter	Unit	PWQO [1]	SS-2 23-Nov-2004 [4]	SS-2 09-Dec-2004 [4]	SS-2 14-Jan-2005 [4]	SS-2 11-Feb-2005 [4]	SS-2 14-Mar-2005 [4]	SS-2 15-Apr-2005 [4]	SS-2 29-May-2005 [4]	SS-2 12-Jun-2005 [4]	SS-2 12-Jul-2005 [4]	SS-2 14-Aug-2005 [4]	SS-2 24-Sep-2005 [4]	SS-2 24-Oct-2005 [4]	SS-2 16-Nov-2005 [4]
General Chemistry															
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	--	--	--	--	--	--	--	--	--
Ammonia, unionized	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [24]	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/l	-- [30]	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [32]	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols															
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-2 29-Dec-2005 [4]	SS-2 19-Jan-2006 [4]	SS-2 15-Feb-2006 [4]	SS-2 30-Mar-2006 [4]	SS-2 11-Apr-2006 [4]	SS-2 12-May-2006 [4]	SS-2 20-Jun-2006 [4]	SS-2 24-Jul-2006	SS-2 14-Aug-2006 [2]	SS-2 29-Sep-2006	SS-2 25-Oct-2006	SS-2 14-Nov-2006	SS-2 12-Dec-2006 [39]	SS-2 31-Jan-2007 [39]
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	--	--	--	211000	--	175000	169000	156000	--	--
Ammonia, unionized	ug/l	20	--	--	--	--	--	--	--	<20	--	<20	<20	<20	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	--	--	--	110	--	<20	<20	<20	--	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--	--	--	1000	--	<1000	<1000	<1000	--	--
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	33000	--	29000	20000	16000	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	--	--	--	96000	--	50000	37000	23000	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	495	--	480	445	705	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	13500	--	12800	11300	8900	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--	--	--	202000	--	187000	160000	165000	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	<100	--	<100	<100	<100	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	<100	--	<100	<100	<100	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	990	--	740	370	290	--	--
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--	--	--	7.3	--	7.5	7.2	7.2	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	--	--	--	90	--	20	20	<10	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--	--	5000	--	26000	14000	16000	--	--
Temperature (Field)	deg c	-- [24]	--	--	--	--	--	--	--	13	--	8	4	3	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	--	--	--	474000	--	361000	305000	257000	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--	--	--	5000	--	9000	2000	6000	--	--
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	<10	--	<10	<10	<10	--	--
Barium	ug/l	--	--	--	--	--	--	--	--	30	--	20	20	20	--	--
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	<1	--	<1	<1	<1	--	--
Boron	ug/l	200 [28]	--	--	--	--	--	--	--	10	--	20	<10	<10	--	--
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	<0.1	--	<0.1	<0.1	<0.1	--	--
Calcium	ug/l	--	--	--	--	--	--	--	--	76000	--	70000	59000	61000	--	--
Chromium	ug/l	-- [30]	--	--	--	--	--	--	--	3	--	1	<1	<1	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	<0.2	--	<0.2	<0.2	<0.2	--	--
Copper	ug/l	5	--	--	--	--	--	--	--	1	--	<1	<1	<1	--	--
Iron	ug/l	300	--	--	--	--	--	--	--	**400**	--	130	40	90	--	--
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	<1	--	<1	<1	<1	--	--
Magnesium	ug/l	--	--	--	--	--	--	--	--	3000	--	3000	3000	3000	--	--
Manganese	ug/l	--	--	--	--	--	--	--	--	210	--	50	<10	<10	--	--
Mercury, dissolved	ug/l	0.2 [32]	--	--	--	--	--	--	--	<0.1	--	<0.1	<0.1	<0.1	--	--
Molybdenum	ug/l	40	--	--	--	--	--	--	--	<5	--	<5	<5	<5	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	<5	--	<5	<5	<5	--	--
Potassium	ug/l	--	--	--	--	--	--	--	--	<1000	--	<1000	<1000	<1000	--	--
Silicon	ug/l	--	--	--	--	--	--	--	--	2500	--	1800	1600	1300	--	--
Silver	ug/l	0.1	--	--	--	--	--	--	--	<0.1	--	<0.1	<0.1	<0.1	--	--
Sodium	ug/l	--	--	--	--	--	--	--	--	64000	--	39000	28000	24000	--	--
Strontium	ug/l	--	--	--	--	--	--	--	--	357	--	237	212	185	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	1667	--	8700	4700	5300	--	--
Thallium	ug/l	0.3 [33]	--	--	--	--	--	--	--	<0.1	--	<0.1	<0.1	<0.1	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	<10	--	<10	<10	<10	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	1	--	2	<1	<1	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	<10	--	<10	<10	<10	--	--
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	<1	--	<1	<1	<1	--	--

Parameter	Unit	PWQO [1]	SS-2 27-Feb-2007 [39]	SS-2 30-Mar-2007 [39]	SS-2 26-Apr-2007 [39]	SS-2 29-May-2007 [2] SS-2	SS-2 26-Jun-2007 [2]	SS-2 23-Jul-2007 [4]	SS-2 28-Aug-2007 [2]	SS-2 28-Sep-2007 [4]	SS-2 25-Oct-2007 [2]	SS-2 29-Nov-2007 [2]	SS-2 18-Dec-2007 [2]	SS-2 08-Jan-2008 [2]	SS-2 06-Feb-2008 [4]
General Chemistry															
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	--	--	--	--	--	--	--	--	--
Ammonia, unionized	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [24]	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/l	-- [30]	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [32]	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols															
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-2	SS-2	SS-2	SS-2	SS-2	SS-2	SS-2	SS-2	SS-2	SS-2	SS-2	SS-2
			31-Mar-2008 [2]	25-Apr-2008 [2]	22-May-2008 [2]	25-Jun-2008 [2]	09-Jul-2008 [2]	08-Aug-2008 [2]	26-Sep-2008 [5]	23-Oct-2008 [4]	20-Nov-2008 [4]	23-Dec-2008 [4]	20-Jan-2009 [4]	24-Feb-2009 [4]
													SS-2	SS-2
General Chemistry														
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	--	--	--	--	--	--	--	--
Ammonia, unionized	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate, dissolved	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [24]	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--
Metals														
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/l	-- [30]	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury, dissolved	ug/l	0.2 [32]	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--
Phenols														
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-3 17-Sep-2000	SS-3 28-May-2001	SS-3 29-Jun-2001	SS-3 23-Jul-2001 [2]	SS-3 26-Aug-2001 [2]	SS-3 21-Sep-2001 [2]	SS-3 20-Oct-2001	SS-3 17-Nov-2001	SS-3 13-Dec-2001	SS-3 07-Jan-2002 [3]	SS-3 01-Feb-2002 [3]	SS-3 23-Mar-2002 [3]	SS-3 21-Apr-2002	SS-3 18-May-2002
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	224000	204000	274000	--	--	--	171000	179000	158000	--	--	--	167000	156000
Ammonia, unionized (Field)	ug/l	20	--	<20	<20	--	--	--	<20	<20	<20	--	--	--	<20	<20
Ammonia Nitrogen	ug/l	--	<20	30	30	--	--	--	50	30	<20	--	--	--	30	280
Bicarbonate	ug/l	--	--	203000	273000	--	--	--	170000	178000	156000	--	--	--	167000	156000
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	2000	--	--	--	<1000	<1000	1000	--	--	--	<1000	1000
Carbonate (CO3)	ug/l	--	--	<2000	<2000	--	--	--	<2000	<2000	2000	--	--	--	<2000	<2000
Chemical Oxygen Demand	ug/l	--	38000	32000	37000	--	--	--	13000	19000	28000	--	--	--	27000	30000
Chloride	ug/l	--	16000	37000	50000	--	--	--	82000	46000	52000	--	--	--	23000	29000
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	30	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	500	213	--	--	--	410	510	390	--	--	--	650	600
Dissolved Organic Carbon	ug/l	--	12500	12500	12000	--	--	--	7200	8500	7700	--	--	--	9800	10100
Hardness, Calcium Carbonate	ug/l	--	232000	187000	237000	--	--	--	251000	230000	199000	--	--	--	159000	167000
Nitrate as N	ug/l	--	<100	<100	<100	--	--	--	<100	<100	<100	--	--	--	<100	<100
Nitrite as N	ug/l	--	<100	<100	<100	--	--	--	<100	<100	<100	--	--	--	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	580	460	790	--	--	--	580	400	340	--	--	--	480	770
Nitrogen, Organic	ug/l	--	--	430	760	--	--	--	530	370	340	--	--	--	450	490
pH (Field)	-	6.5 - 8.5	8.02	7.58	7.1	--	--	--	7.2	7.4	7.8	--	--	--	7.4	7.3
Phosphate	ug/l	--	--	<30	<30	--	--	--	<30	<30	<30	--	--	--	<30	<30
Phosphorus	ug/l	-- [23]	20	<10	30	--	--	--	10	<10	10	--	--	--	10	20
Sulphate	ug/l	--	17000	7000	7000	--	--	--	76000	45000	36000	--	--	--	9000	8000
Temperature (Field)	deg c	-- [24]	--	14	23	--	--	--	11	5	2	--	--	--	12	10
Total Dissolved Solids	ug/l	--	312000	292000	420000	--	--	--	504000	340000	282000	--	--	--	268000	269000
Total Suspended Solids	ug/l	--	<2000	11000	8000	--	--	--	<2000	3000	<2000	--	--	--	<2000	3000
Turbidity	ntu	-- [25]	0.5	0.5	5.9	--	--	--	0.8	1.8	0.4	--	--	--	0.5	0.9
Metals																
Aluminum, dissolved	ug/l	-- [26]	<50	<50	<50	--	--	--	<50	<50	<50	--	--	--	<50	<50
Barium	ug/l	--	40	40	100	--	--	--	40	30	30	--	--	--	20	30
Beryllium	ug/l	-- [27]	<2	<2	<2	--	--	--	<2	<2	<2	--	--	--	<2	<2
Boron	ug/l	200 [28]	<10	<10	10	--	--	--	<10	<50	<50	--	--	--	<50	<50
Cadmium	ug/l	0.2 [29]	<0.1	0.2	<0.1	--	--	--	<0.1	<0.1	<0.1	--	--	--	<0.1	<0.1
Calcium	ug/l	--	88000	70000	90000	--	--	--	92000	87000	78000	--	--	--	62000	62000
Chromium	ug/l	-- [30]	<1	5	2	--	--	--	1	2	<1	--	--	--	<1	<1
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	--	--	--	<0.2	<0.2	<0.2	--	--	--	<0.2	0.2
Copper	ug/l	5	**<10**	<1	<1	--	--	--	1	1	<1	--	--	--	1	2
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	110	160	**1520**	--	--	--	30	30	30	--	--	--	40	170
Lead	ug/l	-- [31]	<1	<1	<1	--	--	--	<1	<1	<1	--	--	--	<1	<1
Magnesium	ug/l	--	3000	3000	3000	--	--	--	5000	3000	1000	--	--	--	1000	3000
Manganese	ug/l	--	<10	30	1520	--	--	--	10	<10	<10	--	--	--	10	330
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	--	--	--	<0.1	<0.1	<0.1	--	--	--	<0.1	<0.1
Molybdenum	ug/l	40	<10	<10	<10	--	--	--	<10	<10	<10	--	--	--	<10	<10
Nickel	ug/l	25	<10	<10	<10	--	--	--	<10	<10	<10	--	--	--	<10	<10
Potassium	ug/l	--	<1000	<1000	<1000	--	--	--	<1000	<1000	<1000	--	--	--	<1000	<1000
Silicon	ug/l	--	2410	1500	4630	--	--	--	2350	1790	1450	--	--	--	820	1010
Silver	ug/l	0.1	<0.1	**0.5**	<0.1	--	--	--	<0.1	<0.1	<0.1	--	--	--	**<10**	<0.1
Sodium	ug/l	--	11000	25000	38000	--	--	--	42000	24000	20000	--	--	--	14000	19000
Strontium	ug/l	--	170	202	251	--	--	--	210	158	147	--	--	--	117	123
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	**<1**	**<1**	**<1**	--	--	--	**<1**	**<1**	**<1**	--	--	--	**<1**	**<1**
Tin	ug/l	--	<10	<10	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	<10	<10	<10	--	--	--	<10	<10	<10	--	--	--	<10	<10
Vanadium	ug/l	6	<1	1	<1	--	--	--	<1	<1	<1	--	--	--	<1	<1
Zinc	ug/l	30 [29]	<10	<10	<10	--	--	--	<10	<10	<10	--	--	--	<10	<10
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	<1	<1	<1	--	--	--	<1	<1	<1	--	--	--	<1	<1

Parameter	Unit	PWQO [1]	SS-3 10-Jun-2002	SS-3 27-Jul-2002	SS-3 12-Aug-2002 [2]	SS-3 25-Sep-2002 [2]	SS-3 31-Oct-2002	SS-3 25-Nov-2002	SS-3 15-Jan-2003 [4]	SS-3 12-Feb-2003 [4]	SS-3 15-Mar-2003 [4]	SS-3 28-Apr-2003 [4]	SS-3 24-May-2003 [4]	SS-3 24-Jun-2003 [4]	SS-3 16-Jul-2003 [4]	SS-3 14-Aug-2003
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	209000	221000	--	--	190000	164000	--	--	--	--	--	--	--	98000
Ammonia, unionized (Field)	ug/l	20	<20	<20	--	--	<20	<20	--	--	--	--	--	--	--	<20
Ammonia Nitrogen	ug/l	--	100	30	--	--	<20	<20	--	--	--	--	--	--	--	80
Bicarbonate	ug/l	--	209000	221000	--	--	190000	164000	--	--	--	--	--	--	--	98000
Biochemical Oxygen Demand, 5 Day	ug/l	--	1000	1000	--	--	<1000	<1000	--	--	--	--	--	--	--	<1000
Carbonate (CO3)	ug/l	--	<2000	<5000	--	--	<2000	<2000	--	--	--	--	--	--	--	<2000
Chemical Oxygen Demand	ug/l	--	35000	35000	--	--	30000	13000	--	--	--	--	--	--	--	<5000
Chloride	ug/l	--	38000	73000	--	--	52000	49000	--	--	--	--	--	--	--	32000
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	450	450	--	--	380	410	--	--	--	--	--	--	--	510
Dissolved Organic Carbon	ug/l	--	13700	14000	--	--	9700	8300	--	--	--	--	--	--	--	2100
Hardness, Calcium Carbonate	ug/l	--	215000	212000	--	--	310000	223000	--	--	--	--	--	--	--	241000
Nitrate as N	ug/l	--	<100	<100	--	--	<100	<100	--	--	--	--	--	--	--	3520
Nitrite as N	ug/l	--	<100	<100	--	--	<100	<100	--	--	--	--	--	--	--	<100
Nitrogen, Total Kjeldahl	ug/l	--	780	770	--	--	620	410	--	--	--	--	--	--	--	500
Nitrogen, Organic	ug/l	--	680	740	--	--	600	390	--	--	--	--	--	--	--	420
pH (Field)	-	6.5 - 8.5	7	7.7	--	--	7.3	7	--	--	--	--	--	--	--	7.2
Phosphate	ug/l	--	40	<30	--	--	<30	50	--	--	--	--	--	--	--	<30
Phosphorus	ug/l	-- [23]	10	30	--	--	30	20	--	--	--	--	--	--	--	<10
Sulphate	ug/l	--	9000	4000	--	--	94000	53000	--	--	--	--	--	--	--	89000
Temperature (Field)	deg c	-- [24]	17	19	--	--	4	3	--	--	--	--	--	--	--	21
Total Dissolved Solids	ug/l	--	351000	422000	--	--	441000	366000	--	--	--	--	--	--	--	265000
Total Suspended Solids	ug/l	--	8000	5000	--	--	3000	<2000	--	--	--	--	--	--	--	14000
Turbidity	ntu	-- [25]	1.8	1.1	--	--	0.9	0.5	--	--	--	--	--	--	--	1.4
Metals																
Aluminum, dissolved	ug/l	-- [26]	<50	<10	--	--	<10	<10	--	--	--	--	--	--	--	20
Barium	ug/l	--	50	50	--	--	40	30	--	--	--	--	--	--	--	110
Beryllium	ug/l	-- [27]	<2	<1	--	--	<1	<1	--	--	--	--	--	--	--	<1
Boron	ug/l	200 [28]	<50	<20	--	--	<50	<50	--	--	--	--	--	--	--	40
Cadmium	ug/l	0.2 [29]	<0.1	<0.1	--	--	<0.1	<0.1	--	--	--	--	--	--	--	<0.1
Calcium	ug/l	--	81000	80000	--	--	116000	86000	--	--	--	--	--	--	--	85000
Chromium	ug/l	-- [30]	<1	2	--	--	2	<1	--	--	--	--	--	--	--	2
Cobalt	ug/l	0.9	<0.2	0.3	--	--	0.3	<0.2	--	--	--	--	--	--	--	<0.2
Copper	ug/l	5	<1	1	--	--	2	<1	--	--	--	--	--	--	--	<1
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	**360**	**350**	--	--	60	20	--	--	--	--	--	--	--	40
Lead	ug/l	-- [31]	<1	<1	--	--	<1	<1	--	--	--	--	--	--	--	<1
Magnesium	ug/l	--	3000	3000	--	--	5000	2000	--	--	--	--	--	--	--	7000
Manganese	ug/l	--	220	89	--	--	28	7	--	--	--	--	--	--	--	8
Mercury	ug/l	0.2 [32]	<0.1	<0.1	--	--	<0.1	<0.1	--	--	--	--	--	--	--	<0.1
Molybdenum	ug/l	40	<10	<5	--	--	<5	<5	--	--	--	--	--	--	--	<5
Nickel	ug/l	25	<10	<5	--	--	<5	<5	--	--	--	--	--	--	--	2
Potassium	ug/l	--	<1000	<1000	--	--	1000	<1000	--	--	--	--	--	--	--	2000
Silicon	ug/l	--	1980	1560	--	--	1900	1500	--	--	--	--	--	--	--	1400
Silver	ug/l	0.1	<0.1	<0.1	--	--	<0.1	<0.1	--	--	--	--	--	--	--	<0.1
Sodium	ug/l	--	22000	52000	--	--	27000	27000	--	--	--	--	--	--	--	14000
Strontium	ug/l	--	194	257	--	--	204	168	--	--	--	--	--	--	--	1160
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	**<1**	**<1**	--	--	**<1**	**<1**	--	--	--	--	--	--	--	**<1**
Tin	ug/l	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	<10	<10	--	--	<10	<10	--	--	--	--	--	--	--	<10
Vanadium	ug/l	6	<1	<1	--	--	<1	<1	--	--	--	--	--	--	--	<1
Zinc	ug/l	30 [29]	<10	<5	--	--	<5	<5	--	--	--	--	--	--	--	<1
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	<1	<1	--	--	<1	<1	--	--	--	--	--	--	--	<1

Parameter	Unit	PWQO [1]	SS-3 30-Sep-2003 [4]	SS-3 30-Oct-2003	SS-3 19-Nov-2003	SS-3 23-Dec-2003 [4]	SS-3 27-Jan-2004 [4]	SS-3 20-Feb-2004 [4]	SS-3 24-Mar-2004 [4]	SS-3 12-Apr-2004	SS-3 12-May-2004	SS-3 28-Jun-2004	SS-3 19-Jul-2004	SS-3 17-Aug-2004	SS-3 30-Sep-2004	SS-3 07-Oct-2004 [4]
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	202000	155000	--	--	--	--	136000	213000	264000	265000	212000	231000	--
Ammonia, unionized (Field)	ug/l	20	--	<20	<20	--	--	--	--	<20	<20	<20	<20	<20	<20	--
Ammonia Nitrogen	ug/l	--	--	40	<20	--	--	--	--	<30	70	80	60	30	30	--
Bicarbonate	ug/l	--	--	202000	155000	--	--	--	--	165000	254000	319000	317000	253000	275000	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	<1000	<1000	--	--	--	--	800	<500	5500	3700	1100	<500	--
Carbonate (CO3)	ug/l	--	--	<2000	<2000	--	--	--	--	<1000	<1000	<1000	<1000	<1000	1000	--
Chemical Oxygen Demand	ug/l	--	--	24000	14000	--	--	--	--	17000	14000	50000	46000	41000	31000	--
Chloride	ug/l	--	--	12000	34000	--	--	--	--	31500	3700	47800	47300	50700	41700	--
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	500	495	--	--	--	--	300	405	540	455	490	520	--
Dissolved Organic Carbon	ug/l	--	--	10000	6500	--	--	--	--	4700	5700	15600	14800	11500	13300	--
Hardness, Calcium Carbonate	ug/l	--	--	256000	210000	--	--	--	--	170821	219200	286442	273100	256000	272000	--
Nitrate as N	ug/l	--	--	500	<100	--	--	--	--	400	<200	<200	<200	<200	<200	--
Nitrite as N	ug/l	--	--	<100	<100	--	--	--	--	<200	<200	<200	<200	<200	<200	--
Nitrogen, Total Kjeldahl	ug/l	--	--	150	280	--	--	--	--	340	290	900	870	750	790	--
Nitrogen, Organic	ug/l	--	--	110	260	--	--	--	--	340	220	820	810	720	760	--
pH (Field)	-	6.5 - 8.5	--	7.2	7.1	--	--	--	--	7.3	7.2	7.3	7	7	7.9	--
Phosphate	ug/l	--	--	60	40	--	--	--	--	<1000	<1000	<1000	<1000	<1000	<1000	--
Phosphorus	ug/l	-- [23]	--	20	20	--	--	--	--	27	15	84	22	33	14	--
Sulphate	ug/l	--	--	39000	50000	--	--	--	--	32000	6900	2800	600	20800	32800	--
Temperature (Field)	deg c	-- [24]	--	3	4	--	--	--	--	5	8	16	19	20	11	--
Total Dissolved Solids	ug/l	--	--	310000	325000	--	--	--	--	242000	264000	342000	386000	340000	386000	--
Total Suspended Solids	ug/l	--	--	2000	3000	--	--	--	--	3000	1000	7000	7000	6000	4000	--
Turbidity	ntu	-- [25]	--	0.9	0.7	--	--	--	--	1.1	0.3	2.3	1.4	2.2	3	--
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	<10	<10	--	--	--	--	7	<5	67	14	6	<5	--
Barium	ug/l	--	--	120	30	--	--	--	--	23	26	65	74	63	46	--
Beryllium	ug/l	-- [27]	--	<1	<1	--	--	--	--	<1	<1	<1	<1	<1	<1	--
Boron	ug/l	200 [28]	--	20	<10	--	--	--	--	<5	10	10	8	14	<5	--
Cadmium	ug/l	0.2 [29]	--	<0.1	<0.1	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Calcium	ug/l	--	--	86000	79000	--	--	--	--	62900	81100	107000	102000	95700	102000	--
Chromium	ug/l	-- [30]	--	1	1	--	--	--	--	<5	<5	<5	<5	<5	<5	--
Cobalt	ug/l	0.9	--	<0.2	<0.2	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Copper	ug/l	5	--	2	<1	--	--	--	--	**11.6**	2.3	1.2	0.7	1.1	4.2	--
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	60	30	--	--	--	--	70	<30	**1450**	**820**	**460**	240	--
Lead	ug/l	-- [31]	--	<1	<1	--	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
Magnesium	ug/l	--	--	10000	3000	--	--	--	--	3310	4070	4620	4420	4140	4170	--
Manganese	ug/l	--	--	19	<10	--	--	--	--	7	39	627	978	182	134	--
Mercury	ug/l	0.2 [32]	--	<0.1	<0.1	--	--	--	--	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	--
Molybdenum	ug/l	40	--	<5	<5	--	--	--	--	<1	<1	<1	<1	<1	<1	--
Nickel	ug/l	25	--	<5	<5	--	--	--	--	<1	<1	<1	<1	<1	<1	--
Potassium	ug/l	--	--	1000	<1000	--	--	--	--	600	500	800	600	500	500	--
Silicon	ug/l	--	--	1500	1300	--	--	--	--	730	1060	3680	4470	3700	2100	--
Silver	ug/l	0.1	--	<0.1	<0.1	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Sodium	ug/l	--	--	8000	19000	--	--	--	--	15300	3300	24100	24000	27500	20200	--
Strontium	ug/l	--	--	1560	179	--	--	--	--	144	167	259	250	224	227	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	--	**<1**	**<1**	--	--	--	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	<10	<10	--	--	--	--	<5	<5	<5	<5	<5	<5	--
Vanadium	ug/l	6	--	<1	<1	--	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--
Zinc	ug/l	30 [29]	--	<10	<10	--	--	--	--	<5	<5	8	9	16	7	--
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	<1	<1	--	--	--	--	<1	<1	**3**	<1	1	<1	--

Parameter	Unit	PWQO [1]	SS-3 23-Nov-2004 [4]	SS-3 09-Dec-2004 [4]	SS-3 14-Jan-2005 [4]	SS-3 11-Feb-2005 [4]	SS-3 14-Mar-2005 [4]	SS-3 15-Apr-2005 [4]	SS-3 29-May-2005 [4]	SS-3 12-Jun-2005 [4]	SS-3 12-Jul-2005 [4]	SS-3 14-Aug-2005 [4]	SS-3 24-Sep-2005 [4]	SS-3 24-Oct-2005 [4]	SS-3 16-Nov-2005 [4]
General Chemistry															
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	--	--	--	--	--	--	--	--	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [24]	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/l	-- [30]	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	ug/l	0.2 [32]	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols															
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-3 29-Dec-2005 [4]	SS-3 19-Jan-2006 [4]	SS-3 15-Feb-2006 [4]	SS-3 30-Mar-2006 [4]	SS-3 11-Apr-2006 [4]	SS-3 12-May-2006 [4]	SS-3 20-Jun-2006 [4]	SS-3 24-Jul-2006	SS-3 14-Aug-2006	SS-3 29-Sep-2006	SS-3 25-Oct-2006	SS-3 14-Nov-2006	SS-3 12-Dec-2006	SS-3 31-Jan-2007
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	--	--	--	220000	125000	197000	181000	179000	188000	323000
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	--	--	--	--	--	--	--	120	110	<20	<20	<20	60	1450
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--	--	--	<1000	<1000	<1000	<1000	<1000	<1000	4000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	27000	5000	21000	10000	20000	12000	7000
Chloride	ug/l	--	--	--	--	--	--	--	--	33000	39000	35000	16000	27000	22000	49000
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	495	440	400	545	605	395	440
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	9100	2300	9300	6500	9700	8000	6600
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--	--	--	313000	292000	267000	241000	216000	223000	510000
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	<100	1000	<100	<100	160	120	440
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	<100	<100	<100	<100	<100	<100	100
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	660	200	620	90	340	970	1940
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--	--	--	7.4	7.4	7.3	7.3	7.2	7.3	7.3
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	--	--	--	30	<10	20	<10	<10	110	30
Sulphate	ug/l	--	--	--	--	--	--	--	--	82000	166000	59000	87000	37000	38000	205000
Temperature (Field)	deg c	-- [24]	--	--	--	--	--	--	--	12	9	9	4	3	1	2
Total Dissolved Solids	ug/l	--	--	--	--	--	--	--	--	430000	458000	394000	363000	326000	327000	722000
Total Suspended Solids	ug/l	--	--	--	--	--	--	--	--	5000	2000	36000	2000	3000	<2000	24000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	<10	20	<10	<10	<10	<10	<10
Barium	ug/l	--	--	--	--	--	--	--	--	60	70	40	20	40	30	140
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	<1	<1	<1	<1	<1	<1	<1
Boron	ug/l	200 [28]	--	--	--	--	--	--	--	10	130	10	40	10	<10	**290**
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	--	--	--	--	--	--	--	117000	84000	97000	80000	80000	81000	130000
Chromium	ug/l	-- [30]	--	--	--	--	--	--	--	1	<1	<1	<1	<1	2	1
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	<0.2	0.4	<0.2	<0.2	<0.2	<0.2	0.8
Copper	ug/l	5	--	--	--	--	--	--	--	<1	<1	<1	<1	<1	1	2
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	--	--	--	190	40	100	40	110	30	290
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	<1	<1	<1	<1	<1	<1	<1
Magnesium	ug/l	--	--	--	--	--	--	--	--	5000	20000	6000	10000	4000	5000	45000
Manganese	ug/l	--	--	--	--	--	--	--	--	110	<10	30	20	20	<10	1280
Mercury	ug/l	0.2 [32]	--	--	--	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	<5	<5	<5	<5	<5	<5	<5
Nickel	ug/l	25	--	--	--	--	--	--	--	<5	<5	<5	<5	<5	<5	<5
Potassium	ug/l	--	--	--	--	--	--	--	--	<1000	4000	1000	2000	<1000	<1000	9000
Silicon	ug/l	--	--	--	--	--	--	--	--	3000	1700	2000	1200	1700	1100	5000
Silver	ug/l	0.1	--	--	--	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	--	--	--	--	--	--	--	15000	24000	22000	13000	24000	17000	41000
Strontium	ug/l	--	--	--	--	--	--	--	--	269	2510	261	625	285	258	5390
Sulfur	ug/l	--	--	--	--	--	--	--	--	27333	55300	19700	29000	12300	12700	68300
Thallium	ug/l	0.3 [33]	--	--	--	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	<10	<10	<10	<10	<10	<10	<10
Vanadium	ug/l	6	--	--	--	--	--	--	--	1	<1	<1	<1	<1	<1	1
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	<10	<10	<10	<10	<10	<10	20
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	<1	<1	<1	<1	<1	<1	<1

Parameter	Unit	PWQO [1]	SS-3 27-Feb-2007	SS-3 30-Mar-2007	SS-3 26-Apr-2007	SS-3 29-May-2007 T-4	SS-3 26-Jun-2007	SS-3 23-Jul-2007 [4]	SS-3 28-Aug-2007	SS-3 28-Sep-2007 [4]	SS-3 25-Oct-2007	SS-3 29-Nov-2007	SS-3 18-Dec-2007	SS-3 08-Jan-2008	SS-3 06-Feb-2008 [4]	SS-3 31-Mar-2008	SS-3 25-Apr-2008
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	272000	155000	173000	217000	184000	--	207000	--	225000	181000	263000	129000	--	131000	165000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	--	<20	--	<20	--	<20	<20	<20	<20	--	<20	<20
Ammonia Nitrogen	ug/l	--	1790	<20	<20	50	30	--	<20	--	20	50	910	<20	--	50	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	1000	<1000	2000	2000	<1000	--	2000	--	2000	<1000	2000	1000	--	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	7000	8000	9000	30000	19000	--	38000	--	61000	<5000	10000	10000	--	24000	21000
Chloride	ug/l	--	54000	16000	38000	43000	84000	--	85000	--	82000	32000	57000	40000	--	130000	19000
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	<5	<5
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	620	395	500	395	395	--	695	--	605	480	490	605	--	535	530
Dissolved Organic Carbon	ug/l	--	2400	3800	7600	12900	14700	--	16200	--	11900	6500	5600	6000	--	6000	7000
Hardness, Calcium Carbonate	ug/l	--	341000	206000	227000	239000	211000	--	247000	--	304000	310000	462000	171000	--	210000	200000
Nitrate as N	ug/l	--	3130	590	600	<100	<100	--	<100	--	<100	<100	2230	120	--	1000	<100
Nitrite as N	ug/l	--	2210	<100	<100	<100	<100	--	<100	--	<100	<100	<100	<100	--	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	2400	200	610	880	960	--	1150	--	860	290	1270	240	--	1000	700
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.2	7.5	7.5	7.3	7.3	--	7.2	--	7.2	7.1	7.3	7	--	7.2	7.3
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	40	<10	<10	120	30	--	70	--	30	30	30	<10	--	21	13
Sulphate	ug/l	--	216000	59000	38000	16000	11000	--	42000	--	83000	147000	260000	38000	--	47000	27000
Temperature (Field)	deg c	-- [24]	1	4	4	10	13	--	24	--	11	1	2	3	--	1	7
Total Dissolved Solids	ug/l	--	728000	299000	346000	375000	421000	--	488000	--	548000	486000	761000	291000	--	530000	280000
Total Suspended Solids	ug/l	--	35000	2000	<2000	<2000	<2000	--	4000	--	<2000	54000	40000	<2000	--	<10000	<10000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	<10	<10	<10	<10	<10	--	<10	--	<10	20	<10	<10	--	--	--
Barium	ug/l	--	100	30	40	60	60	--	90	--	80	30	150	20	--	48	29
Beryllium	ug/l	-- [27]	<1	<1	<1	<1	<1	--	<1	--	<1	<1	<1	<1	--	--	--
Boron	ug/l	200 [28]	**750**	80	10	20	30	--	20	--	40	30	**320**	10	--	<10	30
Cadmium	ug/l	0.2 [29]	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	--	--	--
Calcium	ug/l	--	77000	66000	81000	86000	73000	--	89000	--	110000	106000	119000	62000	--	78000	71000
Chromium	ug/l	-- [30]	3	<1	1	3	1	--	4	--	3	1	2	4	--	<5	<5
Cobalt	ug/l	0.9	0.4	<0.2	<0.2	0.3	<0.2	--	<0.2	--	<0.2	0.2	0.9	<0.2	--	--	--
Copper	ug/l	5	1	<1	2	1	1	--	<1	--	<1	<1	2	<1	--	<1	<1
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	**<50**	--	**<5**	**<5**
Iron	ug/l	300	130	<30	70	**370**	230	--	**360**	--	260	<30	40	50	--	<100	100
Lead	ug/l	-- [31]	<1	<1	<1	<1	<1	--	<1	--	<1	<1	<1	<1	--	--	--
Magnesium	ug/l	--	36000	10000	6000	6000	7000	--	6000	--	7000	11000	40000	4000	--	5700	4800
Manganese	ug/l	--	20	10	20	200	280	--	690	--	180	<10	530	30	--	32	48
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	<5	<5	<5	--	<5	--	<5	<5	<5	<5	--	--	--
Nickel	ug/l	25	<5	<5	<5	<5	<5	--	<5	--	<5	<5	<5	<5	--	--	--
Potassium	ug/l	--	8000	2000	1000	<1000	<1000	--	2000	--	2000	<1000	6000	<1000	--	1000	1000
Silicon	ug/l	--	5300	1200	200	2600	7300	--	6400	--	3900	1500	5100	1800	--	1900	840
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	--	--	--
Sodium	ug/l	--	93000	18000	26000	30000	56000	--	58000	--	60000	26000	57000	23000	--	81000	17000
Strontium	ug/l	--	5560	700	347	295	319	--	398	--	401	850	5410	180	--	430	360
Sulfur	ug/l	--	72000	19700	12700	5300	3700	--	14000	--	27700	49000	86700	12700	--	15000	8400
Thallium	ug/l	0.3 [33]	0.1	0.1	**0.5**	**0.4**	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	--	<0.05	<0.05
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	<10	<10	<10	<10	<10	--	<10	--	<10	<10	<10	<10	--	--	--
Vanadium	ug/l	6	1	1	<1	2	<1	--	3	--	3	<1	2	2	--	--	--
Zinc	ug/l	30 [29]	<10	<10	<10	<10	<10	--	<10	--	<10	<10	**390**	<10	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	<1	<1	<1	<1	<1	--	<1	--	<1	<1	<1	<1	--	--	--

Parameter	Unit	PWQO [1]	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3
			22-May-2008	25-Jun-2008	09-Jul-2008	08-Aug-2008	26-Sep-2008 [5]	23-Oct-2008 [4]	20-Nov-2008 [4]	22-Dec-2008 [4]	20-Jan-2009 [4]	24-Feb-2009 [4]	31-Mar-2009	20-Apr-2009	22-May-2009	23-Jun-2009	27-Jul-2009
											SS-3	SS-3	T-6	SS-3	SS-3	T-3	SS-3
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	196000	232000	238000	272000	--	--	--	--	--	--	157000	163000	213000	272000	214000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	--	--	--	--	--	--	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<50	70	110	190	--	--	--	--	--	--	<50	<50	<50	80	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	2000	<2000	--	--	--	--	--	--	<2000	<2000	<2000	3000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	31000	31000	33000	17000	--	--	--	--	--	--	16000	16000	29000	20000	31000
Chloride	ug/l	--	33000	43000	33000	19000	--	--	--	--	--	--	4000	43000	79000	39000	14000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	--	--	--	--	--	--	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	425	480	590	535	--	--	--	--	--	--	715	560	695	605	725
Dissolved Organic Carbon	ug/l	--	9000	12900	12500	5600	--	--	--	--	--	--	5400	5300	10500	6200	10600
Hardness, Calcium Carbonate	ug/l	--	220000	250000	270000	310000	--	--	--	--	--	--	170000	270000	250000	410000	240000
Nitrate as N	ug/l	--	<100	<100	<100	<100	--	--	--	--	--	--	<100	<100	<100	<100	5500
Nitrite as N	ug/l	--	<10	<10	<10	<10	--	--	--	--	--	--	<10	<10	<10	<10	190
Nitrogen, Total Kjeldahl	ug/l	--	900	900	900	700	--	--	--	--	--	--	500	900	800	800	700
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.8	7.5	7.3	7	--	--	--	--	--	--	7.8	7.8	8.1	7.7	7.5
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	25	23	22	11	--	--	--	--	--	--	9	19	24	42	10
Sulphate	ug/l	--	17000	12000	11000	88000	--	--	--	--	--	--	19000	120000	42000	160000	21000
Temperature (Field)	deg c	-- [24]	17	19	20	24	--	--	--	--	--	--	6	9	12	18	23.0
Total Dissolved Solids	ug/l	--	319000	390000	366000	460000	--	--	--	--	--	--	225000	420000	455000	560000	292000
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	--	--	--	--	--	--	<10000	<10000	<10000	<10000	2000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	49	53	48	58	--	--	--	--	--	--	20	43	49	85	39
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	<10	10	20	100	--	--	--	--	--	--	<10	50	30	160	30
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	72000	83000	86000	110000	--	--	--	--	--	--	66000	95000	93000	130000	80000
Chromium	ug/l	-- [30]	<5	<5	<5	<5	--	--	--	--	--	--	<5	<5	<5	<5	<5
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	<1	1	<1	<1	--	--	--	--	--	--	1	<1	<1	1	<1
Hexavalent Chromium	ug/l	1 [22]	**<5**	**<5**	**<5**	**<5**	--	--	--	--	--	--	**<5**	**<5**	**<5**	**<5**	**<5**
Iron	ug/l	300	100	200	100	100	--	--	--	--	--	--	<100	100	<100	**1200**	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	4400	4600	5500	13000	--	--	--	--	--	--	4600	11000	6700	20000	4700
Manganese	ug/l	--	7	130	170	140	--	--	--	--	--	--	16	34	19	560	34
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	--	--	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	600	600	900	2200	--	--	--	--	--	--	700	2100	1100	4100	500
Silicon	ug/l	--	860	2400	2700	2100	--	--	--	--	--	--	1100	180	350	2000	1900
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	20000	28000	27000	22000	--	--	--	--	--	--	5800	31000	51000	37000	12000
Strontium	ug/l	--	310	340	360	1300	--	--	--	--	--	--	220	790	550	2000	420
Sulfur	ug/l	--	5300	4200	3700	30000	--	--	--	--	--	--	8800	38000	14000	52000	5200
Thallium	ug/l	0.3 [33]	<0.05	<0.05	<0.05	<0.05	--	--	--	--	--	--	<0.05	<0.05	0.06	0.06	<0.05
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-3 13-Aug-2009 SS-3	SS-3 24-Sep-2009 [4] SS-3	SS-3 15-Oct-2009 SS-3	SS-3 18-Nov-2009 SS-3	SS-3 10-Dec-2009 SS-3	SS-3 20-Jan-2010 [4] SS-3	SS-3 03-Feb-2010 [4] SS-3	SS-3 31-Mar-2010 SS-3	SS-3 06-Apr-2010 [40] SS-3	SS-3 06-May-2010 [4] SS-3	SS-3 02-Jun-2010 SS-3	SS-3 07-Jul-2010 SS-3	SS-3 18-Aug-2010 SS-3	SS-3 29-Sep-2010 SS-3	SS-3 28-Oct-2010 SS-3
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	247000	--	215000	256000	208000	--	--	159000	160000	--	168000	142000	245000	208000	210000
Ammonia, unionized (Field)	ug/l	20	<20	--	<20	<20	<20	--	--	<20	<20	--	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<50	--	<50	50	<50	--	--	<50	<50	--	<50	<50	<50	<50	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	--	<2000	<2000	<2000	--	--	<2000	<2000	--	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	33000	--	24000	25000	4000	--	--	20000	21000	--	45000	19000	36000	20000	16000
Chloride	ug/l	--	42000	--	19000	51000	18000	--	--	38000	27000	--	99000	150000	79000	49000	64000
Chromium (III)	ug/l	8.9 [22]	<5	--	<5	<5	<5	--	--	<5	<5	--	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	760	--	1100	1045	880	--	--	960	858	--	842	980	890	510	905
Dissolved Organic Carbon	ug/l	--	12200	--	6500	11100	5200	--	--	5000	5800	--	15800	6400	11700	9300	5500
Hardness, Calcium Carbonate	ug/l	--	300000	--	280000	290000	250000	--	--	260000	340000	--	190000	540000	350000	320000	440000
Nitrate as N	ug/l	--	<100	--	<100	<100	<100	--	--	<100	<100	--	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	<10	--	<10	<10	<10	--	--	<10	<10	--	<10	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	800	--	400	900	400	--	--	700	600	--	1100	600	700	500	400
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.6	--	7.9	7.8	7.8	--	--	7.7	8.2	--	7.6	7.7	7.6	7.5	7.5
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	26	--	<2	21	6	--	--	15	7	--	24	7	17	11	2
Sulphate	ug/l	--	120000	--	79000	52000	46000	--	--	100000	79000	--	17000	17000	110000	110000	240000
Temperature (Field)	deg c	-- [24]	22	--	7	5	2	--	--	7	11.6	--	18	28	27	14	7
Total Dissolved Solids	ug/l	--	505000	--	392000	480000	335000	--	--	348000	360000	--	420000	500000	570000	508000	638000
Total Suspended Solids	ug/l	--	7000	--	<1000	3000	<1000	--	--	6000	<1000	--	2000	2000	1000	<1000	3000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	86	--	32	64	32	--	--	46	41	--	68	110	97	60	67
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	60	--	10	10	10	--	--	60	50	--	30	**240**	50	60	120
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	110000	--	100000	110000	83000	--	--	91000	78000	--	78000	180000	130000	110000	150000
Chromium	ug/l	-- [30]	<5	--	<5	<5	<5	--	--	<5	<5	--	<5	<5	<5	<5	<5
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	<1	--	<1	2	<1	--	--	<1	<1	--	<1	1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	**<5**	--	**<5**	**<5**	**<5**	--	--	<0.5	**<5**	--	<0.5	<0.5	<0.5	<0.5	<0.5
Iron	ug/l	300	**900**	--	<100	**600**	<100	--	--	200	100	--	200	200	200	<100	**700**
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	11000	--	9200	6700	6300	--	--	10000	8400	--	6600	26000	12000	13000	26000
Manganese	ug/l	--	610	--	31	160	90	--	--	33	38	--	110	180	770	53	610
Mercury	ug/l	0.2 [32]	<0.1	--	<0.1	<0.1	<0.1	--	--	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	2300	--	1700	1300	800	--	--	2300	1900	--	900	5300	1700	2900	4600
Silicon	ug/l	--	3200	--	1800	2400	1500	--	--	550	480	--	3900	1500	4800	2300	1300
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	43000	--	22000	44000	16000	--	--	36000	24000	--	65000	64000	59000	44000	59000
Strontium	ug/l	--	910	--	520	470	370	--	--	840	680	--	470	3000	940	1000	3000
Sulfur	ug/l	--	38000	--	26000	16000	16000	--	--	34000	26000	--	6200	95000	38000	42000	94000
Thallium	ug/l	0.3 [33]	0.07	--	<0.05	0.24	<0.05	--	--	<0.05	<0.05	--	<0.05	0.05	<0.05	<0.05	<0.05
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-3 22-Nov-2010 SS-3	SS-3 09-Dec-2010 SS-3	SS-3 12-Jan-2011 SS-3	SS-3 23-Feb-2011 [7] SS-3	SS-3 30-Mar-2011 SS-3	SS-3 14-Apr-2011 SS-3	SS-3 12-May-2011 SS 3	SS-3 20-Jun-2011 S-5	SS-3 19-Jul-2011 SS-3	SS-3 26-Aug-2011 [4] SS-3	SS-3 21-Sep-2011 S-4	SS-3 28-Oct-2011 SS-3	SS-3 14-Nov-2011 SS-3	SS-3 08-Dec-2011 SS - 3	SS-3 11-Jan-2012 SS -3
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	185000	213000	255000	240000	164000	151000	191000	146000	159000	--	195000	194000	233000	191000	264000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	--	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<50	<50	60	150	<50	<50	<50	<50	<50	--	90	<50	<50	<50	60
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	--	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	29000	16000	26000	77000	16000	20000	33000	47000	42000	--	53000	29000	30000	28000	21000
Chloride	ug/l	--	42000	59000	120000	290000	21000	69000	76000	110000	65000	--	99000	69000	86000	58000	100000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	830	347	590	540	790	595	620	717	685	--	632	605	605	680	810
Dissolved Organic Carbon	ug/l	--	7300	6800	7500	6600	3500	7100	10400	13600	13000	--	17300	8500	8100	7600	6400
Hardness, Calcium Carbonate	ug/l	--	220000	320000	400000	430000	190000	200000	250000	180000	180000	--	230000	380000	420000	340000	440000
Nitrate as N	ug/l	--	<100	<100	<100	200	<100	<100	<100	<100	<100	--	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	--	<10	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	400	300	500	1000	400	600	600	800	1100	--	1400	500	600	500	500
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.4	7.77	7.6	7.8	7.6	7.9	7.5	8.09	7.3	--	7.46	7.4	7.38	7.5	7.7
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	9	9	24	89	23	24	34	22	18	--	43	16	44	26	26
Sulphate	ug/l	--	32000	99000	95000	75000	23000	38000	58000	49000	39000	--	47000	180000	190000	140000	140000
Temperature (Field)	deg c	-- [24]	3	0.3	1	1	3	10	15	24.4	26	--	20.2	14	6	1	0
Total Dissolved Solids	ug/l	--	342000	502000	644000	990000	242000	350000	454000	410000	372000	--	592000	594000	590000	512000	656000
Total Suspended Solids	ug/l	--	3000	1000	2000	16000	3000	<1000	<1000	2000	2000	--	5000	<1000	3000	4000	1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	27	48	78	110	22	46	63	54	42	--	74	57	67	56	66
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	10	40	30	20	<10	30	40	30	50	--	50	60	40	33	29
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	85000	120000	140000	150000	73000	76000	95000	70000	61000	--	77000	130000	150000	120000	160000
Chromium	ug/l	-- [30]	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	<5	<5	<5	<5.0	<5.0
Cobalt	ug/l	0.9	--	--	<0.50	<0.50	<0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.50	<0.50
Copper	ug/l	5	<1	<1	<1	2	<1	<1	2	1	<1	--	<1	<1	<1	1.8	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.5	<0.5	**<5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5
Iron	ug/l	300	<100	<100	300	**1300**	<100	<100	300	100	100	--	**500**	<100	100	270	**320**
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	5700	11000	13000	11000	4600	6500	7900	8200	9200	--	11000	13000	14000	12000	13000
Manganese	ug/l	--	6	51	210	220	38	20	110	26	42	--	140	19	38	110	250
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	1300	1800	1800	1400	700	1500	1500	600	900	--	4800	2900	2300	1700	1600
Silicon	ug/l	--	1300	1200	2800	2800	910	410	440	1500	3800	--	1100	2000	2000	2200	3100
Silver	ug/l	0.1	--	--	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.10	<0.10
Sodium	ug/l	--	24000	49000	76000	160000	11000	48000	54000	86000	55000	--	67000	54000	68000	51000	74000
Strontium	ug/l	--	350	1000	1000	950	250	610	750	620	740	--	770	1100	1100	920	940
Sulfur	ug/l	--	12000	35000	34000	28000	7200	17000	22000	16000	13000	--	17000	65000	61000	51000	52000
Thallium	ug/l	0.3 [33]	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	<0.05	<0.050	<0.050
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-3 06-Feb-2012 SS- 3	SS-3 13-Mar-2012 SS-3	SS-3 10-Apr-2012 SS-3	SS-3 24-May-2012 SS-3	SS-3 29-Jun-2012 T-1	SS-3 20-Jul-2012 S-3	SS-3 29-Aug-2012 SS-3	SS-3 26-Sep-2012 SS-3	SS-3 10-Oct-2012 SS-3	SS-3 28-Nov-2012 SS-3	SS-3 17-Dec-2012 SS-3	SS-3 16-Jan-2013 SS-3	SS-3 26-Feb-2013 SS-6	SS-3 25-Mar-2013 SS-3	SS-3 01-Apr-2013 [4] ss3
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	242000	140000	190000	180000	130000	150000	260000	190000	220000	250000	280000	190000	230000	210000	--
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	--
Ammonia Nitrogen	ug/l	--	70	<50	<50	<50	<50	<50	1600	170	<50	72	78	58	250	140	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	2000	3000	8000	<2000	2000	<2000	2000	<2000	<2000	<2000	--
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	24000	21000	26000	36000	41000	53000	100000	26000	36000	31000	23000	17000	19000	22000	--
Chloride	ug/l	--	140000	77000	120000	72000	150000	150000	180000	100000	110000	110000	120000	83000	120000	150000	--
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	620	605	810	790	789	860	690	1010	990	840	805	790	996	932	--
Dissolved Organic Carbon	ug/l	--	5400	5400	7500	16000	14000	17000	27000	11000	12000	8500	9000	6900	6100	7600	--
Hardness, Calcium Carbonate	ug/l	--	490000	230000	290000	240000	200000	170000	290000	460000	450000	390000	490000	330000	460000	350000	--
Nitrate as N	ug/l	--	100	260	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	--
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	--
Nitrogen, Total Kjeldahl	ug/l	--	500	530	730	700	1200	1700	4700	1400	870	1000	690	690	820	920	--
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.6	7.5	7.7	7.8	8.05	7.7	7.3	7.8	7.8	7.6	7.5	7.6	7.38	7.42	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	22	25	11	20	21	6	240	15	13	18	16	10	35	28	--
Sulphate	ug/l	--	190000	83000	94000	48000	61000	38000	36000	310000	250000	180000	230000	93000	220000	110000	--
Temperature (Field)	deg c	-- [24]	1	2	11	17	21.7	24	25	10	8	2	2	1	1.0	1.32	--
Total Dissolved Solids	ug/l	--	804000	434000	566000	390000	532000	488000	726000	840000	778000	708000	818000	538000	702000	594000	--
Total Suspended Solids	ug/l	--	3000	3000	<1000	2000	<1000	9000	15000	<1000	<1000	<1000	1000	<1000	5000	2000	--
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	76	45	67	60	56	61	110	75	68	62	77	48	72	63	--
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	55	34	41	31	47	55	89	86	57	26	25	15	50	31	--
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	180000	88000	110000	88000	60000	55000	100000	170000	150000	140000	190000	120000	150000	130000	--
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--
Copper	ug/l	5	<1.0	<1.0	1.3	<1.0	1.4	2.7	1.8	<1.0	<1.0	1.8	<1.0	1.1	<1.0	1.6	--
Hexavalent Chromium	ug/l	1 [22]	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	--
Iron	ug/l	300	220	170	<100	<100	<100	220	**2900**	<100	<100	300	110	<100	**390**	160	--
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	19000	8000	10000	7400	12000	11000	14000	16000	15000	13000	16000	9400	16000	12000	--
Manganese	ug/l	--	87	74	20	28	8.7	230	560	53	34	170	210	9.3	250	160	--
Mercury	ug/l	0.2 [32]	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	2500	1400	1600	990	720	2700	11000	2300	2500	2000	1900	1000	2200	1600	--
Silicon	ug/l	--	2900	1500	160	740	2100	5900	12000	2600	2700	2300	2700	2400	2500	2100	--
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--
Sodium	ug/l	--	100000	53000	82000	54000	110000	110000	130000	86000	94000	93000	110000	65000	83000	100000	--
Strontium	ug/l	--	1500	790	920	610	850	750	870	1600	1200	1100	1300	480	1500	1000	--
Sulfur	ug/l	--	75000	29000	33000	100000	23000	13000	13000	110000	85000	64000	73000	36000	78000	40000	--
Thallium	ug/l	0.3 [33]	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO (1)	SS-3 10-May-2013 SS-3	SS-3 21-Jun-2013 SS-3	SS-3 29-Jul-2013 SS-3	SS-3 14-Aug-2013 SS-3	SS-3 26-Sep-2013 SS-3	SS-3 25-Oct-2013 SS-3	SS-3 22-Nov-2013 SS-3	SS-3 23-Dec-2013 SS-3	SS-3 09-Jan-2014 (4) s3	SS-3 04-Feb-2014 (4) s3	SS-3 26-Mar-2014 SS-3	SS-3 22-Apr-2014 SS-3	SS-3 21-May-2014 SS-3	SS-3 19-Jun-2014 SS-3	SS-3 15-Jul-2014 SS-3
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- (21)	230000	200000	210000	180000	170000	210000	210000	250000	--	--	240000	160000	180000	200000	190000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	--	--	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	74	69	73	280	55	70	<50	170	--	--	1600	1700	<50	<50	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	3000	<2000	<2000	<2000	<2000	<2000	<2000	3000	--	--	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	42000	35000	35000	35000	56000	35000	31000	20000	--	--	25000	17000	23000	30000	31000
Chloride	ug/l	--	93000	70000	82000	83000	37000	35000	35000	37000	--	--	130000	47000	86000	78000	60000
Chromium (III)	ug/l	8.9 (22)	<5	<5	<5	<5	<5	<5	<5	<5	--	--	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	835	712	541	697	466	740	609	-- (42)	--	--	936	730	695	724	633
Dissolved Organic Carbon	ug/l	--	13000	13000	13000	12000	21000	11000	11000	11000	--	--	9500	5800	8800	11000	11000
Hardness, Calcium Carbonate	ug/l	--	300000	260000	230000	200000	150000	240000	230000	270000	--	--	320000	200000	230000	240000	220000
Nitrate as N	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	--	--	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10	<10	<10	<10	--	--	<10	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	920	700	930	2500	1000	760	560	560	--	--	1900	2200	600	580	980
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.4	7.20	7.64	7.63	6.95	7.8	7.45	8.49	--	--	7.59	7.7	7.5	7.82	7.59
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- (23)	31	19	26	20	9	22	18	25	--	--	36	5	11	14	11
Sulphate	ug/l	--	57000	59000	45000	48000	<1000	51000	39000	36000	--	--	55000	51000	53000	55000	50000
Temperature (Field)	deg c	-- (24)	20	18.6	20.5	18.3	14.7	5	2.8	0	--	--	0.5	8	10	18.1	19.3
Total Dissolved Solids	ug/l	--	462000	416000	432000	412000	306000	378000	356000	400000	--	--	562000	320000	432000	494000	374000
Total Suspended Solids	ug/l	--	1000	<1000	2000	2000	<1000	<1000	<1000	<1000	--	--	5000	<1000	1000	<1000	1000
Turbidity	ntu	-- (25)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- (26)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	72	53	56	62	33	43	33	46	--	--	58	38	39	58	60
Beryllium	ug/l	-- (27)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 (28)	42	41	43	52	30	23	17	10	--	--	17	29	34	44	46
Cadmium	ug/l	0.2 (29)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	120000	92000	83000	73000	63000	90000	81000	110000	--	--	130000	69000	72000	90000	87000
Chromium	ug/l	-- (30)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0
Hexavalent Chromium	ug/l	1 (22)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	150	<100	130	150	130	<100	<100	190	--	--	**750**	<100	<100	100	140
Lead	ug/l	-- (31)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	9200	8000	8800	10000	3800	8400	5700	7500	--	--	9900	6200	7500	9700	8700
Manganese	ug/l	--	140	47	350	410	31	22	19	440	--	--	220	27	25	78	150
Mercury	ug/l	0.2 (32)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	1900	1200	1500	1600	670	1900	850	930	--	--	1600	1500	1400	1300	1300
Silicon	ug/l	--	1900	1600	2900	2100	2300	1400	1400	2700	--	--	3200	210	220	1900	2800
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	68000	56000	64000	66000	30000	37000	35000	37000	--	--	78000	34000	56000	60000	54000
Strontium	ug/l	--	860	790	780	910	290	750	400	470	--	--	690	590	750	990	860
Sulfur	ug/l	--	20000	20000	71000	17000	5000	20000	15000	12000	--	--	20000	21000	18000	21000	18000
Thallium	ug/l	0.3 (33)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 (29)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 (34)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-3 25-Aug-2014 SS-3	SS-3 23-Sep-2014 SS-3	SS-3 27-Oct-2014 SS-3	SS-3 20-Nov-2014 SS-7	SS-3 09-Dec-2014 SS-3	SS-3 16-Mar-2015 SS-3	SS-3 07-Apr-2015 SS-3	SS-3 21-May-2015 SS-3	SS-3 23-Jun-2015 SS-3	SS-3 22-Jul-2015 SS-3	SS-3 28-Aug-2015 SS-3	SS-3 25-Sep-2015 SS-3	SS-3 27-Oct-2015 SS-3	SS-3 20-Nov-2015 SS-3	SS-3 10-Dec-2015 SS-3	SS-3 26-Jan-2016 SS-3
General Chemistry																		
Alkalinity (Total as CaCO3)	ug/l	-- [21]	200000	210000	230000	250000	310000	120000	180000	190000	170000	150000	200000	220000	220000	220000	210000	270000
Ammonia, unionized (Field)	ug/l	20	--	<20	<20	<20	<20	<20	<20	<20	<20	20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	190	<50	120	<50	<50	610	72	<50	--	<50	<50	180	<50	<50	<50	200
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	3000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	25000	22000	20000	24000	24000	40000	20000	32000	31000	27000	36000	31000	28000	23000	16000	13000
Chloride	ug/l	--	42000	39000	44000	58000	49000	140000	100000	140000	82000	100000	73000	70000	99000	45000	58000	39000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	<5	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	790	692	752	790	940	741	905	716	760	658	730	901	725	772	772
Dissolved Organic Carbon	ug/l	--	7700	8100	7800	8100	7400	10000	5400	12000	11000	13000	12000	10000	9600	7500	6800	5700
Hardness, Calcium Carbonate	ug/l	--	250000	260000	280000	290000	350000	190000	240000	270000	230000	220000	240000	320000	300000	310000	260000	310000
Nitrate as N	ug/l	--	<100	<100	<100	<100	<100	1450	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	680	650	1700	560	540	1700	350	690	530	750	710	720	550	370	350	490
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	7.6	8.02	7.42	7.48	8.20	7.76	7.7	7.61	6.56	7.77	7.6	7.05	8.34	7.88	7.89
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	8	10	26	31	25	90	14	36	16	26	27	18	7	12	12	26
Sulphate	ug/l	--	85000	80000	76000	67000	55000	38000	53000	60000	71000	86000	59000	140000	99000	98000	83000	75000
Temperature (Field)	deg c	-- [24]	--	18	9.6	1.3	0.3	2.0	2.5	15	24.8	22.6	21.8	17	6.2	6.2	7.0	0.4
Total Dissolved Solids	ug/l	--	386000	430000	412000	394000	446000	444000	412000	588000	450000	454000	476000	550000	558000	504000	450000	474000
Total Suspended Solids	ug/l	--	<1000	<1000	<1000	8000	8000	14000	1000	6000	2000	1000	<1000	3000	1000	<1000	2000	5000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																		
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	38	47	50	52	52	45	52	65	52	63	64	67	55	40	38	34
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	50	45	42	25	23	13	20	37	44	50	56	56	26	23	13	17
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	77000	94000	100000	120000	130000	66000	89000	100000	82000	75000	85000	110000	100000	100000	96000	110000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	<1.0	<1.0	<1.0	<1.0	<1.0	1.5	<1.0	<1.0	<1.0	2.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	<100	<100	<100	180	210	**370**	180	160	<100	<100	<100	<100	<100	<100	<100	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	9300	10000	11000	9800	10000	7200	6800	9600	9300	12000	11000	13000	11000	11000	8900	8500
Manganese	ug/l	--	19	27	9.5	160	430	750	170	18	21	120	39	46	17	7.4	26	150
Mercury	ug/l	0.2 [32]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	1700	2000	2800	2300	1800	2400	1700	1600	890	740	810	2400	2500	2400	1900	1400
Silicon	ug/l	--	1900	1600	1000	1300	2700	1700	1700	520	1400	3200	4400	3200	450	960	910	2500
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	38000	41000	47000	54000	49000	89000	57000	92000	59000	71000	57000	51000	67000	43000	43000	41000
Strontium	ug/l	--	1000	970	980	800	750	470	570	860	780	970	1000	1300	990	830	740	520
Sulfur	ug/l	--	30000	30000	30000	26000	21000	14000	20000	20000	--	30000	22000	44000	32000	32000	29000	25000
Thallium	ug/l	0.3 [33]	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																		
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3
			23-Feb-2016	21-Mar-2016	26-Apr-2016	31-May-2016	30-Jun-2016	13-Jul-2016	04-Aug-2016	20-Sep-2016	26-Oct-2016	11-Nov-2016	14-Dec-2016	23-Jan-2017	14-Feb-2017	27-Mar-2017	21-Apr-2017	23-May-2017
			SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3
General Chemistry																		
Alkalinity (Total as CaCO3)	ug/l	-- [21]	270000	140000	150000	150000	140000	140000	160000	180000	190000	210000	230000	220000	250000	230000	160000	180000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	150	820	<50	59	<50	<50	<50	<50	<50	<50	<50	<50	630	64	<50	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	22000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	17000	20000	25000	46000	57000	52000	49000	35000	33000	28000	21000	45000	39000	16000	20000	25000
Chloride	ug/l	--	100000	28000	67000	72000	91000	85000	83000	80000	90000	78000	100000	130000	130000	31000	64000	40000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	100	370	573	568	540	505	620	825	640	828	665	1042	790	725	669	566
Dissolved Organic Carbon	ug/l	--	7700	5500	9100	13000	16000	14000	14000	12000	11000	9400	9600	6800	13000	4800	6700	9300
Hardness, Calcium Carbonate	ug/l	--	340000	140000	180000	190000	170000	150000	180000	310000	240000	350000	320000	320000	310000	290000	190000	220000
Nitrate as N	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	220	<100	<100	<100
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	450	1100	270	710	990	700	920	790	310	460	460	350	1000	310	300	470
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.78	7.49	7.64	7.57	7.7	7.7	7.6	7.16	7.6	7.37	7.5	6.88	7.5	7.26	6.70	7.88
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	42	32	14	46	33	49	31	19	10	8	15	110	25	14	10	19
Sulphate	ug/l	--	90000	14000	32000	47000	29000	26000	28000	140000	72000	130000	100000	93000	50000	74000	52000	66000
Temperature (Field)	deg c	-- [24]	0	1.2	8.2	25.0	26	24	24	19.7	20	5.2	1	0	1	1.9	8.3	17.4
Total Dissolved Solids	ug/l	--	594000	220000	332000	362000	382000	338000	402000	560000	478000	576000	560000	618000	634000	428000	326000	358000
Total Suspended Solids	ug/l	--	2000	2000	<1000	4000	5000	3000	3000	1000	2000	1000	3000	44000	3000	1000	1000	1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																		
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	65	24	34	51	52	41	47	69	43	48	47	82	72	31	36	40
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	24	<10	12	39	38	42	52	68	29	31	30	28	15	15	31	43
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	120000	54000	64000	64000	56000	52000	61000	100000	84000	100000	110000	140000	110000	110000	73000	78000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**0.95**	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	**7.6**	<1.0	<1.0	<1.0	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	110	160	110	<100	<100	<100	<100	<100	<100	<100	<100	**2100**	**460**	<100	<100	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	11000	2800	4600	8500	8000	8200	9100	15000	9200	11000	10000	13000	9300	8800	7200	8300
Manganese	ug/l	--	280	47	42	200	200	49	79	42	7.6	12	47	320	590	40	10	48
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	2200	650	1100	1100	1000	1100	860	1500	2500	2500	2000	2500	2000	1300	2300	2200
Silicon	ug/l	--	2600	1100	330	2900	3000	3300	6800	5300	1500	1000	1900	4300	3800	2100	140	730
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	71000	21000	44000	52000	61000	60000	56000	59000	58000	55000	64000	96000	83000	37000	45000	37000
Strontium	ug/l	--	870	170	360	670	600	580	680	1300	740	1000	810	1000	740	470	800	780
Sulfur	ug/l	--	30000	4100	9700	18000	9200	9000	8700	47000	26000	48000	37000	35000	16000	28000	21000	21000
Thallium	ug/l	0.3 [33]	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																		
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3
			26-Jun-2017	21-Jul-2017	11-Aug-2017	08-Sep-2017	17-Oct-2017	17-Nov-2017	07-Dec-2017	22-Jan-2018	16-Feb-2018	13-Mar-2018	24-Apr-2018	18-May-2018	22-Jun-2018	18-Jul-2018	24-Aug-2018	18-Sep-2018
			SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3	SS-3
General Chemistry																		
Alkalinity (Total as CaCO3)	ug/l	-- [21]	190000	180000	170000	210000	240000	240000	270000	267000	298000	230000	176000	187000	159000	163000	210000	175000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	**90**
Ammonia Nitrogen	ug/l	--	75	<50	300	240	<50	<50	80	140	240	170	180	140	90	250	80	3420
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	6000	<2000	<2000	<2000	<2000	<2000	3000	1000	<1000	1000	2000	3000	4000	1000	2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	25000	57000	32000	24000	24000	21000	17000	16000	12000	13000	7000	25000	31000	42000	35000	33000
Chloride	ug/l	--	47000	34000	37000	20000	49000	22000	23000	25000	132000	93000	63000	66000	15000	117000	68000	74000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	<5	<5	**<10**	<1	**<10**	**<10**	**<10**	**<10**	**<10**	<0.1	**<10**
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	661	564	548	484	683	628	692	669	679	784	608	638	636	684	672	659
Dissolved Organic Carbon	ug/l	--	11000	12000	12000	8000	10000	5300	5600	5400	7800	4900	4900	9000	12000	24100	13900	18000
Hardness, Calcium Carbonate	ug/l	--	240000	230000	190000	200000	250000	290000	290000	318000	387000	313000	209000	241000	226000	162000	213000	228000
Nitrate as N	ug/l	--	<100	<100	<100	<100	<100	<100	<100	140	<100	<100	<100	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10	<10	<10	<100	<100	<100	<100	<100	<100	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	670	690	810	550	450	210	260	600	900	400	14200	500	900	1180	1200	6800
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.81	7.72	7.29	7.96	7.34	7.45	6.52	7.30	7.31	7.24	8.08	7.78	7.52	7.76	7.78	7.75
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	22	170	40	29	11	54	37	32	5	23	67	23	19	41	20	16
Sulphate	ug/l	--	87000	57000	42000	39000	38000	70000	58000	65000	74000	60000	71000	39000	10000	19000	46000	64000
Temperature (Field)	deg c	-- [24]	23.0	26.2	20.9	13.6	9.0	0.6	2.6	0	0	1.3	11.1	16.1	21.2	23.3	24.2	21.9
Total Dissolved Solids	ug/l	--	476000	352000	422000	298000	405000	365000	300000	435000	715000	546000	400000	426000	417000	434000	450000	444000
Total Suspended Solids	ug/l	--	3000	51000	11000	4000	<1000	2000	3000	11000	3000	<1000	3000	<1000	4000	4000	5000	23000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																		
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	43	54	43	31	46	32	29	30	70	40	40	40	50	50	60	50
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	40	49	45	28	31	27	17	20	20	20	30	30	50	60	40	60
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	85000	77000	60000	73000	81000	100000	100000	111000	137000	112000	72000	85000	74000	50000	72000	73000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Copper	ug/l	5	<1.0	<1.0	<1.0	1.3	<1.0	1.5	<1.0	<1	<1	1	<1	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**<10**	<1	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**
Iron	ug/l	300	160	**410**	170	190	<100	270	<100	100	100	60	60	120	50	110	80	50
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	10000	9100	10000	8800	9400	10000	9100	10000	11000	8000	7000	7000	10000	9000	8000	11000
Manganese	ug/l	--	110	180	110	58	12	30	13	100	120	60	40	120	30	260	100	100
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	1800	2400	1800	1700	2900	2300	1500	1000	3000	2000	3000	2000	1000	2000	2000	3000
Silicon	ug/l	--	5300	3200	3400	3300	3600	2100	1900	2200	3000	1900	300	900	2800	14900	4300	4300
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	42000	31000	38000	25000	42000	26000	24000	29000	81000	60000	36000	44000	45000	61000	46000	51000
Strontium	ug/l	--	710	970	960	510	860	750	500	358	913	668	873	654	949	821	1030	1080
Sulfur	ug/l	--	23000	22000	16000	12000	13000	26000	21000	24000	26300	15600	21400	13500	17300	6600	18000	21800
Thallium	ug/l	0.3 [33]	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																		
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-3 24-Oct-2018 SS-3	SS-3 20-Nov-2018 [41] SS-3	SS-3 18-Dec-2018 SS-3	SS-3 25-Jan-2019 SS-3	SS-3 21-Feb-2019 SS-3	SS-3 13-Mar-2019 SS-3	SS-3 17-Apr-2019 SS-3	SS-3 24-May-2019 SS - 3	SS-3 21-Jun-2019 SS-3	SS-3 18-Jul-2019 SS-3	SS-3 21-Aug-2019 SS-3	SS-3 18-Sep-2019 SS-3	SS-3 29-Oct-2019 SS-3	SS-3 19-Nov-2019 SS-3	SS-3 18-Dec-2019 SS-3
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	237000	251000	266000	281000	151000	273000	73000	185000	207000	179000	170000	156000	192000	253000	272000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<20	70	300	1030	750	2410	40	25	<10	70	660	30	190	<10	<10
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	3000	2000	<1000	5000	2000	4000	2000	1000	6000	4000	1000	2000	3000	<1000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	15000	88000	9000	16000	22000	16000	17000	24000	160000	26000	43000	24000	18000	21000	13000
Chloride	ug/l	--	82000	13000	15000	88000	70000	159000	28000	58000	64000	67000	88000	92000	66000	54000	83000
Chromium (III)	ug/l	8.9 [22]	**<10**	**<10**	**<10**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	824	368	56	1040	617	1160	246	633	697	606	645	712	824	819	294
Dissolved Organic Carbon	ug/l	--	8700	5200	4400	6300	7200	7500	4500	7500	8800	10700	19300	10600	6900	7600	6900
Hardness, Calcium Carbonate	ug/l	--	283000	304000	298000	397000	185000	342000	78000	254000	278000	191000	195000	294000	331000	291000	391000
Nitrate as N	ug/l	--	<100	<100	<100	<100	2350	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	500	2200	1900	2400	1400	2500	200	490	670	800	1500	500	600	400	646
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.68	7.93	7.32	6.85	7.53	**6.33**	**6.17**	8.2 [37]	7.04	7.13	7.16	7.29	7.57	7.68	**8.94**
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	6	38	5	15	6	32	10	13	19	22	22	10	8	15	6
Sulphate	ug/l	--	106000	55000	62000	142000	72000	103000	6000	75000	86000	42000	30000	98000	126000	89000	119000
Temperature (Field)	deg c	-- [24]	6.0	0	0	0	0	0.7	4.0	15.5	21.3	26.5	24.4	18.8	11.5	0.7	-0.3
Total Dissolved Solids	ug/l	--	599000	378000	411000	676000	380000	754000	150000	372000	793000	364000	437000	508000	528000	530000	646000
Total Suspended Solids	ug/l	--	<1000	55000	5000	22000	10000	7000	<1000	<1000	2000	2000	2000	3000	<1000	8000	1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	50	30	30	60	40	70	20	40	60	50	60	60	50	50	60
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	30	<10	<10	30	20	30	<10	40	50	60	70	40	40	30	30
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	95000	112000	108000	136000	66000	119000	28000	87000	95000	60000	60000	98000	111000	100000	135000
Chromium	ug/l	-- [30]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Copper	ug/l	5	<1	1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	**<10**	**<10**	**<10**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Iron	ug/l	300	<30	**390**	<30	190	250	180	120	40	70	80	70	<30	30	110	60
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	11000	6000	7000	14000	5000	11000	2000	9000	10000	10000	11000	12000	13000	10000	13000
Manganese	ug/l	--	<10	200	10	230	480	150	30	40	850	300	330	30	20	100	110
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	4000	<1000	<1000	4000	2000	4000	<1000	3000	2000	2000	2000	3000	5000	3000	4000
Silicon	ug/l	--	1000	2000	1800	2900	1500	3000	700	300	2300	6400	9000	3200	1700	2000	2400
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	57000	15000	16000	59000	37000	92000	16000	41000	34000	44000	55000	58000	37000	46000	61000
Strontium	ug/l	--	1160	341	302	1340	554	1250	135	987	1180	1070	1060	1210	1380	1030	1350
Sulfur	ug/l	--	40300	23300	24300	55700	22100	40800	2200	25700	31800	14400	11300	36300	44600	29600	49100
Thallium	ug/l	0.3 [33]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-3 15-Jan-2020 SS-3	SS-3 19-Feb-2020 SS-3	SS-3 19-Mar-2020 SS-3	SS-3 03-Apr-2020 SS-3	SS-3 08-May-2020 SS-3	SS-3 01-Jun-2020 SS-3	SS-3 21-Jul-2020 SS-3	SS-3 25-Aug-2020 SS-3	SS-3 17-Sep-2020 SS-3	SS-3 23-Oct-2020 SS-3	SS-3 26-Nov-2020 SS-3	SS-3 11-Dec-2020 SS-3	SS-3 08-Jan-2021 SS-3	SS-3 18-Feb-2021 SS-3	SS-3 22-Mar-2021 SS-3	SS-3 09-Apr-2021 SS-3
General Chemistry																		
Alkalinity (Total as CaCO3)	ug/l	-- [21]	218000	287000	192000	126000	193000	193000	165000	174000	211000	218000	239000	263000	222000	336000	164000	161000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<10	112	<10	<10	<10	<10	<10	60	<10	<10	973	248	<10	113	<10	<10
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	2000	4000	6000	<1000	<1000	9000	8000	5000	5000	6000	2000	1000	2000	21000	<1000	<1000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	30000	18000	23000	8000	24000	22000	60000	16000	23000	13000	13000	10000	6000	164000	11000	9000
Chloride	ug/l	--	96000	153000	85000	42000	63000	52000	106000	59000	65000	40000	66000	68000	67000	129000	64000	68000
Chromium (III)	ug/l	8.9 [22]	1	**<10**	**<10**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	827	953	723	492	696	624	716	808	800	751	736	842	980	1169	678	605
Dissolved Organic Carbon	ug/l	--	6700	7100	4700	4200	6700	10400	19100	10100	9600	6900	6700	5500	5500	8900	4400	5600
Hardness, Calcium Carbonate	ug/l	--	293000	377000	259000	180000	264000	232000	179000	323000	293000	315000	280000	322000	391000	424000	194000	224000
Nitrate as N	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<500	<100	<100	300	<100	<100	<100
Nitrite as N	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<500	<100	<100	<100	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	1070	698	855	444	439	1060	1390	868	972	928	1350	344	1020	3260	401	325
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.28	7.62	7.60	7.70	7.64	7.69	8.23	7.92	7.78	7.74	7.45	7.44	7.59	7.03	7.16	7.80
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	22	8	45	6	8	12	30	30	10	6	11	4	6	83	13	10
Sulphate	ug/l	--	74000	86000	52000	47000	82000	50000	11000	148000	107000	126000	73000	98000	181000	69000	54000	65000
Temperature (Field)	deg c	-- [24]	0.8	1.8	1.2	3.8	6.2	14.1	25.8	23.8	16.9	14.5	0.8	1.5	0.2	0.2	5.1	16.7
Total Dissolved Solids	ug/l	--	538000	774000	457000	318000	449000	391000	441000	521000	518000	494000	493000	541000	610000	754000	401000	393000
Total Suspended Solids	ug/l	--	37000	2000	75000	<1000	5000	4000	8000	7000	<1000	<1000	6000	2000	3000	108000	18000	<1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																		
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	60	80	50	30	50	40	50	70	50	50	40	50	70	80	30	40
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	20	30	30	20	30	60	70	90	70	50	30	40	50	50	<10	30
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	104000	133000	92000	62000	91000	78000	57000	108000	96000	108000	99000	111000	132000	150000	68000	78000
Chromium	ug/l	-- [30]	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Copper	ug/l	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	3	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	<1	<1	**<10**	<1	<1	<1	<0.5	<0.50	<0.50	<0.50	<1	<0.5	<0.50	<0.5	<0.5	<0.5
Iron	ug/l	300	**340**	130	**360**	60	60	40	160	80	<30	<30	110	30	50	**950**	100	40
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	8000	11000	7000	6000	9000	9000	9000	13000	13000	11000	8000	11000	15000	12000	6000	7000
Manganese	ug/l	--	90	100	120	30	80	30	380	180	20	10	50	20	40	470	70	30
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	2000	3000	2000	2000	4000	2000	3000	4000	5000	4000	3000	3000	5000	3000	2000	3000
Silicon	ug/l	--	2100	2900	1600	1000	300	2700	16000	5300	2500	2300	1300	2400	3200	3400	1300	100
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	59000	94000	56000	28000	44000	42000	76000	38000	47000	29000	47000	50000	48000	87000	39000	41000
Strontium	ug/l	--	785	1280	859	605	881	941	743	1800	1570	1560	825	1150	1600	1170	530	845
Sulfur	ug/l	--	23700	34200	18300	16800	29600	18900	5900	57700	40800	46300	24100	39400	64800	30900	18700	21000
Thallium	ug/l	0.3 [33]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																		
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-3 28-May-2021 SS-3	SS-3 28-Jun-2021 SS-3	SS-3 15-Jul-2021 SS-3	SS-3 11-Aug-2021 SS-3	SS-3 28-Sep-2021 SS3	SS-3 27-Oct-2021 SS3	SS-3 11-Nov-2021 SS3	SS-3 15-Dec-2021 SS3	SS-3 25-Jan-2022 [18] SS3	SS-3 24-Feb-2022 [4] 3	SS-3 17-Mar-2022 SW3	SS-3 28-Apr-2022 SS3	SS-3 26-May-2022 SS3	SS-3 24-Jun-2022 SS3	SS-3 25-Jul-2022 SS3
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	167000	147000	171000	153000	189000	200000	221000	234000	387000	--	114000	168000	184000	185000	191000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	--	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<10	<10	<10	<10	<10	<10	<10	<10	311	--	461	120	40	84	<20
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	2000	2000	2000	2000	<1000	3000	3000	1000	--	2000	<1000	1000	3000	1000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	7000	10000	8000	<5000	10000	19000	17000	18000	19000	--	14000	19000	43000	18000	27000
Chloride	ug/l	--	111000	11000	32000	16000	64000	65000	79000	70000	149000	--	25000	70000	80000	52000	46000
Chromium (III)	ug/l	8.9 [22]	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1.0	<1
Color	color unit	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	824	458	551	448	822	669	1107	798	115	--	357	621	666	595	623
Dissolved Organic Carbon	ug/l	--	12300	5100	7700	7900	8100	8200	9700	9300	9500	--	4400	7200	10200	9300	11800
Hardness, Calcium Carbonate	ug/l	--	324000	220000	252000	208000	421000	267000	265000	302000	500000	--	153000	262000	278000	294000	250000
Nitrate as N	ug/l	--	<500	<100	<100	<100	<100	<100	<100	<100	<500	--	480	<100	<100	<100	<100
Nitrite as N	ug/l	--	<500	<100	<100	<100	<100	<100	<100	<100	<500	--	<100	<100	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	2120	1110	539	726	1470	547	579	685	811	--	650	627	858	706	1050
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.72	7.96	7.39	7.40	7.62	7.68	7.81	7.47	8.08	--	8.12	7.94	7.92	7.80	7.84
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	20	8	10	10	7	7	4	5	8	--	7	<2	8	10	15
Sulphate	ug/l	--	151000	73000	74000	55000	233000	81000	64000	78000	195000	--	53000	83000	84000	110000	64000
Temperature (Field)	deg c	-- [24]	17.0	26.5	23.9	27.0	17.0	10.8	4.0	2.0	0	--	5.8	11.5	20.3	30.3	26.1
Total Dissolved Solids	ug/l	--	564000	283000	361000	289000	607000	487000	511000	523000	897000	--	204000	452000	482000	454000	398000
Total Suspended Solids	ug/l	--	2000	<1000	<1000	<1000	<1000	<1000	<1000	1000	3000	--	6000	<1000	<1000	<1000	<1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	50	30	40	30	90	40	50	40	80	--	30	40	50	50	60
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	70	30	40	30	90	30	20	20	30	--	10	30	50	60	70
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	105000	80000	86000	70000	139000	92000	93000	106000	186000	--	53000	90000	95000	98000	82000
Chromium	ug/l	-- [30]	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	<1
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	<0.2	<0.2	<0.2	<0.2	<0.2
Copper	ug/l	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50	<0.5	<0.50	<0.5
Iron	ug/l	300	70	<30	40	30	40	50	50	50	70	--	130	60	60	50	40
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	15000	5000	9000	8000	18000	9000	8000	9000	20000	--	5000	9000	10000	12000	11000
Manganese	ug/l	--	120	30	80	100	110	10	10	10	170	--	40	40	40	140	420
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	5000	<1000	2000	2000	6000	4000	3000	2000	5000	--	2000	3000	3000	2000	3000
Silicon	ug/l	--	1900	2000	2600	2200	3700	2100	1600	2300	5600	--	1600	200	400	2000	5800
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	66000	9000	25000	11000	40000	46000	56000	52000	103000	--	22000	46000	55000	35000	33000
Strontium	ug/l	--	1360	268	631	447	2010	826	672	612	1590	--	406	906	1100	1350	1290
Sulfur	ug/l	--	48600	24800	25500	19200	77900	28700	20900	28400	47000	--	17600	30200	27600	34500	25200
Thallium	ug/l	0.3 [33]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-4 25-Sep-2002 [2]	SS-4 31-Oct-2002	SS-4 28-Nov-2002	SS-4 15-Jan-2003 [4]	SS-4 12-Feb-2003 [4]	SS-4 15-Mar-2003 [4]	SS-4 28-Apr-2003 [4]	SS-4 24-May-2003 [4]	SS-4 24-Jun-2003 [4]	SS-4 16-Jul-2003 [4]	SS-4 14-Aug-2003	SS-4 30-Sep-2003 [4]	SS-4 30-Oct-2003	SS-4 24-Nov-2003
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	203000	167000	--	--	--	--	--	--	--	133000	--	126000	165000
Ammonia, unionized (Field)	ug/l	20	--	<20	<20	--	--	--	--	--	--	--	<20	--	<20	<20
Ammonia Nitrogen	ug/l	--	--	4390	780	--	--	--	--	--	--	--	60	--	60	50
Bicarbonate	ug/l	--	--	203000	167000	--	--	--	--	--	--	--	133000	--	126000	165000
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	<1000	<1000	--	--	--	--	--	--	--	<1000	--	<1000	<1000
Carbonate (CO3)	ug/l	--	--	<2000	<5000	--	--	--	--	--	--	--	<2000	--	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	6000	5000	--	--	--	--	--	--	--	<5000	--	<5000	8000
Chloride	ug/l	--	--	42000	29000	--	--	--	--	--	--	--	31000	--	36000	45000
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	780	810	--	--	--	--	--	--	--	460	--	420	741
Dissolved Organic Carbon	ug/l	--	--	1500	3500	--	--	--	--	--	--	--	2100	--	2000	2800
Hardness, Calcium Carbonate	ug/l	--	--	417000	271000	--	--	--	--	--	--	--	240000	--	297000	349000
Nitrate as N	ug/l	--	--	17400	7660	--	--	--	--	--	--	--	3710	--	4500	4230
Nitrite as N	ug/l	--	--	1300	<100	--	--	--	--	--	--	--	<100	--	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	--	8150	1000	--	--	--	--	--	--	--	460	--	420	570
Nitrogen, Organic	ug/l	--	--	3760	220	--	--	--	--	--	--	--	400	--	360	520
pH (Field)	-	6.5 - 8.5	--	7	6.8	--	--	--	--	--	--	--	7.5	--	7.3	8.01
Phosphate	ug/l	--	--	50	60	--	--	--	--	--	--	--	<30	--	50	<30
Phosphorus	ug/l	-- [23]	--	20	20	--	--	--	--	--	--	--	<10	--	<10	<10
Sulphate	ug/l	--	--	175000	95000	--	--	--	--	--	--	--	95000	--	126000	145000
Temperature (Field)	deg c	-- [24]	--	4	3	--	--	--	--	--	--	--	14	--	4	4
Total Dissolved Solids	ug/l	--	--	612000	404000	--	--	--	--	--	--	--	346000	--	413000	482000
Total Suspended Solids	ug/l	--	--	6000	<2000	--	--	--	--	--	--	--	<2000	--	<2000	6000
Turbidity	ntu	-- [25]	--	3	2.5	--	--	--	--	--	--	--	0.8	--	1.6	2.6
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	<10	20	--	--	--	--	--	--	--	10	--	10	10
Barium	ug/l	--	--	90	80	--	--	--	--	--	--	--	100	--	90	80
Beryllium	ug/l	-- [27]	--	<1	<1	--	--	--	--	--	--	--	<1	--	<1	<1
Boron	ug/l	200 [28]	--	170	<50	--	--	--	--	--	--	--	30	--	40	30
Cadmium	ug/l	0.2 [29]	--	<0.1	<0.1	--	--	--	--	--	--	--	<0.1	--	<0.1	<0.1
Calcium	ug/l	--	--	101000	92000	--	--	--	--	--	--	--	83000	--	104000	120000
Chromium	ug/l	-- [30]	--	<1	1	--	--	--	--	--	--	--	2	--	3	3
Cobalt	ug/l	0.9	--	0.9	0.4	--	--	--	--	--	--	--	<0.2	--	<0.2	0.2
Copper	ug/l	5	--	1	<1	--	--	--	--	--	--	--	<1	--	<1	1
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	60	20	--	--	--	--	--	--	--	<10	--	20	30
Lead	ug/l	-- [31]	--	1	<1	--	--	--	--	--	--	--	<1	--	<1	<1
Magnesium	ug/l	--	--	40000	10000	--	--	--	--	--	--	--	8000	--	9000	12000
Manganese	ug/l	--	--	7	<5	--	--	--	--	--	--	--	<5	--	6	<10
Mercury	ug/l	0.2 [32]	--	<0.1	<0.1	--	--	--	--	--	--	--	<0.1	--	<0.1	<0.1
Molybdenum	ug/l	40	--	8	<5	--	--	--	--	--	--	--	<5	--	<5	<5
Nickel	ug/l	25	--	<5	<5	--	--	--	--	--	--	--	2	--	<5	<5
Potassium	ug/l	--	--	14000	2000	--	--	--	--	--	--	--	2000	--	2000	3000
Silicon	ug/l	--	--	2700	1500	--	--	--	--	--	--	--	1200	--	1100	1700
Silver	ug/l	0.1	--	<0.1	<0.1	--	--	--	--	--	--	--	<0.1	--	<0.1	<0.1
Sodium	ug/l	--	--	24000	15000	--	--	--	--	--	--	--	14000	--	20000	24000
Strontium	ug/l	--	--	5540	1680	--	--	--	--	--	--	--	1040	--	981	1050
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	--	**<1**	**<1**	--	--	--	--	--	--	--	**<1**	--	**<1**	**<1**
Titanium	ug/l	--	--	<10	<10	--	--	--	--	--	--	--	<10	--	<10	<10
Vanadium	ug/l	6	--	<1	<1	--	--	--	--	--	--	--	<1	--	<1	1
Zinc	ug/l	30 [29]	--	<5	<5	--	--	--	--	--	--	--	10	--	<10	<10
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	<1	<1	--	--	--	--	--	--	--	<1	--	<1	<1

Parameter	Unit	PWQO [1]	SS-4 23-Dec-2003 [4]	SS-4 27-Jan-2004 [4]	SS-4 20-Feb-2004 [4]	SS-4 24-Mar-2004 [4]	SS-4 12-Apr-2004	SS-4 12-May-2004	SS-4 28-Jun-2004	SS-4 19-Jul-2004	SS-4 26-Jul-2004	SS-4 17-Aug-2004	SS-4 30-Sep-2004	SS-4 07-Oct-2004 [4]	SS-4 23-Nov-2004 [4]	SS-4 09-Dec-2004 [4]
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	156000	232000	246000	269000	--	226000	205000	--	--	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	<20	<20	<20	<20	--	<20	<20	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	60	3290	990	1130	--	1050	360	--	--	--
Bicarbonate	ug/l	--	--	--	--	--	189000	277000	298000	321000	--	268000	243000	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	<500	<500	600	1000	--	<500	<500	--	--	--
Carbonate (CO3)	ug/l	--	--	--	--	--	<1000	<1000	<1000	<1000	--	2000	1000	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	7000	<5000	10000	9000	--	11000	9000	--	--	--
Chloride	ug/l	--	--	--	--	--	50400	28600	24800	29400	--	64500	66300	--	--	--
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	510	640	580	510	--	560	809	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	2300	1800	3800	2500	--	2500	3700	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	239089	332200	385770	328500	--	427000	370000	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	1400	4800	1300	2300	--	3700	2100	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	<200	<200	<200	<200	--	<200	<200	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	400	3090	1410	1270	--	1240	550	--	--	--
Nitrogen, Organic	ug/l	--	--	--	--	--	280	0	420	140	--	190	190	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	7.3	7.3	7.2	7.4	--	7.2	7.4	--	--	--
Phosphate	ug/l	--	--	--	--	--	<1000	<1000	<1000	<1000	--	<1000	<1000	--	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	7	9	8	190	--	2	<2	--	--	--
Sulphate	ug/l	--	--	--	--	--	69400	128000	128000	95600	--	189000	162000	--	--	--
Temperature (Field)	deg c	-- [24]	--	--	--	--	2	7	14	15	--	16	14.3	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	328000	480000	436000	446000	--	654000	610000	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	2000	4000	2000	36000	1000	4000	1000	--	--	--
Turbidity	ntu	-- [25]	--	--	--	--	2.3	1.3	2	5.7	--	0.6	0.6	--	--	--
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	<5	5	9	<5	--	10	<5	--	--	--
Barium	ug/l	--	--	--	--	--	67	136	165	250	--	186	151	--	--	--
Beryllium	ug/l	-- [27]	--	--	--	--	<1	<1	<1	<1	--	<1	<1	--	--	--
Boron	ug/l	200 [28]	--	--	--	--	23	**329**	**292**	**266**	--	**340**	**206**	--	--	--
Cadmium	ug/l	0.2 [29]	--	--	--	--	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	--	--	--
Calcium	ug/l	--	--	--	--	--	80400	76300	97400	78900	--	106000	96500	--	--	--
Chromium	ug/l	-- [30]	--	--	--	--	<5	<5	<5	<5	--	<5	<5	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	<0.1	0.3	0.3	0.7	--	0.4	0.3	--	--	--
Copper	ug/l	5	--	--	--	--	<0.5	<0.5	**27**	<0.5	--	<0.5	<0.5	--	--	--
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	30	<30	**630**	**490**	--	<30	<30	--	--	--
Lead	ug/l	-- [31]	--	--	--	--	<0.5	<0.5	1.1	0.7	--	0.5	<0.5	--	--	--
Magnesium	ug/l	--	--	--	--	--	9290	34400	34700	32000	--	39500	31500	--	--	--
Manganese	ug/l	--	--	--	--	--	5	5	40	11	--	6	<5	--	--	--
Mercury	ug/l	0.2 [32]	--	--	--	--	<0.05	<0.1	<0.1	<0.1	--	<0.1	<0.1	--	--	--
Molybdenum	ug/l	40	--	--	--	--	<1	8	3	1	--	2	2	--	--	--
Nickel	ug/l	25	--	--	--	--	<1	3	2	4	--	3	3	--	--	--
Potassium	ug/l	--	--	--	--	--	1300	8100	6600	6900	--	8100	5900	--	--	--
Silicon	ug/l	--	--	--	--	--	1230	4230	4920	6060	--	4570	3950	--	--	--
Silver	ug/l	0.1	--	--	--	--	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	--	--	--
Sodium	ug/l	--	--	--	--	--	22700	34200	29100	30900	--	41400	33400	--	--	--
Strontium	ug/l	--	--	--	--	--	867	4640	4210	3840	--	5110	4340	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	--	--	--	--	<0.05	**0.46**	0.22	0.25	--	0.2	0.12	--	--	--
Titanium	ug/l	--	--	--	--	--	<5	<5	14	20	--	<5	<5	--	--	--
Vanadium	ug/l	6	--	--	--	--	<0.5	<0.5	0.8	0.7	--	<0.5	<0.5	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	<5	<5	10	12	--	<5	<5	--	--	--
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	<1	<1	<1	<1	--	<1	<1	--	--	--

Parameter	Unit	PWQO [1]	SS-4 14-Jan-2005 [4]	SS-4 11-Feb-2005 [4]	SS-4 14-Mar-2005 [4]	SS-4 15-Apr-2005 [4]	SS-4 29-May-2005 [4]	SS-4 12-Jun-2005 [4]	SS-4 12-Jul-2005 [4]	SS-4 14-Aug-2005 [4]	SS-4 24-Sep-2005 [4]	SS-4 24-Oct-2005 [4]	SS-4 16-Nov-2005 [4]	SS-4 29-Dec-2005 [4]	SS-4 19-Jan-2006 [4]
General Chemistry															
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	--	--	--	--	--	--	--	--	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [24]	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/l	-- [30]	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	ug/l	0.2 [32]	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols															
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-4 15-Feb-2006 [4]	SS-4 30-Mar-2006 [4]	SS-4 11-Apr-2006 [4]	SS-4 12-May-2006 [4]	SS-4 20-Jun-2006 [4]	SS-4 24-Jul-2006	SS-4 14-Aug-2006	SS-4 29-Sep-2006	SS-4 25-Oct-2006	SS-4 14-Nov-2006	SS-4 12-Dec-2006	SS-4 31-Jan-2007	SS-4 27-Feb-2007	SS-4 30-Mar-2007	SS-4 26-Apr-2007
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	--	115000	124000	158000	206000	174000	205000	244000	268000	208000	180000
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	--	--	--	--	--	140	40	1070	40	730	460	1220	1550	770	580
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--	<1000	<1000	<1000	2000	<1000	<1000	<1000	1000	<1000	<1000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	<5000	6000	<5000	24000	<5000	<5000	<5000	10000	9000	<5000
Chloride	ug/l	--	--	--	--	--	--	37000	39000	37000	16000	32000	35000	43000	55000	53000	42000
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	395	395	395	370	520	510	605	490	660	440
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	2000	3100	1800	11000	2600	2700	2300	2600	2400	2700
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--	272000	287000	382000	288000	376000	406000	429000	352000	388000	363000
Nitrate as N	ug/l	--	--	--	--	--	--	1630	1020	5890	730	4370	2410	2900	3080	2140	1870
Nitrite as N	ug/l	--	--	--	--	--	--	<100	<100	340	<100	220	160	470	2280	270	<100
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	360	270	1280	440	1070	730	1300	2100	860	790
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--	7.5	7.5	7.4	7.5	7.4	7.3	7.3	7.3	7.3	7.3
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	--	90	20	20	<10	10	170	100	20	20	20
Sulphate	ug/l	--	--	--	--	--	--	157000	163000	248000	112000	190000	164000	186000	220000	198000	177000
Temperature (Field)	deg c	-- [24]	--	--	--	--	--	10	8	7	3	3	1	1	2	5	4
Total Dissolved Solids	ug/l	--	--	--	--	--	--	430000	458000	608000	426000	549000	539000	623000	728000	624000	558000
Total Suspended Solids	ug/l	--	--	--	--	--	--	<2000	6000	7000	8000	16000	8000	122000	15000	3000	<2000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Barium	ug/l	--	--	--	--	--	--	60	70	80	40	90	90	100	90	140	100
Beryllium	ug/l	-- [27]	--	--	--	--	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Boron	ug/l	200 [28]	--	--	--	--	--	70	110	**250**	80	**210**	180	**420**	**610**	**310**	180
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Calcium	ug/l	--	--	--	--	--	--	86000	82000	102000	89000	98000	108000	101000	80000	96000	96000
Chromium	ug/l	-- [30]	--	--	--	--	--	<1	<1	<1	<1	2	2	<1	6	3	1
Cobalt	ug/l	0.9	--	--	--	--	--	<0.2	<0.2	0.5	<0.2	0.4	0.4	0.6	0.2	**1.2**	**1.1**
Copper	ug/l	5	--	--	--	--	--	<1	<1	<1	<1	<1	<1	<1	2	<1	<1
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	--	<30	<30	50	50	80	100	180	70	60	40
Lead	ug/l	-- [31]	--	--	--	--	--	<1	<1	<1	<1	<1	<1	1	<1	<1	<1
Magnesium	ug/l	--	--	--	--	--	--	14000	20000	31000	16000	32000	33000	43000	37000	36000	30000
Manganese	ug/l	--	--	--	--	--	--	<10	<10	<10	10	<10	<10	20	30	10	<10
Mercury	ug/l	0.2 [32]	--	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	<5	<5	<5	<5	<5	<5	<5	<5	5	<5
Nickel	ug/l	25	--	--	--	--	--	<5	<5	<5	<5	<5	<5	<5	<5	10	8
Potassium	ug/l	--	--	--	--	--	--	2000	4000	8000	3000	6000	8000	9000	8000	7000	6000
Silicon	ug/l	--	--	--	--	--	--	500	1400	3000	2100	3500	3400	4800	5100	5200	3600
Silver	ug/l	0.1	--	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	--	--	--	--	--	20000	22000	37000	15000	30000	26000	42000	101000	50000	41000
Strontium	ug/l	--	--	--	--	--	--	1800	2200	4620	1730	3950	3860	5680	4750	5490	4260
Sulfur	ug/l	--	--	--	--	--	--	52333	54300	82700	37300	63300	54700	62000	73300	66000	59000
Thallium	ug/l	0.3 [33]	--	--	--	--	--	<0.1	<0.1	0.2	<0.1	<0.1	0.1	0.1	0.1	**0.5**	**0.6**
Titanium	ug/l	--	--	--	--	--	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Vanadium	ug/l	6	--	--	--	--	--	<1	<1	<1	<1	<1	<1	1	1	3	<1
Zinc	ug/l	30 [29]	--	--	--	--	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Parameter	Unit	PWQO [1]	SS-4 29-May-2007 T-1	SS-4 26-Jun-2007	SS-4 23-Jul-2007 [4]	SS-4 28-Aug-2007	SS-4 28-Sep-2007 [4]	SS-4 25-Oct-2007	SS-4 29-Nov-2007	SS-4 18-Dec-2007	SS-4 08-Jan-2008 [4]	SS-4 06-Feb-2008 [4]	SS-4 31-Mar-2008	SS-4 25-Apr-2008	SS-4 22-May-2008	SS-4 25-Jun-2008	SS-4 09-Jul-2008
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	225000	234000	--	175000	--	172000	174000	233000	--	--	177000	162000	212000	156000	155000
Ammonia, unionized (Field)	ug/l	20	--	<20	--	<20	--	<20	<20	<20	--	--	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	360	310	--	320	--	770	410	150	--	--	180	120	70	240	180
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	2000	<1000	--	<1000	--	<1000	<1000	<1000	--	--	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	<5000	<5000	--	<5000	--	<5000	<5000	<5000	--	--	8000	<4000	7000	5000	6000
Chloride	ug/l	--	40000	40000	--	44000	--	44000	49000	50000	--	--	84000	36000	38000	44000	38000
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	<5	<5	<5	<5	<5
Conductivity (Field)	uS/cm	--	535	520	--	720	--	580	450	485	--	--	540	410	525	635	540
Dissolved Organic Carbon	ug/l	--	2900	3100	--	3600	--	2600	2600	2700	--	--	2300	2200	1900	2000	1800
Hardness, Calcium Carbonate	ug/l	--	404000	364000	--	425000	--	468000	469000	420000	--	--	350000	330000	390000	380000	360000
Nitrate as N	ug/l	--	950	550	--	4120	--	5830	3070	570	--	--	900	1400	400	2000	1500
Nitrite as N	ug/l	--	110	<100	--	420	--	220	<100	<100	--	--	20	40	10	70	20
Nitrogen, Total Kjeldahl	ug/l	--	490	500	--	660	--	860	540	410	--	--	500	700	400	700	600
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.5	7.4	--	7.4	--	7.4	7.4	7.4	--	--	7.4	7.4	7.6	7.7	7.8
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	50	30	--	50	--	<20	<10	<10	--	--	6	8	<2	6	9
Sulphate	ug/l	--	213000	176000	--	329000	--	350000	335000	227000	--	--	189000	191000	215000	242000	240000
Temperature (Field)	deg c	-- [24]	6	8	--	21	--	8	3	2	--	--	2	5	14	15	15
Total Dissolved Solids	ug/l	--	619000	590000	--	770000	--	812000	805000	663000	--	--	630000	510000	553000	610000	590000
Total Suspended Solids	ug/l	--	5000	<2000	--	17000	--	3000	13000	5000	--	--	<10000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	<10	<10	--	<10	--	<10	<10	<10	--	--	--	--	--	--	--
Barium	ug/l	--	140	140	--	110	--	120	110	180	--	--	84	110	140	130	110
Beryllium	ug/l	-- [27]	<1	<1	--	<1	--	<1	<1	<1	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**320**	**280**	--	**390**	--	**420**	**310**	**290**	--	--	170	**210**	**230**	**270**	**260**
Cadmium	ug/l	0.2 [29]	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	--	--	--	--	--	--	--
Calcium	ug/l	--	94000	88000	--	106000	--	115000	117000	104000	--	--	93000	94000	91000	94000	98000
Chromium	ug/l	-- [30]	2	<1	--	<1	--	1	1	2	--	--	<5	<5	<5	<5	<5
Cobalt	ug/l	0.9	**1.0**	0.5	--	0.3	--	0.6	0.6	0.5	--	--	--	--	--	--	--
Copper	ug/l	5	<1	<1	--	**68**	--	<1	1	1	--	--	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	**<5**	**<5**	**<5**	**<5**	**<5**
Iron	ug/l	300	80	40	--	<30	--	30	40	190	--	--	<100	<100	<100	<100	<100
Lead	ug/l	-- [31]	<1	<1	--	<1	--	2	<1	<1	--	--	--	--	--	--	--
Magnesium	ug/l	--	41000	35000	--	39000	--	44000	43000	39000	--	--	27000	30000	34000	32000	33000
Manganese	ug/l	--	10	10	--	10	--	<10	10	20	--	--	9	8	16	9	8
Mercury	ug/l	0.2 [32]	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	--	--	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	<5	--	8	--	12	9	<5	--	--	--	--	--	--	--
Nickel	ug/l	25	6	<5	--	<5	--	6	6	<5	--	--	--	--	--	--	--
Potassium	ug/l	--	7000	6000	--	7000	--	9000	6000	6000	--	--	4600	5800	5600	6300	6700
Silicon	ug/l	--	5600	4900	--	2100	--	4100	4300	5800	--	--	3100	3400	4400	3300	3700
Silver	ug/l	0.1	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	--	--	--	--	--	--	--
Sodium	ug/l	--	48000	42000	--	73000	--	77000	63000	48000	--	--	65000	44000	36000	49000	41000
Strontium	ug/l	--	4690	4250	--	5030	--	6500	6020	5000	--	--	3600	4100	4400	5100	4700
Sulfur	ug/l	--	71000	58700	--	109700	--	116700	111700	75700	--	--	61000	60000	72000	96000	93000
Thallium	ug/l	0.3 [33]	**0.5**	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	--	--	0.06	0.05	0.07	0.08	0.1
Titanium	ug/l	--	<10	<10	--	<10	--	<10	<10	<10	--	--	--	--	--	--	--
Vanadium	ug/l	6	1	<1	--	1	--	1	<1	<1	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	<10	<10	--	<10	--	<10	<10	<10	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	<1	<1	--	<1	--	<1	<1	<1	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-4 08-Aug-2008	SS-4 26-Sep-2008 [5]	SS-4 23-Oct-2008 [4]	SS-4 20-Nov-2008 [4]	SS-4 22-Dec-2008 [4]	SS-4 20-Jan-2009 [4]	SS-4 24-Feb-2009 [4]	SS-4 31-Mar-2009	SS-4 20-Apr-2009	SS-4 22-May-2009	SS-4 23-Jun-2009	SS-4 27-Jul-2009	SS-4 13-Aug-2009	SS-4 24-Sep-2009 [4]	SS-4 15-Oct-2009
								SS-4	SS-4	T-1	SS-4	SS-4	T-1	SS-4	SS-4	SS-4	SS-4
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	145000	--	--	--	--	--	--	182000	125000	166000	174000	117000	143000	--	205000
Ammonia, unionized (Field)	ug/l	20	<20	--	--	--	--	--	--	<20	<20	<20	<20	<20	<20	--	<20
Ammonia Nitrogen	ug/l	--	290	--	--	--	--	--	--	230	240	270	290	480	<50	--	570
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	--	--	--	--	--	--	<2000	<2000	<2000	<2000	<2000	<2000	--	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	6000	--	--	--	--	--	--	5000	7000	5000	6000	11000	5000	--	17000
Chloride	ug/l	--	39000	--	--	--	--	--	--	57000	59000	72000	80000	49000	53000	--	61000
Chromium (III)	ug/l	8.9 [22]	<5	--	--	--	--	--	--	<5	<5	<5	<5	<5	<5	--	<5
Conductivity (Field)	uS/cm	--	625	--	--	--	--	--	--	820	785	685	805	985	970	--	1090
Dissolved Organic Carbon	ug/l	--	1800	--	--	--	--	--	--	1900	1800	1700	1900	1500	1300	--	2300
Hardness, Calcium Carbonate	ug/l	--	370000	--	--	--	--	--	--	390000	280000	390000	430000	390000	390000	--	480000
Nitrate as N	ug/l	--	700	--	--	--	--	--	--	2600	2000	4300	3200	<100	3000	--	2900
Nitrite as N	ug/l	--	40	--	--	--	--	--	--	40	20	50	150	<10	<10	--	100
Nitrogen, Total Kjeldahl	ug/l	--	700	--	--	--	--	--	--	600	800	600	600	900	400	--	900
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.4	--	--	--	--	--	--	7.9	8.2	8.0	8.2	8.0	8.1	--	8.0
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	<2	--	--	--	--	--	--	5	9	12	6	<2	2	--	<2
Sulphate	ug/l	--	270000	--	--	--	--	--	--	290000	160000	310000	310000	370000	320000	--	340000
Temperature (Field)	deg c	-- [24]	13	--	--	--	--	--	--	4	8	13	14	18.0	18	--	6
Total Dissolved Solids	ug/l	--	580000	--	--	--	--	--	--	660000	480000	695000	695000	700000	650000	--	750000
Total Suspended Solids	ug/l	--	<10000	--	--	--	--	--	--	<10000	<10000	<10000	<10000	1000	<1000	--	<1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	110	--	--	--	--	--	--	90	56	85	110	48	59	--	86
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**280**	--	--	--	--	--	--	**300**	130	**330**	**400**	**340**	**290**	--	**390**
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	96000	--	--	--	--	--	--	110000	81000	100000	110000	88000	110000	--	110000
Chromium	ug/l	-- [30]	<5	--	--	--	--	--	--	<5	<5	<5	<5	<5	<5	--	<5
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	<1	--	--	--	--	--	--	<1	<1	<1	<1	<1	<1	--	<1
Hexavalent Chromium	ug/l	1 [22]	**<5**	--	--	--	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5
Iron	ug/l	300	<100	--	--	--	--	--	--	<100	<100	<100	<100	<100	<100	--	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	32000	--	--	--	--	--	--	39000	20000	36000	42000	28000	35000	--	47000
Manganese	ug/l	--	13	--	--	--	--	--	--	6	11	7	9	2	<2	--	14
Mercury	ug/l	0.2 [32]	<0.1	--	--	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	6100	--	--	--	--	--	--	7100	4200	7700	8800	8100	8900	--	8000
Silicon	ug/l	--	3500	--	--	--	--	--	--	3600	1900	3500	4000	2100	2900	--	4400
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	41000	--	--	--	--	--	--	61000	44000	70000	83000	85000	57000	--	76000
Strontium	ug/l	--	4700	--	--	--	--	--	--	5700	2900	5400	6600	4300	4600	--	7000
Sulfur	ug/l	--	93000	--	--	--	--	--	--	86000	57000	93000	100000	110000	100000	--	100000
Thallium	ug/l	0.3 [33]	0.09	--	--	--	--	--	--	0.09	0.08	0.08	0.13	0.16	0.24	--	0.14
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-4 18-Nov-2009 SS-4	SS-4 10-Dec-2009 SS-4	SS-4 20-Jan-2010 [4] SS-4	SS-4 03-Feb-2010 [4] SS-4	SS-4 31-Mar-2010 SS-4	SS-4 06-Apr-2010 SS-4	SS-4 15-Apr-2010 SS-4	SS-4 06-May-2010 [4] SS-4	SS-4 02-Jun-2010 SS-4	SS-4 07-Jul-2010 SS-4	SS-4 18-Aug-2010 SS-4	SS-4 29-Sep-2010 SS-4	SS-4 28-Oct-2010 SS-4	SS-4 22-Nov-2010 SS-4	SS-4 09-Dec-2010 SS-4
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	177000	171000	--	--	157000	174000	--	--	153000	145000	127000	90000	130000	137000	135000
Ammonia, unionized (Field)	ug/l	20	<20	<20	--	--	<20	<20	--	--	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	800	690	--	--	140	330	--	--	270	<50	<50	<50	<50	60	180
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	--	--	<2000	<2000	--	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	6000	5000	--	--	11000	6000	--	--	10000	11000	8000	<4000	6000	18000	4000
Chloride	ug/l	--	68000	52000	--	--	56000	61000	--	--	81000	83000	71000	44000	69000	63000	47000
Chromium (III)	ug/l	8.9 [22]	<5	<5	--	--	<5	<5	--	--	<5	<5	<5	<5	<5	<5	<5
Conductivity (Field)	uS/cm	--	1135	1005	--	--	1060	1090	--	--	1120	1035	1010	825	1045	1020	928
Dissolved Organic Carbon	ug/l	--	1700	1600	--	--	1600	1600	--	--	1800	1600	1600	1400	1600	1900	2300
Hardness, Calcium Carbonate	ug/l	--	420000	370000	--	--	400000	340000	--	--	420000	470000	470000	340000	470000	430000	390000
Nitrate as N	ug/l	--	4900	4500	--	--	1600	1300	--	--	1300	1500	1600	1800	2100	1900	1700
Nitrite as N	ug/l	--	190	110	--	--	50	60	--	--	<10	<10	10	20	<10	10	20
Nitrogen, Total Kjeldahl	ug/l	--	1300	1000	--	--	700	800	--	--	600	300	300	400	400	1400	500
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.1	8	--	--	7.9	7.9	--	--	7.9	8.1	8.0	7.8	8.1	8.2	7.85
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	<2	<2	--	--	5	<2	--	--	<2	<2	<2	11	<2	5	22
Sulphate	ug/l	--	380000	320000	--	--	330000	320000	--	--	370000	380000	360000	280000	350000	330000	290000
Temperature (Field)	deg c	-- [24]	5	3	--	--	5	9	--	--	14	22	23	12	5	4	2.0
Total Dissolved Solids	ug/l	--	835000	730000	--	--	672000	714000	--	--	774000	774000	740000	546000	732000	686000	618000
Total Suspended Solids	ug/l	--	4000	2000	--	--	42000	<1000	<1000	--	<1000	1000	<1000	4000	3000	1000	<1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	62	44	--	--	89	47	--	--	51	58	56	45	52	53	70
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**490**	**320**	--	--	**300**	**430**	--	--	**490**	**420**	**360**	190	**330**	**240**	170
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	100000	82000	--	--	190000	98000	--	--	110000	130000	120000	96000	140000	120000	120000
Chromium	ug/l	-- [30]	<5	<5	--	--	<5	<5	--	--	<5	<5	<5	<5	<5	<5	<5
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	<1	<1	--	--	<1	<1	--	--	<1	<1	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	<0.5	<0.5	--	--	<0.5	**<5**	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Iron	ug/l	300	<100	<100	--	--	**900**	<100	--	--	<100	<100	<100	<100	<100	<100	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	42000	32000	--	--	37000	37000	--	--	45000	46000	38000	25000	44000	36000	32000
Manganese	ug/l	--	7	5	--	--	29	6	--	--	3	5	5	4	3	5	13
Mercury	ug/l	0.2 [32]	<0.1	<0.1	--	--	<0.1	<0.1	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	8700	5900	--	--	6900	6900	--	--	8300	8900	8000	5600	8500	6300	6200
Silicon	ug/l	--	3600	2700	--	--	4200	3200	--	--	3200	3200	2400	1600	2900	2400	2200
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	110000	77000	--	--	72000	100000	--	--	95000	80000	63000	48000	77000	61000	49000
Strontium	ug/l	--	6800	5500	--	--	5500	6400	--	--	7900	7600	6900	4300	6700	5800	5100
Sulfur	ug/l	--	110000	100000	--	--	100000	110000	--	--	130000	130000	130000	89000	150000	110000	95000
Thallium	ug/l	0.3 [33]	0.16	0.11	--	--	0.13	0.10	--	--	0.12	0.14	0.14	0.09	0.12	0.07	0.11
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO (1)	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4
			12-Jan-2011	23-Feb-2011 (7)	30-Mar-2011	14-Apr-2011	12-May-2011	20-Jun-2011	19-Jul-2011	26-Aug-2011 (4)	21-Sep-2011	28-Oct-2011	14-Nov-2011	08-Dec-2011 (9)	11-Jan-2012	06-Feb-2012	13-Mar-2012 (9)
			SS-4	SS-4	SS-4	SS-4	SS 4	SW-1	SS-4	SS-4	S-1	SS-4	SS-4	SS - 4	SS -4	SS- 4	SS-4
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- (21)	180000	141000	198000	105000	157000	160000	123000	--	123000	135000	156000	133000	187000	213000	110000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	--	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	220	330	260	340	130	<50	<50	--	<50	<50	510	280	70	110	270
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	3000	<2000	<2000	<2000	<2000	<2000	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	14000	7000	14000	8000	8000	15000	11000	--	8000	7000	9000	5000	7000	12000	11000
Chloride	ug/l	--	74000	57000	63000	40000	71000	70000	45000	--	87000	61000	70000	45000	66000	73000	48000
Chromium (III)	ug/l	8.9 (22)	<5	<5	<5	<5	<5	<5	<5	--	<5	<5	<5	<5	<5	<5	<5
Conductivity (Field)	uS/cm	--	895	905	1240	1195	1185	1167	1015	--	1097	1060	985	1105	1095	1105	862
Dissolved Organic Carbon	ug/l	--	2300	3000	2100	1800	1900	1900	1800	--	1400	1500	1800	1600	1700	2100	2000
Hardness, Calcium Carbonate	ug/l	--	450000	330000	480000	320000	440000	470000	420000	--	550000	510000	540000	450000	520000	560000	300000
Nitrate as N	ug/l	--	1000	1000	500	1600	1300	1000	800	--	1200	2000	1400	2400	1300	500	1400
Nitrite as N	ug/l	--	20	20	<10	40	10	<10	<10	--	<10	20	<10	40	<10	<10	17
Nitrogen, Total Kjeldahl	ug/l	--	500	700	600	700	500	300	400	--	400	300	700	600	400	400	600
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.1	8.2	7.9	8.2	7.7	7.90	7.6	--	7.32	7.7	7.5	7.5	7.9	7.9	7.6
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- (23)	5	11	7	7	19	13	3	--	11	5	3	12	<2	6	13
Sulphate	ug/l	--	300000	230000	290000	250000	360000	370000	360000	--	450000	360000	380000	330000	360000	340000	240000
Temperature (Field)	deg c	-- (24)	2	2	3	7	10	20.4	21	--	17.1	12	6	2	1	2	2
Total Dissolved Solids	ug/l	--	708000	554000	692000	494000	702000	840000	698000	--	1010000	874000	910000	788000	896000	814000	552000
Total Suspended Solids	ug/l	--	1000	<1000	1000	2000	<1000	2000	1000	--	2000	<1000	2000	1000	<1000	1000	<1000
Turbidity	ntu	-- (25)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- (26)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	70	60	73	55	53	65	58	--	49	50	53	50	55	62	44
Beryllium	ug/l	-- (27)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 (28)	**290**	**210**	**280**	160	**270**	**310**	**280**	--	**400**	**300**	**340**	**230**	**350**	**360**	130
Cadmium	ug/l	0.2 (29)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	120000	87000	120000	92000	120000	150000	130000	--	150000	140000	150000	130000	150000	160000	91000
Chromium	ug/l	-- (30)	<5	<5	<5	<5	<5	<5	<5	--	<5	<5	<5	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	0.7	0.6	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.50	0.58	0.78	<0.50
Copper	ug/l	5	<1	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	1.4	<1.0	<1.0	<1.0
Hexavalent Chromium	ug/l	1 (22)	**<5**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	**1.2**
Iron	ug/l	300	<100	<100	<100	<100	<100	<100	100	--	<100	<100	<100	<100	<100	160	<100
Lead	ug/l	-- (31)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	41000	29000	43000	24000	37000	47000	36000	--	48000	41000	51000	39000	52000	57000	23000
Manganese	ug/l	--	17	11	12	8	4	4	4	--	3	5	6	7.8	12	24	7.9
Mercury	ug/l	0.2 (32)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	6600	5100	6400	5700	6600	8400	8000	--	10000	7600	8000	6900	7300	8000	4900
Silicon	ug/l	--	3300	2200	3700	1600	2600	2900	2300	--	3000	2600	3500	2700	3700	4600	1900
Silver	ug/l	0.1	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	70000	52000	57000	47000	70000	83000	67000	--	79000	63000	78000	61000	80000	86000	46000
Strontium	ug/l	--	6600	4800	7000	4600	6400	7500	6500	--	7600	6900	8100	6600	8000	8000	4300
Sulfur	ug/l	--	100000	79000	100000	90000	120000	130000	130000	--	170000	140000	140000	130000	140000	140000	75000
Thallium	ug/l	0.3 (33)	0.07	0.06	0.07	0.11	0.11	0.11	0.11	--	0.17	0.11	0.08	0.11	0.071	0.060	0.084
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 (29)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 (34)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-4 10-Apr-2012 SS-4	SS-4 24-May-2012 SS-4	SS-4 29-Jun-2012 T-2	SS-4 20-Jul-2012 S-4	SS-4 29-Aug-2012 SS-4	SS-4 26-Sep-2012 SS-4	SS-4 10-Oct-2012 SS-4	SS-4 28-Nov-2012 SS-4	SS-4 17-Dec-2012 SS-4	SS-4 16-Jan-2013 [9] SS-4	SS-4 26-Feb-2013 SS-4	SS-4 25-Mar-2013 SS-4	SS-4 01-Apr-2013 [4] ss4	SS-4 10-May-2013 SS-4	SS-4 21-Jun-2013 [43] SS-4
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	170000	130000	160000	170000	140000	130000	160000	170000	190000	140000	190000	140000	--	97000	120000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	--	<20	<20
Ammonia Nitrogen	ug/l	--	54	<50	<50	<50	<50	170	73	90	170	160	91	83	--	100	65
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	--	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	7900	<4000	6300	<4000	7800	7500	6600	12000	<4000	5200	7700	6700	--	6600	<4000
Chloride	ug/l	--	70000	46000	80000	82000	77000	43000	60000	67000	72000	69000	81000	72000	--	43000	65000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	<5	<5
Conductivity (Field)	uS/cm	--	940	1010	1087	1045	1104	1150	1190	1225	1205	950	1062	941	--	886	1040
Dissolved Organic Carbon	ug/l	--	1800	2000	1800	1800	1700	1700	1600	1500	1700	1600	1800	2000	--	1300	1500
Hardness, Calcium Carbonate	ug/l	--	450000	480000	540000	500000	550000	510000	600000	580000	690000	540000	560000	440000	--	330000	450000
Nitrate as N	ug/l	--	1300	920	500	210	370	1600	950	940	670	1100	580	2000	--	1700	1800
Nitrite as N	ug/l	--	<10	<10	13	<10	<10	<10	<10	<10	<10	<10	<10	26	--	14	<10
Nitrogen, Total Kjeldahl	ug/l	--	360	<100	920	260	620	360	340	430	420	740	720	420	--	660	370
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.8	7.9	8.21	7.8	7.8	7.9	8.0	8.1	8.0	7.9	6.97	6.92	--	8.2	7.75
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	<2	4	<2	3	<2	<2	5	5	9	<2	5	<2	--	4	<4 [35]
Sulphate	ug/l	--	320000	360000	390000	350000	400000	410000	440000	440000	450000	370000	390000	330000	--	270000	330000
Temperature (Field)	deg c	-- [24]	6	13	21.1	22	20	9	9	3	2	2	2.2	2.0	--	19	17.0
Total Dissolved Solids	ug/l	--	784000	718000	854000	864000	998000	902000	984000	998000	1010000	874000	670000	710000	--	530000	742000
Total Suspended Solids	ug/l	--	2000	<1000	<1000	<1000	<1000	2000	1000	<1000	1000	2000	1000	1000	--	2000	<1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	54	56	49	50	60	49	51	42	50	47	49	43	--	42	56
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**280**	190	**320**	**360**	**420**	**300**	**330**	**350**	**350**	**240**	**280**	170	--	130	110
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	130000	130000	140000	130000	150000	150000	150000	150000	170000	140000	140000	130000	--	97000	140000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	0.54	<0.50	<0.50	<0.50	<0.50	<0.50	0.54	<0.50	--	<0.50	<0.50
Copper	ug/l	5	1.1	<1.0	<1.0	1.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**1.3**	<0.50	0.55	--	<0.50	<0.50
Iron	ug/l	300	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	--	<100	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	40000	33000	45000	45000	51000	41000	52000	54000	62000	43000	47000	36000	--	24000	19000
Manganese	ug/l	--	5.5	5.8	2.0	7.6	6.0	3.9	5.3	5.3	9.4	8.1	13	5.6	--	<2.0	15
Mercury	ug/l	0.2 [32]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	6600	6100	7800	7800	9000	7700	7700	7100	7600	6900	6100	7000	--	6300	3300
Silicon	ug/l	--	2900	2200	3000	3300	3300	2600	3300	3100	3700	2500	3100	2300	--	1500	1400
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10
Sodium	ug/l	--	64000	47000	66000	63000	73000	61000	72000	81000	89000	71000	67000	62000	--	46000	46000
Strontium	ug/l	--	7300	5600	7900	8200	8400	7500	7900	8400	10000	7100	8200	5500	--	4100	2500
Sulfur	ug/l	--	120000	110000	150000	140000	150000	160000	160000	160000	160000	140000	140000	110000	--	88000	68000
Thallium	ug/l	0.3 [33]	0.070	0.078	0.10	0.10	0.15	0.11	0.090	<0.050	0.050	0.053	<0.050	0.081	--	0.073	<0.050
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-4 29-Jul-2013 SS-4	SS-4 14-Aug-2013 SS-4	SS-4 26-Sep-2013 SS-4	SS-4 25-Oct-2013 SS-4	SS-4 22-Nov-2013 [10] SS-4	SS-4 23-Dec-2013 SS-4	SS-4 09-Jan-2014 [4] s4	SS-4 04-Feb-2014 [4] s4	SS-4 26-Mar-2014 [10] SS-4	SS-4 22-Apr-2014 [9] SS-4	SS-4 21-May-2014 SS-4	SS-4 19-Jun-2014 SS-4	SS-4 15-Jul-2014 SS-4	SS-4 25-Aug-2014 SS-4	SS-4 23-Sep-2014 SS-4
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	120000	110000	120000	150000	170000	180000	--	--	190000	110000	120000	150000	120000	96000	130000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	--	--	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	62	<50	<50	65	<50	60	--	--	250	280	52	<50	<50	<50	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000	--	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	<4000	<4000	7800	4000	7300	<4000	--	--	4600	5100	<4000	<4000	<4000	<4000	<4000
Chloride	ug/l	--	59000	48000	46000	49000	74000	81000	--	--	82000	38000	49000	75000	45000	35000	49000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	<5	--	--	<5	<5	<5	<5	<5	<5	<5
Conductivity (Field)	uS/cm	--	800	1044	1047	1025	1297	1370	--	--	1344	1285	1305	1136	967	1210	1170
Dissolved Organic Carbon	ug/l	--	1400	1400	1600	2100	1900	1500	--	--	1700	1300	1400	1500	1200	1000	1500
Hardness, Calcium Carbonate	ug/l	--	450000	440000	460000	480000	580000	560000	--	--	540000	300000	410000	490000	440000	350000	450000
Nitrate as N	ug/l	--	1100	880	930	1000	790	670	--	--	660	1710	1940	1880	1200	1090	1050
Nitrite as N	ug/l	--	<10	<10	<10	14	<10	<10	--	--	<10	<10	10	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	280	400	460	340	280	220	--	--	620	530	630	490	360	300	300
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.00	6.97	6.85	7.5	7.60	7.61	--	--	7.00	7.8	7.9	7.65	7.97	7.9	7.9
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	<2	<2	<2	6	<4 [35]	<2	--	--	<10 [35]	<2	<2	80	<2	<2	<2
Sulphate	ug/l	--	350000	340000	380000	360000	410000	440000	--	--	380000	230000	320000	370000	330000	310000	370000
Temperature (Field)	deg c	-- [24]	20.9	18.5	14.0	6	6.0	3.3	--	--	4.5	6	8	13.6	19.1	19	19
Total Dissolved Solids	ug/l	--	822000	754000	790000	818000	920000	994000	--	--	924000	504000	662000	942000	674000	582000	802000
Total Suspended Solids	ug/l	--	1000	8000	2000	6000	<1000	<1000	--	--	<1000	2000	<1000	2000	1000	1000	3000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	50	41	44	70	45	45	--	--	44	36	53	49	49	47	43
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**240**	**260**	**250**	**240**	**290**	**330**	--	--	**280**	97	150	**240**	**210**	150	**250**
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	130000	130000	130000	150000	150000	160000	--	--	160000	87000	120000	140000	130000	110000	140000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	6.5	<5.0	<5.0	--	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	0.76	<0.50	0.53	--	--	0.53	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	<1.0	<1.0	1.2	**22**	<1.0	<1.0	--	--	<1.0	<1.0	<1.0	1.2	<1.0	1.7	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	<0.50	0.75	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	<100	<100	<100	**2900**	<100	<100	--	--	<100	<100	<100	<100	<100	<100	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	35000	32000	36000	40000	49000	55000	--	--	53000	21000	29000	41000	32000	26000	37000
Manganese	ug/l	--	2.5	4.1	3.0	30	5.0	11	--	--	12	2.4	2.3	3.4	<2.0	2.7	2.2
Mercury	ug/l	0.2 [32]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	7800	7400	7800	7700	7100	7400	--	--	7100	5800	7300	8500	8600	8000	9100
Silicon	ug/l	--	2400	2200	2500	2500	2900	3400	--	--	3500	1500	2000	2600	2200	1700	2300
Silver	ug/l	0.1	<0.10	<0.10	<0.10	**0.13**	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	50000	50000	50000	54000	67000	79000	--	--	71000	31000	45000	62000	47000	34000	51000
Strontium	ug/l	--	6200	6000	5900	6300	8100	8800	--	--	7900	3500	4500	6200	5300	3900	5700
Sulfur	ug/l	--	130000	120000	140000	130000	160000	180000	--	--	140000	86000	110000	130000	110000	100000	130000
Thallium	ug/l	0.3 [33]	0.15	0.15	0.093	0.090	0.062	0.055	--	--	0.057	0.052	0.074	0.091	0.097	0.12	0.094
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-4 27-Oct-2014 [10] SS-4	SS-4 20-Nov-2014 [10] SS-4	SS-4 09-Dec-2014 [11] SS-4	SS-4 21-Jan-2015 [4] ss4	SS-4 10-Feb-2015 [4] ss4	SS-4 16-Mar-2015 SS-4	SS-4 07-Apr-2015 SS-4	SS-4 21-May-2015 [10] SS-4	SS-4 23-Jun-2015 [10] SS-4	SS-4 22-Jul-2015 [12] SS-4	SS-4 28-Aug-2015 [10] SS-4	SS-4 25-Sep-2015 [9] SS-4	SS-4 27-Oct-2015 [10] SS-4
General Chemistry															
Alkalinity (Total as CaCO3)	ug/l	-- [21]	140000	150000	170000	--	--	180000	140000	160000	130000	130000	110000	100000	140000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	--	--	<20	<20	<20	<20	20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<50	<50	<50	--	--	150	81	<50	--	<50	<50	<50	510
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	--	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	<4000	6600	<4000	--	--	6300	10000	7400	8400	<4000	6400	<4000	4600
Chloride	ug/l	--	57000	71000	71000	--	--	79000	60000	83000	89000	97000	72000	59000	83000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	--	--	<5	<5	<5	<5	<5	<5	<5	<5
Conductivity (Field)	uS/cm	--	1123	1214	1245	--	--	1277	986	1080	1174	685	1103	1115	1265
Dissolved Organic Carbon	ug/l	--	1500	1600	1600	--	--	1800	1300	1500	1400	1800	1200	1200	1400
Hardness, Calcium Carbonate	ug/l	--	520000	530000	560000	--	--	580000	420000	530000	550000	600000	500000	460000	590000
Nitrate as N	ug/l	--	1060	1000	1300	--	--	860	970	1050	1280	860	960	1160	550
Nitrite as N	ug/l	--	<10	<10	<10	--	--	<10	<10	<10	<10	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	190	170	170	--	--	430	270	290	430	320	350	250	1100
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.54	8.24	6.65	--	--	7.82	7.01	7.9	7.96	6.67	7.51	7.5	**6.31**
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	2	<4	<4	--	--	7	<4	4	<4	<4	<4	<4	6
Sulphate	ug/l	--	380000	390000	410000	--	--	380000	310000	360000	380000	430000	390000	380000	430000
Temperature (Field)	deg c	-- [24]	9.9	2.8	3.5	--	--	5.1	4.6	12	20.6	21.0	20.2	15	9.4
Total Dissolved Solids	ug/l	--	750000	830000	902000	--	--	848000	636000	914000	1000000	986000	994000	772000	986000
Total Suspended Solids	ug/l	--	<1000	1000	1000	--	--	<1000	<2000	2000	<2000	1000	<2000	<1000	<1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	47	44	46	--	--	46	36	41	44	48	43	42	40
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**240**	**270**	**270**	--	--	**240**	170	**220**	**230**	**260**	**230**	170	**230**
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	160000	160000	160000	--	--	150000	110000	150000	160000	160000	150000	140000	150000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	<1.0	<1.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.50	<0.50	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.70	<0.50
Iron	ug/l	300	<100	<100	<100	--	--	<100	<100	<100	<100	<100	<100	<100	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	42000	46000	48000	--	--	43000	31000	44000	43000	47000	39000	33000	44000
Manganese	ug/l	--	<2.0	3.0	5.2	--	--	14	7.6	2.3	2.3	2.0	<2.0	2.3	3.1
Mercury	ug/l	0.2 [32]	<0.10	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	8900	8500	8000	--	--	6700	5300	8000	9400	9900	9500	9100	8300
Silicon	ug/l	--	2600	2900	3100	--	--	2700	2100	2700	2200	2600	2200	1900	2300
Silver	ug/l	0.1	<0.10	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	56000	64000	64000	--	--	56000	44000	60000	56000	61000	46000	37000	53000
Strontium	ug/l	--	6700	7000	7000	--	--	6300	4600	6200	6100	6600	5500	4600	6700
Sulfur	ug/l	--	150000	160000	150000	--	--	150000	99000	140000	--	160000	150000	130000	150000
Thallium	ug/l	0.3 [33]	0.10	0.079	0.072	--	--	0.063	0.053	0.080	0.10	0.11	0.13	0.10	0.10
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols															
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-4 20-Nov-2015 SS-4	SS-4 10-Dec-2015 [10] SS-4	SS-4 26-Jan-2016 [10] SS-4	SS-4 23-Feb-2016 SS-4	SS-4 21-Mar-2016 [9] SS-4	SS-4 26-Apr-2016 [9] SS-4	SS-4 31-May-2016 SS-4	SS-4 30-Jun-2016 SS-4	SS-4 13-Jul-2016 SS-4	SS-4 04-Aug-2016 SS-4	SS-4 20-Sep-2016 SS-4	SS-4 26-Oct-2016 [9] SS-4	SS-4 11-Nov-2016 [9] SS-4	SS-4 14-Dec-2016 SS-4	SS-4 23-Jan-2017 SS-4
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	130000	140000	140000	150000	100000	140000	160000	150000	120000	110000	100000	110000	130000	150000	150000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<50	<50	98	<50	120	<50	<50	<50	<50	<50	<50	<50	<50	190	160
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	5100	<4000	<4000	<4000	4700	6400	<4000	14000	14000	6000	<4000	6700	4100	<4000	<4000
Chloride	ug/l	--	72000	79000	76000	78000	49000	79000	110000	100000	83000	84000	49000	48000	65000	68000	82000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Conductivity (Field)	uS/cm	--	1136	1304	1230	1220	749	1039	1251	725	855	1005	1027	1120	1171	1035	1280
Dissolved Organic Carbon	ug/l	--	1300	1300	1400	1500	1300	1600	1600	1600	1400	1500	1100	1400	1300	1500	1500
Hardness, Calcium Carbonate	ug/l	--	600000	550000	510000	510000	310000	470000	600000	660000	530000	530000	480000	480000	600000	580000	540000
Nitrate as N	ug/l	--	830	740	1150	1010	1300	1360	790	650	1150	1080	770	1330	1450	1200	920
Nitrite as N	ug/l	--	<10	<10	15	<10	15	<10	<10	<10	15	12	<10	15	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	320	240	590	230	360	300	240	270	270	400	300	<100	160	430	250
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.87	8.00	7.31	7.08	7.69	8.02	6.86	7.9	7.9	7.8	8.06	7.8	7.52	7.7	6.65
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	<4	<4	<4	4	<4	<4	<4	<4	<4	<4	4	<4	<4	<4	<4
Sulphate	ug/l	--	400000	410000	370000	360000	210000	340000	380000	430000	390000	420000	390000	360000	420000	390000	390000
Temperature (Field)	deg c	-- [24]	7.3	5.4	3.2	3.3	3.7	9.0	21.0	21	21	20	20.6	16	7.0	2	2.6
Total Dissolved Solids	ug/l	--	924000	960000	864000	860000	466000	702000	992000	1180000	986000	1040000	788000	846000	938000	936000	912000
Total Suspended Solids	ug/l	--	2000	<1000	<2000	1000	12000	<1000	1000	3000	2000	2000	4000	2000	<1000	<1000	1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	38	38	42	37	39	40	45	43	45	47	41	40	35	38	49
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	190	**220**	180	180	83	140	190	**260**	**230**	**220**	200	190	190	200	**210**
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	150000	150000	140000	150000	90000	140000	150000	170000	160000	160000	140000	130000	150000	160000	180000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	0.63	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.8	<1.0	<1.0	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.50	**1.4**	<0.50	**1.8**	**1.2**	<0.50	<0.50	<0.50	<0.50	<0.50	**1.2**	0.58	<0.50	<0.50
Iron	ug/l	300	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	41000	44000	39000	42000	20000	33000	44000	48000	42000	40000	34000	36000	41000	43000	50000
Manganese	ug/l	--	3.3	3.5	5.4	5.8	4.6	3.1	2.2	2.0	2.0	<2.0	3.6	2.2	<2.0	3.4	6.7
Mercury	ug/l	0.2 [32]	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	7800	7900	9900	7300	7000	8000	8500	10000	11000	12000	9600	12000	10000	9200	10000
Silicon	ug/l	--	2200	2400	2300	2400	1500	2200	2500	2800	2400	2200	1900	2100	2300	2500	3000
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	50000	56000	51000	53000	36000	48000	61000	65000	53000	48000	42000	47000	51000	50000	62000
Strontium	ug/l	--	5600	6200	5400	5400	2700	5100	6400	7000	5900	5800	5000	5100	5900	5600	6800
Sulfur	ug/l	--	140000	150000	140000	130000	75000	120000	140000	160000	150000	150000	130000	140000	160000	150000	150000
Thallium	ug/l	0.3 [33]	0.066	0.070	0.055	0.060	0.072	0.068	0.088	0.12	0.14	0.12	0.11	0.082	0.070	0.078	0.070
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-4 14-Feb-2017 SS-4	SS-4 27-Mar-2017 [14] SS-4	SS-4 21-Apr-2017 [14] SS-4	SS-4 23-May-2017 SS-4	SS-4 26-Jun-2017 SS-4	SS-4 21-Jul-2017 SS-4	SS-4 11-Aug-2017 SS-4	SS-4 08-Sep-2017 SS-4	SS-4 17-Oct-2017 [14] SS-4	SS-4 17-Nov-2017 SS-4	SS-4 07-Dec-2017 [14] SS-4	SS-4 22-Jan-2018 SS-4	SS-4 16-Feb-2018 SS-4	SS-4 13-Mar-2018 SS-4	SS-4 24-Apr-2018 SS-4
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	180000	140000	120000	150000	140000	120000	130000	120000	130000	130000	160000	190000	215000	149000	131000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<50	68	83	<50	83	220	80	<50	74	<50	<50	110	110	70	200
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<1000	<1000	<1000	<1000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	<4000	6200	5400	6600	4400	4100	<4000	<4000	6000	4000	<4000	6000	<5000	<5000	<5000
Chloride	ug/l	--	96000	82000	77000	110000	110000	66000	100000	92000	96000	75000	86000	74000	104000	91000	114000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**<10**	<1	**<10**	**<10**
Conductivity (Field)	uS/cm	--	1098	971	1068	1289	1342	1118	1318	1164	1202	1143	1257	1242	1379	1108	1120
Dissolved Organic Carbon	ug/l	--	1800	1600	1700	1600	1600	1300	1800	1500	1500	1600	1700	1800	1500	1800	1700
Hardness, Calcium Carbonate	ug/l	--	600000	400000	420000	590000	620000	500000	560000	510000	510000	510000	530000	566000	586000	477000	440000
Nitrate as N	ug/l	--	710	1170	2410	1790	710	1700	1320	870	760	1320	940	340	320	770	920
Nitrite as N	ug/l	--	<10	<10	18	<10	<10	<10	<10	<10	<10	10	<10	<100	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	230	110	300	380	350	240	300	170	1300	220	130	200	200	200	300
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.8	7.63	7.21	7.08	6.88	7.30	7.71	6.68	7.58	6.63	6.78	**6.15**	**6.37**	7.72	7.52
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	<4	<4	<4	<4	4	<4	<4	<4	<4	<4	6	<2	<2	14	54
Sulphate	ug/l	--	420000	270000	300000	370000	400000	380000	390000	360000	380000	360000	370000	378000	410000	321000	453000
Temperature (Field)	deg c	-- [24]	2	3.1	7.4	11.8	15.1	18.3	20.6	15.8	12.0	4.4	4.3	1.7	1.3	2.0	8.9
Total Dissolved Solids	ug/l	--	1030000	600000	714000	950000	1080000	872000	1010000	882000	970000	810000	840000	780000	973000	748000	805000
Total Suspended Solids	ug/l	--	<1000	1000	1000	1000	5000	<1000	<1000	2000	3000	<1000	5000	3000	2000	2000	3000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	38	37	43	44	47	45	48	47	43	39	38	50	40	40	40
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	190	130	130	190	200	160	**220**	**210**	**210**	**210**	190	**280**	**260**	200	180
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	160000	120000	130000	170000	170000	140000	160000	160000	150000	140000	160000	151000	157000	135000	120000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1	<1	1	2
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.3	0.3	<0.2	0.2
Copper	ug/l	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	<0.50	0.56	0.66	<0.50	<0.50	<0.50	<0.50	0.86	0.65	**1.4**	0.96	**<10**	<1	**<10**	**<10**
Iron	ug/l	300	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	30	40	40	30
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	47000	31000	31000	44000	46000	35000	43000	42000	40000	36000	41000	46000	47000	34000	34000
Manganese	ug/l	--	6.1	3.8	2.3	4.0	5.2	<2.0	<2.0	2.4	3.0	<2.0	3.0	<10	<10	<10	<10
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	8300	8900	10000	8200	8100	9800	13000	14000	13000	13000	12000	8000	10000	10000	10000
Silicon	ug/l	--	2700	2200	1900	2500	2600	2200	2700	2700	2600	2400	2700	3000	3200	2600	2500
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	61000	51000	44000	52000	48000	39000	57000	54000	55000	47000	55000	52000	68000	61000	52000
Strontium	ug/l	--	6300	4400	4200	5800	6200	4900	5900	6100	5600	4600	5900	6820	7080	5940	5840
Sulfur	ug/l	--	150000	86000	110000	130000	150000	130000	140000	140000	140000	130000	140000	107000	142000	96700	109000
Thallium	ug/l	0.3 [33]	0.050	0.051	0.11	0.071	0.074	0.068	0.10	0.11	0.094	0.087	0.070	<0.1	<0.1	<0.1	<0.1
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-4 18-May-2018 SS-4	SS-4 22-Jun-2018 SS-4	SS-4 18-Jul-2018 SS-4	SS-4 24-Aug-2018 [44] SS-4	SS-4 18-Sep-2018 [45] SS-4	SS-4 24-Oct-2018 SS-4	SS-4 20-Nov-2018 SS-4	SS-4 18-Dec-2018 SS-4	SS-4 02-Jan-2019 SS-4 (RESAMPLE)	SS-4 25-Jan-2019 [46] SS-4	SS-4 21-Feb-2019 SS-4	SS-4 13-Mar-2019 SS-4	SS-4 17-Apr-2019 SS-4	SS-4 24-May-2019 SS - 4	SS-4 21-Jun-2019 SS-4
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	137000	127000	133000	116000	131000	140000	158000	173000	--	202000	218000	197000	74000	128000	118000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	--	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	920	30	330	70	2340	30	60	130	--	250	900	60	160	53	<10
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	2000	<1000	<1000	<1000	<1000	<1000	--	<1000	<1000	3000	3000	<1000	<1000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	<5000	<5000	<5000	<5000	6000	<5000	<5000	<5000	--	<5000	7000	<5000	<5000	<5000	7000
Chloride	ug/l	--	104000	28000	161000	114000	126000	119000	115000	111000	--	110000	141000	124000	49000	94000	154000
Chromium (III)	ug/l	8.9 [22]	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	--	<1	<1	<1	3	2	<1
Conductivity (Field)	uS/cm	--	1251	1337	1472	1257	1349	1337	1360	1354	--	1350	1393	1352	693	1222	1328
Dissolved Organic Carbon	ug/l	--	1500	2500	6900	1200	5200	1800	1800	1800	--	2600	1800	2200	1000	<500	800
Hardness, Calcium Carbonate	ug/l	--	538000	562000	540000	455000	568000	497000	616000	569000	--	526000	513000	487000	266000	507000	512000
Nitrate as N	ug/l	--	1110	120	340	920	490	1100	1530	1340	--	370	430	520	1380	2510	1830
Nitrite as N	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	--	<100	<100	<100	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	3400	700	630	300	2100	200	3300	400	--	1600	1200	100	200	320	250
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.67	7.97	7.14	6.80	6.96	6.93	6.57	6.68	--	**6.46**	6.79	6.65	**6.4**	7.96 [37]	**6.30**
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	8	5	4	5	2	<2	3	8	--	2	3	3	5	<2	<2
Sulphate	ug/l	--	379000	81000	419000	432000	448000	449000	469000	408000	--	353000	414000	370000	177000	368000	400000
Temperature (Field)	deg c	-- [24]	11.9	19.1	23.9	19.1	20.6	8.7	3.3	3.5	--	1.5	3.2	1.7	6.6	10.4	14.1
Total Dissolved Solids	ug/l	--	903000	897000	1050000	952000	994000	1020000	994000	973000	--	959000	973000	959000	452000	784000	4540000
Total Suspended Solids	ug/l	--	<1000	1000	1000	3000	<1000	<1000	4000	33000	<1000	1000	2000	6000	13000	2000	2000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	40	50	50	60	50	<10	50	50	--	50	40	40	40	50	50
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	180	**230**	**260**	**240**	**280**	<10	**260**	**250**	--	**260**	**260**	**250**	60	180	**240**
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	148000	156000	147000	126000	155000	133000	166000	152000	--	138000	138000	129000	80000	142000	139000
Chromium	ug/l	-- [30]	2	6	2	1	<1	<1	<1	2	--	<1	<1	<1	3	2	1
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.5	0.5	--	0.9	0.8	0.5	0.2	0.3	0.4
Copper	ug/l	5	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	--	<1	<1	<1	<1	<1	<1
Iron	ug/l	300	<30	<30	<30	40	<30	<30	40	130	--	40	40	50	70	<30	<30
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	41000	42000	42000	34000	44000	40000	49000	46000	--	44000	41000	40000	16000	37000	40000
Manganese	ug/l	--	<10	<10	<10	<10	<10	<10	<10	10	--	20	10	10	<10	<10	<10
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	14000	19000	19000	16000	16000	16000	12000	14000	--	11000	11000	10000	11000	14000	17000
Silicon	ug/l	--	2800	2700	2400	2200	2600	2300	2900	3200	--	3300	3300	3200	1700	2400	2300
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	63000	69000	76000	64000	74000	77000	74000	65000	--	74000	80000	78000	31000	56000	78000
Strontium	ug/l	--	6130	6230	7200	6590	6150	<1	9080	7150	--	7110	7060	7380	2190	5220	6260
Sulfur	ug/l	--	120000	107000	148000	176000	157000	167000	157000	148000	--	130000	133000	130000	73900	132000	148000
Thallium	ug/l	0.3 [33]	<0.1	0.1	0.1	0.1	0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4
			18-Jul-2019	21-Aug-2019	18-Sep-2019	29-Oct-2019	19-Nov-2019	18-Dec-2019	15-Jan-2020	19-Feb-2020	19-Mar-2020	03-Apr-2020	08-May-2020	01-Jun-2020	21-Jul-2020	25-Aug-2020	17-Sep-2020	23-Oct-2020
			SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4	SS-4
General Chemistry																		
Alkalinity (Total as CaCO3)	ug/l	-- [21]	157000	140000	148000	79000	146000	124000	85000	205000	93000	91000	152000	168000	170000	138000	119000	128000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	50	40	30	100	<10	<10	18	35	94	27	26	16	<10	<50	32	28
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	<1000	2000	3000	<1000	1000	3000	3000	<1000	<1000	9000	5000	2000	6000	6000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	<5000	<5000	6000	<5000	<5000	<5000	<5000	5000	<5000	<5000	5000	<5000	11000	<5000	<5000	<5000
Chloride	ug/l	--	114000	130000	114000	60000	96000	67000	34000	90000	57000	71000	84000	101000	120000	81000	75000	84000
Chromium (III)	ug/l	8.9 [22]	<1	<1	<1	3	1	1	1	**<10**	**<10**	**<10**	<1	<1	<1	<1	<1	<1
Conductivity (Field)	uS/cm	--	1239	1346	1298	1003	1495	1112	637	1347	778	982	1191	1184	1309	1222	1294	1262
Dissolved Organic Carbon	ug/l	--	<500	8700	1600	1400	1800	1400	1200	1900	1600	1700	1600	1600	2400	1400	1600	1500
Hardness, Calcium Carbonate	ug/l	--	513000	565000	689000	372000	563000	428000	264000	564000	337000	384000	489000	508000	543000	515000	544000	488000
Nitrate as N	ug/l	--	620	740	740	1460	1750	700	590	180	1570	1800	900	<100	240	570	670	1380
Nitrite as N	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<500
Nitrogen, Total Kjeldahl	ug/l	--	300	<100	<100	300	<100	146	280	259	352	393	318	256	229	219	1800	748
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	**6.23**	7.18	**6.26**	7.37	7.40	7.95	7.50	8.10	8.20	7.90	7.91	7.69	8.08	8.21	7.75	7.19
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	<2	2	<2	4	<2	4	4	<2	9	<2	<2	<2	<2	4	3	3
Sulphate	ug/l	--	384000	418000	447000	300000	456000	307000	186000	382000	216000	288000	339000	355000	389000	397000	478000	429000
Temperature (Field)	deg c	-- [24]	15.9	17.6	15.6	9.3	3.9	2.7	1.5	0.6	2.9	6.5	8.2	10.1	15.5	17.5	15.5	10.9
Total Dissolved Solids	ug/l	--	800000	1030000	1020000	607000	1040000	735000	414000	959000	505000	648000	819000	889000	924000	868000	938000	903000
Total Suspended Solids	ug/l	--	4000	2000	2000	6000	2000	3000	13000	1000	15000	1000	4000	2000	1000	4000	3000	4000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																		
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	50	60	50	40	50	40	30	50	40	40	40	40	50	50	50	40
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**280**	**320**	**280**	120	**250**	150	90	**300**	90	120	**220**	**280**	**300**	**260**	**210**	**230**
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	136000	152000	192000	106000	153000	117000	76000	145000	102000	111000	133000	136000	148000	142000	147000	141000
Chromium	ug/l	-- [30]	<1	<1	4	3	1	2	1	<1	4	5	<1	<1	<1	<1	<1	1
Cobalt	ug/l	0.9	0.3	0.4	0.4	0.2	0.4	0.3	0.2	0.6	0.3	0.2	0.5	0.7	0.5	0.3	<0.2	0.4
Copper	ug/l	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	<1	<1	<1	<1	<1	1	<1	<1	**<10**	<1	<1	<1	<0.5	<0.50	0.9	**1.5**
Iron	ug/l	300	<30	<30	40	60	<30	50	160	60	110	50	<30	30	30	40	<30	50
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	42000	45000	51000	26000	44000	33000	18000	49000	20000	26000	38000	41000	42000	39000	43000	33000
Manganese	ug/l	--	<10	<10	<10	<10	<10	<10	<10	10	<10	<10	<10	<10	<10	<10	<10	<10
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	12000	14000	18000	11000	17000	11000	6000	10000	10000	14000	11000	12000	14000	12000	16000	13000
Silicon	ug/l	--	2600	3000	2800	2200	2800	2500	1900	3600	3100	2300	2700	2600	3700	4400	2600	3700
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	63000	74000	74000	41000	71000	51000	26000	69000	39000	44000	56000	72000	75000	53000	60000	63000
Strontium	ug/l	--	6870	8090	8050	3540	6960	5160	2450	8770	3530	3760	5910	8360	7140	6580	6190	6050
Sulfur	ug/l	--	152000	163000	171000	110000	164000	116000	61300	164000	77900	108000	130000	142000	162000	150000	179000	149000
Thallium	ug/l	0.3 [33]	<0.1	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1	<0.1
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																		
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-4 26-Nov-2020 SS-4	SS-4 11-Dec-2020 SS-4	SS-4 08-Jan-2021 SS-4	SS-4 18-Feb-2021 SS-4	SS-4 22-Mar-2021 SS-4	SS-4 09-Apr-2021 [47] SS-4	SS-4 28-May-2021 SS-4	SS-4 28-Jun-2021 SS-4	SS-4 15-Jul-2021 SS-4	SS-4 11-Aug-2021 SS-4	SS-4 28-Sep-2021 SS4	SS-4 27-Oct-2021 SS4	SS-4 11-Nov-2021 SS4	SS-4 15-Dec-2021 SS4	SS-4 25-Jan-2022 [18] SS4
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	177000	140000	141000	189000	175000	131000	179000	109000	139000	148000	170000	87000	128000	139000	199000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	10	124	<10	<10	<10	<10	<10	<10	<10	<10	41	20	<10	<10	<10
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	1000	1000	2000	8000	<1000	3000	<1000	<1000	<1000	3000	<1000	<1000	<1000	2000	<1000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	<5000	<5000	7000	9000	5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	<5000	6000	<5000
Chloride	ug/l	--	99000	74000	80000	112000	74000	101000	121000	109000	88000	93000	126000	48000	74000	64000	108000
Chromium (III)	ug/l	8.9 [22]	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Conductivity (Field)	uS/cm	--	1391	1329	1288	1459	1221	1230	1344	1228	1208	1318	1307	929	1290	1246	1653
Dissolved Organic Carbon	ug/l	--	1500	1300	1500	1700	1500	1400	2300	1000	1500	2000	2000	1400	2200	2200	2600
Hardness, Calcium Carbonate	ug/l	--	581000	555000	528000	631000	454000	527000	656000	514000	581000	550000	592000	350000	509000	523000	592000
Nitrate as N	ug/l	--	1010	2340	1330	550	840	2640	720	1060	<500	<500	<100	1310	1450	800	530
Nitrite as N	ug/l	--	<100	<100	<100	<100	<100	<500	<500	<100	<500	<500	<100	<100	<100	<100	<500
Nitrogen, Total Kjeldahl	ug/l	--	224	145	192	145	300	357	678	125	<100	314	620	430	219	346	141
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.60	7.10	7.05	7.45	7.10	7.18	7.66	7.64	7.47	7.07	7.63	8.19	8.03	7.72	7.52
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	<2	2	5	<2	<2	<2	32	5	<2	2	<2	6	<2	<2	<2
Sulphate	ug/l	--	477000	455000	441000	468000	367000	433000	460000	423000	444000	435000	500000	268000	443000	417000	560000
Temperature (Field)	deg c	-- [24]	4.2	5.4	4.6	2.3	6.2	9.0	12.8	18.0	17.2	17.8	11.5	9.9	9.2	3.5	1.4
Total Dissolved Solids	ug/l	--	1020000	903000	889000	1020000	854000	861000	1000000	868000	889000	966000	1080000	590000	917000	780000	1000000
Total Suspended Solids	ug/l	--	1000	3000	10000	<1000	4000	<1000	23000	14000	2000	<1000	4000	18000	<1000	4000	<1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	40	40	40	40	40	50	40	40	40	40	40	40	40	30	40
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**270**	190	**220**	**290**	180	170	**280**	**210**	**240**	**260**	**350**	100	140	180	**210**
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	160000	153000	144000	167000	121000	145000	172000	143000	160000	151000	158000	104000	141000	140000	164000
Chromium	ug/l	-- [30]	<1	2	<1	<1	<1	2	<1	<1	<1	<1	<1	2	1	<1	<1
Cobalt	ug/l	0.9	0.3	0.3	0.7	0.5	0.4	0.2	0.5	0.5	0.2	0.5	**1.6**	<0.2	<0.2	<0.2	0.5
Copper	ug/l	5	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	<1	**1.4**	0.60	<0.5	<0.5	**1.3**	<0.5	0.7	0.6	<0.50	<0.50	**1.5**	**1.1**	0.6	<0.50
Iron	ug/l	300	30	30	80	40	50	<30	**400**	60	40	50	80	80	<30	40	50
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	44000	42000	41000	52000	37000	40000	55000	38000	44000	42000	48000	22000	38000	42000	52000
Manganese	ug/l	--	<10	<10	<10	<10	<10	<10	20	<10	<10	<10	10	<10	<10	<10	10
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	16000	14000	13000	14000	8000	15000	14000	16000	14000	16000	16000	12000	17000	14000	13000
Silicon	ug/l	--	3600	3200	3500	2600	3200	3200	3700	3000	3200	3800	3700	2100	2400	2300	4100
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	75000	59000	66000	81000	56000	63000	77000	69000	57000	68000	101000	30000	56000	50000	63000
Strontium	ug/l	--	7070	5780	6180	6300	5990	5760	6740	4670	5660	6570	9050	2780	4800	4820	6790
Sulfur	ug/l	--	179000	177000	154000	179000	137000	152000	169000	149000	150000	156000	176000	111000	164000	157000	161000
Thallium	ug/l	0.3 [33]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-4 24-Feb-2022 [4] 4	SS-4 17-Mar-2022 [19] SW4	SS-4 28-Apr-2022 SS4	SS-4 26-May-2022 [20] SS4	SS-4 24-Jun-2022 SS4	SS-4 25-Jul-2022 SS4
General Chemistry								
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	100000	123000	144000	108000	92000
Ammonia, unionized (Field)	ug/l	20	--	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	--	141	33	54	137	<20
Bicarbonate	ug/l	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	<1000	<1000	<1000	2000	<1000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	6000	6000	14000	<5000	<5000
Chloride	ug/l	--	--	68000	106000	136000	87000	78000
Chromium (III)	ug/l	8.9 [22]	--	<1	<1	<1	<1.0	<1
Conductivity (Field)	uS/cm	--	--	350	1166	1237	1053	1032
Dissolved Organic Carbon	ug/l	--	--	2300	2400	1800	1900	1800
Hardness, Calcium Carbonate	ug/l	--	--	305000	567000	623000	522000	481000
Nitrate as N	ug/l	--	--	840	1960	1330	2140	1400
Nitrite as N	ug/l	--	--	<100	<100	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	--	272	451	320	374	345
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	7.80	7.64	7.82	7.72	7.72
Phosphate	ug/l	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	6	<2	<2	2	6
Sulphate	ug/l	--	--	209000	403000	461000	428000	383000
Temperature (Field)	deg c	-- [24]	--	2.2	8.0	13.2	17.8	22
Total Dissolved Solids	ug/l	--	--	512000	903000	1030000	833000	742000
Total Suspended Solids	ug/l	--	--	7000	5000	2000	1000	3000
Turbidity	ntu	-- [25]	--	--	--	--	--	--
Metals								
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--
Barium	ug/l	--	--	40	40	40	40	50
Beryllium	ug/l	-- [27]	--	--	--	--	--	--
Boron	ug/l	200 [28]	--	80	160	**250**	200	190
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--
Calcium	ug/l	--	--	89000	161000	172000	148000	140000
Chromium	ug/l	-- [30]	--	<1	1	<1	<1	<1
Cobalt	ug/l	0.9	--	0.2	0.3	0.3	0.2	0.2
Copper	ug/l	5	--	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	--	0.8	**1.1**	<0.5	<0.50	<0.5
Iron	ug/l	300	--	80	50	<30	40	60
Lead	ug/l	-- [31]	--	--	--	--	--	--
Magnesium	ug/l	--	--	20000	40000	47000	37000	32000
Manganese	ug/l	--	--	10	<10	<10	<10	<10
Mercury	ug/l	0.2 [32]	--	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--
Potassium	ug/l	--	--	7000	16000	15000	14000	12000
Silicon	ug/l	--	--	2200	2700	3600	2000	2900
Silver	ug/l	0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	--	41000	64000	69000	54000	41000
Strontium	ug/l	--	--	2710	5040	6670	5120	4890
Sulfur	ug/l	--	--	70100	152000	149000	138000	147000
Thallium	ug/l	0.3 [33]	--	<0.1	<0.1	<0.1	0.1	0.1
Titanium	ug/l	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--
Phenols								
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-5 29-Jun-2001	SS-5 23-Jul-2001	SS-5 26-Aug-2001 [2]	SS-5 21-Sep-2001 [2]	SS-5 20-Oct-2001	SS-5 17-Nov-2001	SS-5 13-Dec-2001	SS-5 07-Jan-2002 [3]	SS-5 01-Feb-2002 [3]	SS-5 23-Mar-2002 [3]	SS-5 21-Apr-2002	SS-5 18-May-2002	SS-5 10-Jun-2002	SS-5 27-Jul-2002 [2]	SS-5 12-Aug-2002 [2]
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	238000	231000	--	--	180000	215000	170000	--	--	--	166000	172000	174000	--	--
Ammonia, unionized (Field)	ug/l	20	<20	<20	--	--	<20	<20	<20	--	--	--	<20	<20	<20	--	--
Ammonia Nitrogen	ug/l	--	<20	230	--	--	30	30	50	--	--	--	<20	30	90	--	--
Bicarbonate	ug/l	--	237000	230000	--	--	179000	214000	169000	--	--	--	166000	172000	174000	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	5000	--	--	1000	1000	2000	--	--	--	<1000	1000	1000	--	--
Carbonate (CO3)	ug/l	--	<2000	<2000	--	--	<2000	<2000	<2000	--	--	--	<2000	<2000	<2000	--	--
Chemical Oxygen Demand	ug/l	--	21000	40000	--	--	29000	22000	30000	--	--	--	13000	47000	38000	--	--
Chloride	ug/l	--	3000	6000	--	--	2000	2000	2000	--	--	--	4000	1000	1000	--	--
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	200	180	--	--	160	180	480	--	--	--	350	370	210	--	--
Dissolved Organic Carbon	ug/l	--	6400	11900	--	--	7500	11200	8800	--	--	--	6400	17500	16100	--	--
Hardness, Calcium Carbonate	ug/l	--	218000	222000	--	--	188000	203000	205000	--	--	--	158000	160000	181000	--	--
Nitrate as N	ug/l	--	<100	<100	--	--	<100	<100	<100	--	--	--	<100	<100	<100	--	--
Nitrite as N	ug/l	--	<100	<100	--	--	<100	<100	<100	--	--	--	<100	<100	<100	--	--
Nitrogen, Total Kjeldahl	ug/l	--	460	590	--	--	450	400	380	--	--	--	290	520	590	--	--
Nitrogen, Organic	ug/l	--	460	360	--	--	420	370	330	--	--	--	270	490	500	--	--
pH (Field)	-	6.5 - 8.5	7.5	7.3	--	--	7.2	7	7.6	--	--	--	7.2	7.4	7.3	--	--
Phosphate	ug/l	--	90	<30	--	--	<30	<30	<30	--	--	--	<30	<30	<30	--	--
Phosphorus	ug/l	-- [23]	20	370	--	--	<10	<10	10	--	--	--	60	<10	<10	--	--
Sulphate	ug/l	--	6000	4000	--	--	23000	14000	14000	--	--	--	8000	5000	3000	--	--
Temperature (Field)	deg c	-- [24]	19	24	--	--	10	4	2	--	--	--	13	11	18	--	--
Total Dissolved Solids	ug/l	--	256000	264000	--	--	244000	280000	198000	--	--	--	219000	222000	221000	--	--
Total Suspended Solids	ug/l	--	5000	75000	--	--	5000	3000	12000	--	--	--	2000	2000	5000	--	--
Turbidity	ntu	-- [25]	1	30	--	--	1.6	1.2	2.5	--	--	--	0.4	0.8	1.1	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	<50	<50	--	--	<50	<50	<50	--	--	--	<50	<50	<50	--	--
Barium	ug/l	--	30	120	--	--	10	10	<10	--	--	--	20	<10	<10	--	--
Beryllium	ug/l	-- [27]	<2	<2	--	--	<2	<2	<2	--	--	--	<2	<2	<2	--	--
Boron	ug/l	200 [28]	10	20	--	--	<10	<50	<50	--	--	--	<50	<50	<50	--	--
Cadmium	ug/l	0.2 [29]	<0.1	<0.1	--	--	0.1	<0.1	<0.1	--	--	--	<0.1	<0.1	<0.1	--	--
Calcium	ug/l	--	79000	79000	--	--	72000	78000	77000	--	--	--	60000	64000	71000	--	--
Chromium	ug/l	-- [30]	<1	7	--	--	1	2	<1	--	--	--	<1	1	<1	--	--
Cobalt	ug/l	0.9	<0.2	0.3	--	--	<0.2	<0.2	<0.2	--	--	--	<0.2	<0.2	<0.2	--	--
Copper	ug/l	5	<1	<1	--	--	<1	<1	2	--	--	--	<1	<1	<1	--	--
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	**830**	280	--	--	40	60	130	--	--	--	<10	30	120	--	--
Lead	ug/l	-- [31]	<1	<1	--	--	<1	<1	<1	--	--	--	<1	<1	<1	--	--
Magnesium	ug/l	--	5000	6000	--	--	2000	2000	3000	--	--	--	2000	<1000	1000	--	--
Manganese	ug/l	--	610	1050	--	--	20	30	30	--	--	--	<10	10	30	--	--
Mercury	ug/l	0.2 [32]	<0.1	<0.1	--	--	<0.1	<0.1	<0.1	--	--	--	<0.1	<0.1	<0.1	--	--
Molybdenum	ug/l	40	<10	<10	--	--	<10	<10	<10	--	--	--	<10	<10	<10	--	--
Nickel	ug/l	25	<10	<10	--	--	<10	<10	<10	--	--	--	<10	<10	<10	--	--
Potassium	ug/l	--	<1000	<1000	--	--	<1000	<1000	<1000	--	--	--	<1000	<1000	<1000	--	--
Silicon	ug/l	--	1780	2510	--	--	750	800	1060	--	--	--	710	1210	170	--	--
Silver	ug/l	0.1	<0.1	<0.1	--	--	<0.1	<0.1	<0.1	--	--	--	**<10**	<0.1	<0.1	--	--
Sodium	ug/l	--	3000	3000	--	--	2000	9000	<2000	--	--	--	3000	2000	<2000	--	--
Strontium	ug/l	--	180	182	--	--	84	86	59	--	--	--	109	74	83	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	**<1**	**<1**	--	--	**<1**	**<1**	**<1**	--	--	--	**<1**	**<1**	**<1**	--	--
Titanium	ug/l	--	<10	<10	--	--	<10	<10	<10	--	--	--	<10	<10	<10	--	--
Vanadium	ug/l	6	<1	**9**	--	--	<1	<1	<1	--	--	--	<1	<1	<1	--	--
Zinc	ug/l	30 [29]	<10	<10	--	--	<10	<10	<10	--	--	--	<10	<10	<10	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	<1	<1	--	--	<1	<1	<1	--	--	--	<1	<1	<1	--	--

Parameter	Unit	PWQO (1)	SS-5 25-Sep-2002 (2)	SS-5 31-Oct-2002	SS-5 28-Nov-2002 (3)	SS-5 15-Jan-2003 (4)	SS-5 12-Feb-2003 (4)	SS-5 15-Mar-2003 (4)	SS-5 28-Apr-2003 (4)	SS-5 24-May-2003 (4)	SS-5 24-Jun-2003 (4)	SS-5 16-Jul-2003 (4)	SS-5 14-Aug-2003	SS-5 30-Sep-2003 (4)	SS-5 30-Oct-2003	SS-5 19-Nov-2003
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- (21)	--	161000	--	--	--	--	--	--	--	--	220000	--	156000	169000
Ammonia, unionized (Field)	ug/l	20	--	<20	--	--	--	--	--	--	--	--	<20	--	<20	<20
Ammonia Nitrogen	ug/l	--	--	<20	--	--	--	--	--	--	--	--	<20	--	30	<20
Bicarbonate	ug/l	--	--	161000	--	--	--	--	--	--	--	--	220000	--	156000	169000
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	<1000	--	--	--	--	--	--	--	--	<1000	--	<1000	<1000
Carbonate (CO3)	ug/l	--	--	<2000	--	--	--	--	--	--	--	--	<2000	--	<2000	<2000
Chemical Oxygen Demand	ug/l	--	--	18000	--	--	--	--	--	--	--	--	19000	--	18000	14000
Chloride	ug/l	--	--	11000	--	--	--	--	--	--	--	--	12000	--	14000	11000
Chromium (III)	ug/l	8.9 (22)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	290	--	--	--	--	--	--	--	--	380	--	395	420
Dissolved Organic Carbon	ug/l	--	--	7900	--	--	--	--	--	--	--	--	8500	--	6800	5800
Hardness, Calcium Carbonate	ug/l	--	--	294000	--	--	--	--	--	--	--	--	243000	--	199000	204000
Nitrate as N	ug/l	--	--	280	--	--	--	--	--	--	--	--	<100	--	<100	<100
Nitrite as N	ug/l	--	--	<100	--	--	--	--	--	--	--	--	<100	--	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	--	480	--	--	--	--	--	--	--	--	520	--	370	200
Nitrogen, Organic	ug/l	--	--	460	--	--	--	--	--	--	--	--	520	--	340	180
pH (Field)	-	6.5 - 8.5	--	7.2	--	--	--	--	--	--	--	--	7.4	--	7	7.2
Phosphate	ug/l	--	--	<30	--	--	--	--	--	--	--	--	<30	--	<30	60
Phosphorus	ug/l	-- (23)	--	<10	--	--	--	--	--	--	--	--	<10	--	30	20
Sulphate	ug/l	--	--	123000	--	--	--	--	--	--	--	--	17000	--	26000	32000
Temperature (Field)	deg c	-- (24)	--	3	--	--	--	--	--	--	--	--	20	--	2	4
Total Dissolved Solids	ug/l	--	--	357000	--	--	--	--	--	--	--	--	299000	--	250000	269000
Total Suspended Solids	ug/l	--	--	7000	--	--	--	--	--	--	--	--	<2000	--	<2000	<2000
Turbidity	ntu	-- (25)	--	7.2	--	--	--	--	--	--	--	--	0.3	--	0.9	0.4
Metals																
Aluminum, dissolved	ug/l	-- (26)	--	<10	--	--	--	--	--	--	--	--	<10	--	<10	<10
Barium	ug/l	--	--	20	--	--	--	--	--	--	--	--	20	--	20	20
Beryllium	ug/l	-- (27)	--	<1	--	--	--	--	--	--	--	--	<1	--	<1	<1
Boron	ug/l	200 (28)	--	<50	--	--	--	--	--	--	--	--	20	--	<10	<10
Cadmium	ug/l	0.2 (29)	--	<0.1	--	--	--	--	--	--	--	--	<0.1	--	0.1	<0.1
Calcium	ug/l	--	--	108000	--	--	--	--	--	--	--	--	89000	--	73000	75000
Chromium	ug/l	-- (30)	--	1	--	--	--	--	--	--	--	--	4	--	<1	1
Cobalt	ug/l	0.9	--	0.3	--	--	--	--	--	--	--	--	<0.2	--	<0.2	<0.2
Copper	ug/l	5	--	<1	--	--	--	--	--	--	--	--	<1	--	<1	<1
Hexavalent Chromium	ug/l	1 (22)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	50	--	--	--	--	--	--	--	--	<10	--	20	<10
Lead	ug/l	-- (31)	--	<1	--	--	--	--	--	--	--	--	<1	--	<1	<1
Magnesium	ug/l	--	--	6000	--	--	--	--	--	--	--	--	5000	--	4000	4000
Manganese	ug/l	--	--	23	--	--	--	--	--	--	--	--	7	--	12	<10
Mercury	ug/l	0.2 (32)	--	<0.1	--	--	--	--	--	--	--	--	<0.1	--	<0.1	<0.1
Molybdenum	ug/l	40	--	<5	--	--	--	--	--	--	--	--	<5	--	<5	<5
Nickel	ug/l	25	--	<5	--	--	--	--	--	--	--	--	1	--	<5	<5
Potassium	ug/l	--	--	<1000	--	--	--	--	--	--	--	--	<1000	--	<1000	<1000
Silicon	ug/l	--	--	1100	--	--	--	--	--	--	--	--	1800	--	1000	1200
Silver	ug/l	0.1	--	<0.1	--	--	--	--	--	--	--	--	<0.1	--	<0.1	<0.1
Sodium	ug/l	--	--	6000	--	--	--	--	--	--	--	--	3000	--	8000	6000
Strontium	ug/l	--	--	151	--	--	--	--	--	--	--	--	239	--	132	175
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 (33)	--	**<1**	--	--	--	--	--	--	--	--	**<1**	--	**<1**	**<1**
Titanium	ug/l	--	--	<10	--	--	--	--	--	--	--	--	<10	--	<10	<10
Vanadium	ug/l	6	--	<1	--	--	--	--	--	--	--	--	1	--	<1	<1
Zinc	ug/l	30 (29)	--	<5	--	--	--	--	--	--	--	--	1	--	<10	<10
Phenols																
Phenolics, Total Recoverable	ug/l	1 (34)	--	<1	--	--	--	--	--	--	--	--	<1	--	<1	<1

Parameter	Unit	PWQO [1]	SS-5 23-Dec-2003 [4]	SS-5 27-Jan-2004 [4]	SS-5 20-Feb-2004 [4]	SS-5 24-Mar-2004 [4]	SS-5 12-Apr-2004	SS-5 12-May-2004	SS-5 28-Jun-2004	SS-5 19-Jul-2004 [48]	SS-5 17-Aug-2004 [2]	SS-5 30-Sep-2004	SS-5 07-Oct-2004 [4]	SS-5 23-Nov-2004 [4]	SS-5 09-Dec-2004 [4]	SS-5 14-Jan-2005 [4]
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	156000	201000	147000	--	--	192000	--	--	--	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	<20	<20	<20	--	--	<20	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	<30	30	110	--	--	<30	--	--	--	--
Bicarbonate	ug/l	--	--	--	--	--	189000	240000	178000	--	--	229000	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	800	<500	6900	--	--	<500	--	--	--	--
Carbonate (CO3)	ug/l	--	--	--	--	--	<1000	<1000	<1000	--	--	<1000	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	11000	11000	52000	--	--	23000	--	--	--	--
Chloride	ug/l	--	--	--	--	--	8100	6800	8100	--	--	19300	--	--	--	--
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	395	380	395	--	--	481	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	3300	4600	14700	--	--	9100	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	184658	212100	218379	--	--	233000	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	<200	200	<200	--	--	<200	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	<200	<200	<200	--	--	<200	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	310	210	760	--	--	400	--	--	--	--
Nitrogen, Organic	ug/l	--	--	--	--	--	240	180	650	--	--	370	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	7	7.3	7.1	--	--	7.5	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	<1000	<1000	<1000	--	--	<1000	--	--	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	5	3	53	--	--	39	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	21400	11100	9400	--	--	45600	--	--	--	--
Temperature (Field)	deg c	-- [24]	--	--	--	--	4	9	12	--	--	14.2	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	214000	260000	224000	--	--	330000	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	1000	<1000	15000	--	--	4000	--	--	--	--
Turbidity	ntu	-- [25]	--	--	--	--	0.3	0.3	9.8	--	--	1.7	--	--	--	--
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	<5	<5	26	--	--	<5	--	--	--	--
Barium	ug/l	--	--	--	--	--	18	26	38	--	--	27	--	--	--	--
Beryllium	ug/l	-- [27]	--	--	--	--	<1	<1	<1	--	--	<1	--	--	--	--
Boron	ug/l	200 [28]	--	--	--	--	<5	9	8	--	--	29	--	--	--	--
Cadmium	ug/l	0.2 [29]	--	--	--	--	<0.1	<0.1	<0.1	--	--	<0.1	--	--	--	--
Calcium	ug/l	--	--	--	--	--	67500	78000	81300	--	--	80100	--	--	--	--
Chromium	ug/l	-- [30]	--	--	--	--	<5	<5	9	--	--	<5	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	<0.1	<0.1	0.2	--	--	<0.1	--	--	--	--
Copper	ug/l	5	--	--	--	--	<0.5	<0.5	2.9	--	--	**200**	--	--	--	--
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	<30	<30	**530**	--	--	100	--	--	--	--
Lead	ug/l	-- [31]	--	--	--	--	<0.5	<0.5	1.4	--	--	<0.5	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	3880	4240	3690	--	--	8020	--	--	--	--
Manganese	ug/l	--	--	--	--	--	<5	9	260	--	--	94	--	--	--	--
Mercury	ug/l	0.2 [32]	--	--	--	--	<0.05	<0.1	<0.1	--	--	<0.1	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--	<1	<1	<1	--	--	<1	--	--	--	--
Nickel	ug/l	25	--	--	--	--	<1	<1	<1	--	--	<1	--	--	--	--
Potassium	ug/l	--	--	--	--	--	500	500	900	--	--	1200	--	--	--	--
Silicon	ug/l	--	--	--	--	--	640	1000	1660	--	--	1260	--	--	--	--
Silver	ug/l	0.1	--	--	--	--	0.1	<0.1	<0.1	--	--	<0.1	--	--	--	--
Sodium	ug/l	--	--	--	--	--	4400	4700	5300	--	--	11000	--	--	--	--
Strontium	ug/l	--	--	--	--	--	156	171	134	--	--	520	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	--	--	--	--	<0.05	<0.05	<0.05	--	--	<0.05	--	--	--	--
Titanium	ug/l	--	--	--	--	--	<5	<5	14	--	--	<5	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	<0.5	<0.5	0.5	--	--	<0.5	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	<5	<5	13	--	--	<5	--	--	--	--
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	<1	<1	<1	--	--	<1	--	--	--	--

Parameter	Unit	PWQO (1)	SS-5 11-Feb-2005 (4)	SS-5 14-Mar-2005 (4)	SS-5 15-Apr-2005 (4)	SS-5 29-May-2005 (4)	SS-5 12-Jun-2005 (4)	SS-5 12-Jul-2005 (4)	SS-5 14-Aug-2005 (4)	SS-5 24-Sep-2005 (4)	SS-5 24-Oct-2005 (4)	SS-5 16-Nov-2005 (4)	SS-5 29-Dec-2005 (4)	SS-5 19-Jan-2006 (4)	SS-5 15-Feb-2006 (4)
General Chemistry															
Alkalinity (Total as CaCO3)	ug/l	-- (21)	--	--	--	--	--	--	--	--	--	--	--	--	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 (22)	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- (23)	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- (24)	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	-- (25)	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, dissolved	ug/l	-- (26)	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/l	-- (27)	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 (28)	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/l	0.2 (29)	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/l	-- (30)	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 (22)	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- (31)	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	ug/l	0.2 (32)	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 (33)	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 (29)	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols															
Phenolics, Total Recoverable	ug/l	1 (34)	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-5 30-Mar-2006 [4]	SS-5 11-Apr-2006 [4]	SS-5 12-May-2006 [4]	SS-5 20-Jun-2006 [4]	SS-5 24-Jul-2006	SS-5 14-Aug-2006	SS-5 29-Sep-2006	SS-5 25-Oct-2006	SS-5 14-Nov-2006	SS-5 12-Dec-2006	SS-5 31-Jan-2007 [3]	SS-5 27-Feb-2007 [3]	SS-5 30-Mar-2007	SS-5 26-Apr-2007	SS-5 29-May-2007 [2] SS-5
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	155000	151000	168000	177000	176000	174000	--	--	180000	171000	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	<20	<20	<20	<20	<20	<20	--	--	<20	<20	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	140	60	<20	20	<20	<20	--	--	30	<20	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	<1000	<1000	<1000	<1000	<1000	<1000	--	--	<1000	<1000	--
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	11000	11000	5000	8000	5000	<5000	--	--	13000	<5000	--
Chloride	ug/l	--	--	--	--	--	38000	36000	19000	19000	20000	25000	--	--	28000	22000	--
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	520	500	455	395	395	425	--	--	505	300	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	4500	5700	6500	6200	5200	4100	--	--	3500	4500	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	306000	313000	294000	255000	292000	286000	--	--	248000	281000	--
Nitrate as N	ug/l	--	--	--	--	--	<100	<100	<100	230	630	1080	--	--	880	<100	--
Nitrite as N	ug/l	--	--	--	--	--	<100	<100	<100	<100	<100	<100	--	--	<100	<100	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	490	340	190	130	250	270	--	--	90	190	--
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	7.2	7.3	7.4	7.3	7.2	7.3	--	--	7.5	7.5	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	30	20	20	<10	<10	<10	--	--	<10	<10	--
Sulphate	ug/l	--	--	--	--	--	147000	152000	121000	107000	104000	103000	--	--	79000	102000	--
Temperature (Field)	deg c	-- [24]	--	--	--	--	11	10	8	3	3	2	--	--	3	3	--
Total Dissolved Solids	ug/l	--	--	--	--	--	455000	467000	403000	390000	386000	404000	--	--	380000	385000	--
Total Suspended Solids	ug/l	--	--	--	--	--	11000	4000	<2000	<2000	<2000	5000	--	--	63000	<2000	--
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	<10	30	<10	<10	<10	<10	--	--	<10	<10	--
Barium	ug/l	--	--	--	--	--	50	40	30	30	30	30	--	--	30	30	--
Beryllium	ug/l	-- [27]	--	--	--	--	<1	<1	<1	<1	<1	<1	--	--	<1	<1	--
Boron	ug/l	200 [28]	--	--	--	--	40	30	40	50	70	40	--	--	90	70	--
Cadmium	ug/l	0.2 [29]	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	<0.1	<0.1	--
Calcium	ug/l	--	--	--	--	--	106000	104000	98000	84000	94000	93000	--	--	81000	91000	--
Chromium	ug/l	-- [30]	--	--	--	--	1	<1	<1	<1	<1	2	--	--	2	<1	--
Cobalt	ug/l	0.9	--	--	--	--	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.2	<0.2	--
Copper	ug/l	5	--	--	--	--	<1	<1	<1	<1	<1	<1	--	--	<1	<1	--
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	270	160	70	30	40	<30	--	--	50	<30	--
Lead	ug/l	-- [31]	--	--	--	--	<1	<1	<1	<1	<1	<1	--	--	<1	<1	--
Magnesium	ug/l	--	--	--	--	--	10000	13000	12000	11000	14000	13000	--	--	11000	13000	--
Manganese	ug/l	--	--	--	--	--	100	110	40	10	<10	20	--	--	30	<10	--
Mercury	ug/l	0.2 [32]	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	<0.1	<0.1	--
Molybdenum	ug/l	40	--	--	--	--	<5	<5	<5	<5	<5	<5	--	--	<5	<5	--
Nickel	ug/l	25	--	--	--	--	<5	<5	<5	<5	<5	<5	--	--	<5	<5	--
Potassium	ug/l	--	--	--	--	--	2000	2000	1000	2000	3000	2000	--	--	2000	3000	--
Silicon	ug/l	--	--	--	--	--	1300	1200	1300	1200	1000	800	--	--	1600	400	--
Silver	ug/l	0.1	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	<0.1	<0.1	--
Sodium	ug/l	--	--	--	--	--	20000	18000	16000	15000	17000	16000	--	--	27000	22000	--
Strontium	ug/l	--	--	--	--	--	602	864	623	709	770	700	--	--	522	908	--
Sulfur	ug/l	--	--	--	--	--	49000	50700	40300	35700	34700	34300	--	--	26300	34000	--
Thallium	ug/l	0.3 [33]	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	0.2	**0.5**	--
Titanium	ug/l	--	--	--	--	--	<10	<10	<10	<10	<10	<10	--	--	<10	<10	--
Vanadium	ug/l	6	--	--	--	--	1	1	<1	<1	<1	<1	--	--	2	<1	--
Zinc	ug/l	30 [29]	--	--	--	--	<10	<10	<10	<10	<10	<10	--	--	<10	<10	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	<1	<1	<1	<1	<1	<1	--	--	<1	<1	--

Parameter	Unit	PWQO [1]	SS-5 26-Jun-2007 [2]	SS-5 23-Jul-2007 [4]	SS-5 28-Aug-2007	SS-5 28-Sep-2007 [4]	SS-5 25-Oct-2007 [2]	SS-5 29-Nov-2007	SS-5 18-Dec-2007 [3]	SS-5 08-Jan-2008	SS-5 06-Feb-2008 [4]	SS-5 31-Mar-2008	SS-5 25-Apr-2008	SS-5 22-May-2008	SS-5 25-Jun-2008	SS-5 09-Jul-2008	SS-5 08-Aug-2008
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	253000	--	--	178000	--	139000	--	167000	167000	212000	197000	223000	263000
Ammonia, unionized (Field)	ug/l	20	--	--	<20	--	--	<20	--	<20	--	<20	--	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	--	--	40	--	--	30	--	200	--	<50	--	<50	60	140	250
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	<1000	--	--	<1000	--	<1000	--	<2000	<2000	<2000	<2000	<2000	5000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	11000	--	--	7000	--	<5000	--	12000	--	11000	11000	15000	48000
Chloride	ug/l	--	--	--	24000	--	--	33000	--	34000	--	39000	19000	15000	23000	28000	53000
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	<5	<5	<5	<5	<5	<5
Conductivity (Field)	uS/cm	--	--	--	665	--	--	505	--	435	--	490	460	505	570	490	520
Dissolved Organic Carbon	ug/l	--	--	--	7800	--	--	6400	--	2600	--	3600	--	3400	5900	6000	15400
Hardness, Calcium Carbonate	ug/l	--	--	--	432000	--	--	312000	--	365000	--	290000	250000	280000	330000	330000	240000
Nitrate as N	ug/l	--	--	--	<100	--	--	<100	--	1820	--	400	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	--	--	<100	--	--	<100	--	<100	--	<10	<10	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	--	--	650	--	--	240	--	380	--	500	--	400	400	700	1400
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	7.2	--	--	7.2	--	7.3	--	7.4	7.3	7.5	7.3	7.3	7.1
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	--	30	--	--	30	--	10	--	8	--	3	11	15	18
Sulphate	ug/l	--	--	--	168000	--	--	150000	--	204000	--	143000	85000	80000	131000	147000	<1000
Temperature (Field)	deg c	-- [24]	--	--	19	--	--	0	--	2	--	2	6	15	14	17	22
Total Dissolved Solids	ug/l	--	--	--	551000	--	--	482000	--	523000	--	460000	350000	358000	442000	500000	425000
Total Suspended Solids	ug/l	--	--	--	9000	--	--	<2000	--	10000	--	<10000	<10000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	<10	--	--	10	--	<10	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	60	--	--	30	--	90	--	32	31	45	51	51	64
Beryllium	ug/l	-- [27]	--	--	<1	--	--	<1	--	<1	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	--	--	140	--	--	30	--	160	--	80	100	80	110	120	20
Cadmium	ug/l	0.2 [29]	--	--	<0.1	--	--	<0.1	--	<0.1	--	--	--	--	--	--	--
Calcium	ug/l	--	--	--	145000	--	--	107000	--	95000	--	85000	82000	82000	110000	110000	91000
Chromium	ug/l	-- [30]	--	--	2	--	--	<1	--	5	--	<5	<5	<5	<5	<5	<5
Cobalt	ug/l	0.9	--	--	0.2	--	--	<0.2	--	0.5	--	--	--	--	--	--	--
Copper	ug/l	5	--	--	1	--	--	<1	--	<1	--	<1	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	**<50**	--	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**
Iron	ug/l	300	--	--	<30	--	--	<30	--	120	--	<100	<100	<100	<100	200	**600**
Lead	ug/l	-- [31]	--	--	<1	--	--	<1	--	<1	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	17000	--	--	11000	--	31000	--	15000	12000	11000	13000	15000	5600
Manganese	ug/l	--	--	--	10	--	--	<10	--	10	--	9	8	12	18	330	560
Mercury	ug/l	0.2 [32]	--	--	<0.1	--	--	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	<5	--	--	<5	--	<5	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	<5	--	--	<5	--	<5	--	--	--	--	--	--	--
Potassium	ug/l	--	--	--	3000	--	--	<1000	--	5000	--	2400	2600	1900	1800	2500	1000
Silicon	ug/l	--	--	--	1900	--	--	1400	--	2800	--	2000	1400	1300	1900	1700	4800
Silver	ug/l	0.1	--	--	<0.1	--	--	<0.1	--	<0.1	--	--	--	--	--	--	--
Sodium	ug/l	--	--	--	26000	--	--	27000	--	34000	--	35000	21000	19000	26000	30000	36000
Strontium	ug/l	--	--	--	1250	--	--	900	--	4020	--	1100	1200	1000	1800	1400	390
Sulfur	ug/l	--	--	--	56000	--	--	50000	--	68000	--	44000	28000	26000	44000	50000	1200
Thallium	ug/l	0.3 [33]	--	--	<0.1	--	--	<0.1	--	<0.1	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	ug/l	--	--	--	<10	--	--	<10	--	<10	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	4	--	--	<1	--	2	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	10	--	--	<10	--	<10	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	<1	--	--	<1	--	<1	--	--	--	--	--	--	--

Parameter	Unit	PWQO (1)	SS-5 26-Sep-2008 (5)	SS-5 23-Oct-2008 (4)	SS-5 20-Nov-2008 (4)	SS-5 22-Dec-2008 (4)	SS-5 20-Jan-2009 (4) SS-5	SS-5 24-Feb-2009 (4) SS-5	SS-5 31-Mar-2009 T-3	SS-5 20-Apr-2009 SS-5	SS-5 22-May-2009 SS-5	SS-5 23-Jun-2009 T-4	SS-5 27-Jul-2009 SS-5	SS-5 13-Aug-2009 SS-5	SS-5 24-Sep-2009 (4) SS-5	SS-5 15-Oct-2009 SS-5	SS-5 18-Nov-2009 SS-5
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- (21)	--	--	--	--	--	--	164000	128000	240000	276000	192000	199000	--	241000	180000
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	<20	<20	<20	<20	<20	<20	--	<20	<20
Ammonia Nitrogen	ug/l	--	--	--	--	--	--	--	60	<50	<50	90	<50	60	--	210	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--	--	<2000	<2000	<2000	<2000	<2000	<2000	--	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	9000	7000	20000	23000	<4000	22000	--	14000	10000
Chloride	ug/l	--	--	--	--	--	--	--	44000	61000	29000	39000	32000	41000	--	52000	50000
Chromium (III)	ug/l	8.9 (22)	--	--	--	--	--	--	<5	<5	<5	<5	<5	<5	--	<5	<5
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	750	750	800	760	875	910	--	990	975
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	3700	3400	7500	7100	8300	6900	--	6800	4100
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--	--	330000	280000	300000	430000	330000	350000	--	500000	430000
Nitrate as N	ug/l	--	--	--	--	--	--	--	1600	1300	<100	<100	<100	<100	--	300	2100
Nitrite as N	ug/l	--	--	--	--	--	--	--	30	<10	<10	<10	<10	<10	--	<10	30
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	700	600	600	800	600	600	--	700	700
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--	--	7.8	8	8.1	8.1	7.6	7.8	--	7.8	7.8
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- (23)	--	--	--	--	--	--	8	9	23	40	11	13	--	4	<2
Sulphate	ug/l	--	--	--	--	--	--	--	230000	180000	88000	160000	160000	240000	--	280000	290000
Temperature (Field)	deg c	-- (24)	--	--	--	--	--	--	5	7	12	16	19.0	18	--	8	3
Total Dissolved Solids	ug/l	--	--	--	--	--	--	--	540000	490000	440000	565000	466000	586000	--	695000	670000
Total Suspended Solids	ug/l	--	--	--	--	--	--	--	<10000	<10000	<10000	<10000	4000	4000	--	<1000	1000
Turbidity	ntu	-- (25)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- (26)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--	55	52	50	86	51	55	--	78	51
Beryllium	ug/l	-- (27)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 (28)	--	--	--	--	--	--	180	120	80	150	110	150	--	150	140
Cadmium	ug/l	0.2 (29)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	--	--	--	--	--	--	98000	85000	110000	130000	97000	110000	--	160000	130000
Chromium	ug/l	-- (30)	--	--	--	--	--	--	<5	<5	<5	<5	<5	<5	--	<5	<5
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	--	--	--	--	--	--	<1	<1	<1	<1	<1	<1	--	<1	<1
Hexavalent Chromium	ug/l	1 (22)	--	--	--	--	--	--	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**	--	**<5**	**<5**
Iron	ug/l	300	--	--	--	--	--	--	<100	<100	**400**	**1100**	200	200	--	**2100**	<100
Lead	ug/l	-- (31)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	--	--	25000	20000	14000	18000	14000	19000	--	28000	24000
Manganese	ug/l	--	--	--	--	--	--	--	3	4	330	600	78	210	--	1100	34
Mercury	ug/l	0.2 (32)	--	--	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	--	--	--	--	--	--	5000	4000	3400	4000	3000	5100	--	4300	4600
Silicon	ug/l	--	--	--	--	--	--	--	2600	740	1600	1800	2300	1200	--	2900	1900
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	--	--	--	--	--	--	43000	45000	27000	33000	27000	50000	--	61000	58000
Strontium	ug/l	--	--	--	--	--	--	--	3000	2700	1400	2000	1700	2100	--	3400	2600
Sulfur	ug/l	--	--	--	--	--	--	--	66000	58000	29000	51000	44000	69000	--	90000	85000
Thallium	ug/l	0.3 (33)	--	--	--	--	--	--	<0.05	<0.05	0.08	<0.05	<0.05	0.09	--	<0.05	<0.05
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 (29)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 (34)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-5 10-Dec-2009 SS-5	SS-5 20-Jan-2010 [4] SS-5	SS-5 03-Feb-2010 [4] SS-5	SS-5 31-Mar-2010 SS-5	SS-5 06-Apr-2010 [40] SS-5	SS-5 06-May-2010 [4] SS-5	SS-5 02-Jun-2010 [2] SS-5	SS-5 07-Jul-2010 [2] SS-5	SS-5 18-Aug-2010 SS-5	SS-5 29-Sep-2010 SS-5	SS-5 28-Oct-2010 SS-5	SS-5 22-Nov-2010 SS-5	SS-5 09-Dec-2010 SS-5	SS-5 12-Jan-2011 SS-5
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	161000	--	--	190000	162000	--	--	--	187000	154000	167000	146000	172000	190000
Ammonia, unionized (Field)	ug/l	20	<20	--	--	<20	<20	--	--	--	<20	<20	<20	<20	--	<20
Ammonia Nitrogen	ug/l	--	470	--	--	50	<50	--	--	--	<50	<50	<50	<50	<50	70
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	--	--	<2000	<2000	--	--	--	<2000	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	11000	--	--	15000	5000	--	--	--	20000	9000	10000	16000	6000	16000
Chloride	ug/l	--	52000	--	--	37000	32000	--	--	--	71000	43000	44000	40000	31000	62000
Chromium (III)	ug/l	8.9 [22]	<5	--	--	<5	<5	--	--	--	<5	<5	6	<5	<5	<5
Conductivity (Field)	uS/cm	--	960	--	--	930	795	--	--	--	950	680	970	880	795	540
Dissolved Organic Carbon	ug/l	--	2400	--	--	3400	4800	--	--	--	6400	5800	4500	4000	4600	3100
Hardness, Calcium Carbonate	ug/l	--	400000	--	--	340000	330000	--	--	--	490000	420000	320000	390000	360000	460000
Nitrate as N	ug/l	--	4200	--	--	600	300	--	--	--	<100	<100	300	600	400	900
Nitrite as N	ug/l	--	70	--	--	30	<10	--	--	--	<10	<10	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	800	--	--	600	500	--	--	--	500	600	400	400	300	400
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.7	--	--	7.7	7.8	--	--	--	7.8	7.6	7.8	7.7	7.8	7.8
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	4	--	--	5	<2	--	--	--	8	14	<2	5	19	6
Sulphate	ug/l	--	330000	--	--	200000	170000	--	--	--	290000	250000	260000	240000	190000	270000
Temperature (Field)	deg c	-- [24]	2	--	--	4	9.5	--	--	--	9.50	13	5	2	1	2
Total Dissolved Solids	ug/l	--	720000	--	--	588000	480000	--	--	--	684000	568000	618000	536000	44000	662000
Total Suspended Solids	ug/l	--	2000	--	--	2000	<1000	--	--	--	3000	<1000	<1000	<1000	<1000	<1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	50	--	--	78	48	--	--	--	73	54	55	45	38	55
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	**270**	--	--	**260**	150	--	--	--	**210**	190	140	120	90	170
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	110000	--	--	110000	97000	--	--	--	150000	120000	140000	120000	120000	140000
Chromium	ug/l	-- [30]	<5	--	--	<5	<5	--	--	--	<5	<5	<5	<5	<5	<5
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.50
Copper	ug/l	5	<1	--	--	2	**8**	--	--	--	<1	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	**<5**	--	--	<0.5	**<5**	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	**<5**
Iron	ug/l	300	<100	--	--	100	<100	--	--	--	200	<100	<100	<100	<100	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	32000	--	--	31000	18000	--	--	--	31000	26000	26000	25000	22000	33000
Manganese	ug/l	--	16	--	--	24	16	--	--	--	120	15	<2	<2	4	<2
Mercury	ug/l	0.2 [32]	<0.1	--	--	<0.1	<0.1	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	6500	--	--	5500	3700	--	--	--	6200	4900	4900	4500	3500	5200
Silicon	ug/l	--	2300	--	--	2500	1200	--	--	--	2700	1900	1000	960	1000	2800
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.10
Sodium	ug/l	--	75000	--	--	67000	37000	--	--	--	65000	48000	46000	40000	30000	59000
Strontium	ug/l	--	5000	--	--	4700	2200	--	--	--	3700	3200	3400	3400	2700	4100
Sulfur	ug/l	--	110000	--	--	80000	58000	--	--	--	100000	83000	100000	83000	69000	93000
Thallium	ug/l	0.3 [33]	0.06	--	--	0.08	<0.05	--	--	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-5 23-Feb-2011 [7] SS-5	SS-5 30-Mar-2011 SS-5	SS-5 14-Apr-2011 SS-5	SS-5 12-May-2011 SS 5	SS-5 20-Jun-2011 [2] SS-5	SS-5 19-Jul-2011 SS-5	SS-5 26-Aug-2011 [4] SS-5	SS-5 21-Sep-2011 S-5	SS-5 28-Oct-2011 SS-5	SS-5 14-Nov-2011 [9] SS-5	SS-5 08-Dec-2011 [9] SS - 5	SS-5 11-Jan-2012 SS -5	SS-5 06-Feb-2012 SS- 5	SS-5 13-Mar-2012 [9] SS-5	SS-5 10-Apr-2012 SS-5
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	162000	186000	161000	184000	--	139000	--	217000	131000	150000	126000	188000	214000	100000	140000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	--	<20	--	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	430	50	<50	<50	--	<50	--	<50	<50	560	<50	<50	<50	130	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	--	<2000	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	13000	19000	18000	25000	--	26000	--	13000	19000	9000	9000	10000	15000	12000	16000
Chloride	ug/l	--	53000	34000	20000	36000	--	44000	--	47000	44000	64000	42000	65000	48000	41000	34000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	--	<5	--	<5	<5	<5	<5	<5	<5	<5	<5
Conductivity (Field)	uS/cm	--	640	880	849	680	--	945	--	901	920	910	1005	940	795	780	755
Dissolved Organic Carbon	ug/l	--	3400	3900	5300	6200	--	5800	--	4600	4100	3500	2200	2600	3400	2200	4600
Hardness, Calcium Carbonate	ug/l	--	370000	350000	260000	350000	--	400000	--	480000	460000	540000	420000	540000	560000	260000	340000
Nitrate as N	ug/l	--	1000	200	<100	200	--	<100	--	1400	300	400	2000	1200	500	1100	150
Nitrite as N	ug/l	--	20	10	<10	<10	--	<10	--	<10	<10	<10	20	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	900	500	400	600	--	900	--	500	400	900	500	300	300	600	730
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	8.0	7.7	7.9	7.7	--	7.3	--	7.38	7.4	7.4	7.6	7.8	7.8	7.8	7.6
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	23	29	14	36	--	42	--	15	6	17	23	12	12	18	7
Sulphate	ug/l	--	220000	170000	100000	200000	--	320000	--	310000	310000	370000	300000	370000	310000	190000	210000
Temperature (Field)	deg c	-- [24]	1	2	9	12	--	23	--	14.8	11	4	1	2	1	2	7
Total Dissolved Solids	ug/l	--	550000	488000	330000	512000	--	656000	--	776000	754000	866000	722000	856000	826000	470000	534000
Total Suspended Solids	ug/l	--	4000	4000	2000	<1000	--	<1000	--	1000	<1000	3000	4000	1000	<1000	3000	2000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	51	47	35	69	--	69	--	91	59	69	46	58	56	36	45
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	170	130	110	170	--	**210**	--	180	200	**240**	170	**260**	**220**	120	110
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	100000	110000	86000	120000	--	130000	--	160000	140000	160000	120000	160000	170000	87000	110000
Chromium	ug/l	-- [30]	<5	<5	<5	<5	--	<5	--	<5	<5	<5	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.5	<0.5	<0.5	--	<0.5	--	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	<1	2	1	1	--	<1	--	<1	<1	1	<1.0	<1.0	<1.0	2.1	1.0
Hexavalent Chromium	ug/l	1 [22]	<0.5	<0.5	<0.5	<0.5	--	<0.5	--	<0.5	<0.5	0.6	0.6	<0.5	<0.5	0.8	<0.5
Iron	ug/l	300	100	100	<100	**1100**	--	**600**	--	<100	<100	<100	170	<100	<100	180	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	25000	21000	15000	22000	--	30000	--	28000	31000	40000	31000	46000	40000	19000	19000
Manganese	ug/l	--	77	35	10	350	--	140	--	16	3	8	35	5.4	5.0	77	10
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	4700	3700	2900	4400	--	6500	--	4000	5600	6400	5800	6400	5800	4400	3200
Silicon	ug/l	--	2400	1400	430	1400	--	3100	--	2700	1500	1800	2000	3500	3100	1600	510
Silver	ug/l	0.1	<0.10	<0.1	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	48000	35000	20000	37000	--	63000	--	46000	49000	67000	52000	72000	65000	38000	29000
Strontium	ug/l	--	3700	3200	2300	3500	--	4400	--	4400	4400	5300	4700	6200	5000	3400	2800
Sulfur	ug/l	--	77000	60000	40000	73000	--	110000	--	110000	120000	130000	120000	140000	120000	65000	74000
Thallium	ug/l	0.3 [33]	<0.05	<0.05	<0.05	0.09	--	<0.05	--	<0.05	<0.05	<0.05	<0.050	<0.050	<0.050	<0.050	<0.050
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-5	SS-5	SS-5	SS-5	SS-5	SS-5	SS-5	SS-5	SS-5	SS-5	SS-5	SS-5	SS-5	SS-5	SS-5
			24-May-2012	29-Jun-2012 [2]	20-Jul-2012 [2]	29-Aug-2012 [2]	26-Sep-2012	10-Oct-2012	28-Nov-2012 [2]	17-Dec-2012 [3]	16-Jan-2013 [9]	26-Feb-2013	25-Mar-2013	01-Apr-2013 [4]	10-May-2013	21-Jun-2013	24-Jun-2013
			SS-5	SS-5	s-5	s-5	SS-5	SS-5	SS-5	s-5	SS-5	SS-5	SS-5	ss5	SS-5	SS-5	SS-5
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	120000	--	--	--	160000	180000	--	--	130000	200000	150000	--	130000	130000	--
Ammonia, unionized (Field)	ug/l	20	<20	--	--	--	<20	<20	--	--	<20	<20	<20	--	<20	<20	--
Ammonia Nitrogen	ug/l	--	<50	--	--	--	180	54	--	--	110	66	<50	--	60	58	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	--	--	--	<2000	2000	--	--	<2000	<2000	<2000	--	<2000	<2000	--
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	22000	--	--	--	13000	25000	--	--	4200	22000	11000	--	16000	9100	--
Chloride	ug/l	--	37000	--	--	--	35000	35000	--	--	65000	36000	37000	--	41000	48000	--
Chromium (III)	ug/l	8.9 [22]	<5	--	--	--	<5	<5	--	--	<5	<5	<5	--	<5	<5	--
Conductivity (Field)	uS/cm	--	765	--	--	--	1075	1080	--	--	860	856	797	--	844	986	--
Dissolved Organic Carbon	ug/l	--	8500	--	--	--	7200	6400	--	--	2100	4500	3600	--	3900	3600	--
Hardness, Calcium Carbonate	ug/l	--	350000	--	--	--	470000	520000	--	--	490000	520000	390000	--	360000	430000	--
Nitrate as N	ug/l	--	<100	--	--	--	<100	110	--	--	1100	250	790	--	590	260	--
Nitrite as N	ug/l	--	<10	--	--	--	<10	<10	--	--	11	<10	<10	--	<10	<10	--
Nitrogen, Total Kjeldahl	ug/l	--	660	--	--	--	670	840	--	--	910	530	770	--	710	480	--
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.8	--	--	--	7.7	7.8	--	--	7.9	7.31	7.34	--	7.8	7.57	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	20	--	--	--	11	33	--	--	5	22	4	--	11	6	--
Sulphate	ug/l	--	230000	--	--	--	350000	360000	--	--	360000	320000	240000	--	260000	320000	--
Temperature (Field)	deg c	-- [24]	14	--	--	--	10	8	--	--	1	1.0	1.2	--	18	19.3	--
Total Dissolved Solids	ug/l	--	504000	--	--	--	758000	768000	--	--	794000	640000	572000	--	574000	690000	--
Total Suspended Solids	ug/l	--	6000	--	--	--	<1000	<1000	--	--	<1000	2000	1000	--	<1000	2000	--
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	48	--	--	--	71	73	--	--	51	50	41	--	51	--	49
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	200	--	--	--	160	150	--	--	**210**	120	100	--	160	--	140
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	99000	--	--	--	150000	170000	--	--	140000	150000	130000	--	120000	--	110000
Chromium	ug/l	-- [30]	<5.0	--	--	--	<5.0	<5.0	--	--	<5.0	<5.0	<5.0	--	<5.0	--	<5
Cobalt	ug/l	0.9	<0.50	--	--	--	<0.50	<0.50	--	--	<0.50	<0.50	<0.50	--	<0.50	--	<0.5
Copper	ug/l	5	<1.0	--	--	--	<1.0	1.0	--	--	<1.0	<1.0	4.7	--	<1.0	--	1
Hexavalent Chromium	ug/l	1 [22]	<0.5	--	--	--	<0.5	<0.5	--	--	**1.1**	<0.50	<0.50	--	<0.50	<0.50	--
Iron	ug/l	300	<100	--	--	--	<100	140	--	--	<100	<100	<100	--	<100	--	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	22000	--	--	--	29000	33000	--	--	38000	26000	24000	--	22000	--	21000
Manganese	ug/l	--	30	--	--	--	21	72	--	--	6.1	15	9.1	--	9.2	--	33
Mercury	ug/l	0.2 [32]	<0.10	--	--	--	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	--	<0.10	<0.10	--
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	3800	--	--	--	5200	5000	--	--	6600	3800	4500	--	5500	--	4400
Silicon	ug/l	--	1300	--	--	--	2300	2400	--	--	2400	2300	1900	--	1500	--	1200
Silver	ug/l	0.1	<0.10	--	--	--	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	--	<0.10	--	<0.1
Sodium	ug/l	--	38000	--	--	--	35000	39000	--	--	67000	35000	37000	--	44000	--	30000
Strontium	ug/l	--	3300	--	--	--	4900	4500	--	--	5700	3900	3500	--	3600	--	3400
Sulfur	ug/l	--	75000	--	--	--	120000	130000	--	--	130000	110000	85000	--	88000	--	70000
Thallium	ug/l	0.3 [33]	<0.050	--	--	--	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	--	<0.050	--	<0.05
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-5 29-Jul-2013 SS-5	SS-5 14-Aug-2013 SS-5	SS-5 26-Sep-2013 SS-5	SS-5 25-Oct-2013 SS-5	SS-5 22-Nov-2013 SS-5	SS-5 23-Dec-2013 SS-5	SS-5 09-Jan-2014 [4] s5	SS-5 04-Feb-2014 [4] s5	SS-5 26-Mar-2014 SS-5	SS-5 22-Apr-2014 SS-5	SS-5 21-May-2014 SS-5	SS-5 19-Jun-2014 SS-5	SS-5 15-Jul-2014 [2] S5	SS-5 25-Aug-2014 SS-5	SS-5 23-Sep-2014 SS-5
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	180000	140000	130000	140000	200000	220000	--	--	210000	120000	160000	150000	--	180000	170000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	--	--	<20	<20	<20	<20	--	<20	<20
Ammonia Nitrogen	ug/l	--	210	<50	68	130	<50	<50	--	--	240	110	<50	<50	--	<50	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	<2000	--	--	<2000	<2000	<2000	<2000	--	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	21000	8200	9000	12000	18000	11000	--	--	8200	11000	47000	8500	--	24000	16000
Chloride	ug/l	--	35000	56000	42000	48000	26000	27000	--	--	39000	33000	22000	64000	--	25000	28000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	<5	--	--	<5	<5	<5	<5	--	<5	<5
Conductivity (Field)	uS/cm	--	584	1069	909	715	815	900	--	--	1007	890	795	1055	--	845	990
Dissolved Organic Carbon	ug/l	--	7600	4000	3300	2900	6100	4700	--	--	4000	2900	5700	3400	--	6700	5900
Hardness, Calcium Carbonate	ug/l	--	370000	440000	410000	470000	400000	450000	--	--	440000	300000	290000	460000	--	340000	340000
Nitrate as N	ug/l	--	<100	<100	250	770	<100	340	--	--	260	780	<100	330	--	<100	<100
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10	<10	--	--	<10	<10	<10	<10	--	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	710	340	340	480	590	520	--	--	730	400	2200	470	--	530	510
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.61	7.57	6.87	7.5	7.68	8.13	--	--	7.91	7.6	7.6	7.52	--	7.7	7.8
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	23	6	6	13	60	5	--	--	19	3	250	8	--	10	13
Sulphate	ug/l	--	200000	330000	340000	350000	220000	250000	--	--	270000	190000	160000	330000	--	200000	190000
Temperature (Field)	deg c	-- [24]	17.5	17.3	13.1	5	4.4	1.2	--	--	0.1	7	8	18.7	--	22	19
Total Dissolved Solids	ug/l	--	592000	762000	736000	804000	532000	606000	--	--	682000	454000	414000	904000	--	500000	538000
Total Suspended Solids	ug/l	--	<1000	1000	2000	4000	2000	1000	--	--	<1000	2000	14000	3000	--	3000	11000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	51	60	51	53	43	45	--	--	47	37	36	59	--	49	43
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	120	**240**	200	180	83	60	--	--	130	100	99	200	--	130	120
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	120000	130000	120000	140000	120000	150000	--	--	150000	89000	90000	140000	--	110000	110000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	<5.0	<5.0	--	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
Copper	ug/l	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
Iron	ug/l	300	140	<100	<100	<100	**640**	<100	--	--	<100	<100	110	110	--	**390**	240
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	20000	32000	30000	35000	20000	24000	--	--	28000	18000	16000	34000	--	21000	20000
Manganese	ug/l	--	210	20	18	6.7	210	27	--	--	6.4	12	32	27	--	120	96
Mercury	ug/l	0.2 [32]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	3400	6700	6500	6700	3000	2600	--	--	4100	4800	3100	7700	--	4100	4200
Silicon	ug/l	--	3300	2300	1600	2000	1600	1900	--	--	2800	660	850	1900	--	2600	2000
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10
Sodium	ug/l	--	31000	50000	43000	49000	21000	22000	--	--	35000	27000	20000	55000	--	23000	26000
Strontium	ug/l	--	3000	5200	4700	5200	2900	3200	--	--	3800	2900	2500	5100	--	3200	2900
Sulfur	ug/l	--	17000	110000	120000	130000	72000	85000	--	--	93000	73000	54000	120000	--	69000	69000
Thallium	ug/l	0.3 [33]	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	--	0.054	<0.050
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-5 27-Oct-2014 SS-5	SS-5 20-Nov-2014 SS-5	SS-5 09-Dec-2014 [11] SS-5	SS-5 16-Mar-2015 SS-5	SS-5 07-Apr-2015 SS-5	SS-5 21-May-2015 [2] 5	SS-5 23-Jun-2015 [2] 5	SS-5 22-Jul-2015 [2] 5	SS-5 28-Aug-2015 [10] SS-5	SS-5 25-Sep-2015 SS-5	SS-5 27-Oct-2015 [2] 5	SS-5 20-Nov-2015 SS-5	SS-5 10-Dec-2015 SS-5	SS-5 26-Jan-2016 [10] SS-5
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	190000	190000	210000	180000	150000	--	--	--	140000	170000	--	170000	180000	150000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	--	--	--	<20	<20	--	<20	<20	<20
Ammonia Nitrogen	ug/l	--	69	<50	<50	160	<50	--	--	--	<50	<50	--	<50	<50	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	--	--	--	<2000	<2000	--	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	15000	6600	11000	4600	11000	--	--	--	13000	26000	--	16000	9100	10000
Chloride	ug/l	--	30000	34000	45000	74000	58000	--	--	--	73000	40000	--	38000	35000	72000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	--	--	--	<5	<5	--	<5	<5	<5
Conductivity (Field)	uS/cm	--	789	834	1097	1208	994	--	--	--	1088	1010	--	887	951	1223
Dissolved Organic Carbon	ug/l	--	5200	3800	4300	3100	2600	--	--	--	4400	6600	--	5900	4800	2400
Hardness, Calcium Carbonate	ug/l	--	390000	400000	530000	560000	440000	--	--	--	500000	420000	--	440000	430000	520000
Nitrate as N	ug/l	--	<100	160	460	740	860	--	--	--	<100	<100	--	<100	<100	980
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10	--	--	--	<10	<10	--	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	340	250	280	500	330	--	--	--	420	510	--	350	250	280
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.87	7.96	8.12	8.47	7.76	--	--	--	7.31	7.4	--	8.05	7.95	7.77
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	11	7	8	16	9	--	--	--	15	110	--	7	9	17
Sulphate	ug/l	--	210000	240000	340000	350000	300000	--	--	--	380000	290000	--	280000	260000	370000
Temperature (Field)	deg c	-- [24]	9.1	2.0	0.7	0.7	2.7	--	--	--	18.5	13	--	5.9	5.2	0.4
Total Dissolved Solids	ug/l	--	566000	538000	800000	824000	626000	--	--	--	960000	676000	--	686000	668000	884000
Total Suspended Solids	ug/l	--	3000	2000	<1000	1000	2000	--	--	--	<1000	16000	--	<1000	<1000	5000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	44	44	47	51	42	--	--	--	53	67	--	37	37	49
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	110	110	120	190	140	--	--	--	200	110	--	84	76	140
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	130000	140000	170000	150000	120000	--	--	--	160000	140000	--	130000	140000	150000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	<5.0	<5.0	--	--	--	<5.0	<5.0	--	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	0.72	--	<0.50	<0.50	<0.50
Copper	ug/l	5	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	--	<1.0	1.2	--	<1.0	<1.0	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	<0.50	--	<0.50	<0.50	0.58
Iron	ug/l	300	110	<100	<100	<100	<100	--	--	--	<100	**1700**	--	<100	<100	230
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	23000	27000	34000	38000	29000	--	--	--	38000	24000	--	24000	24000	39000
Manganese	ug/l	--	53	50	24	15	12	--	--	--	18	570	--	6.9	8.0	51
Mercury	ug/l	0.2 [32]	<0.10	<0.10	<0.10	<0.10	<0.10	--	--	--	<0.10	<0.10	--	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	4600	5000	5000	6100	4800	--	--	--	8400	5100	--	4400	3800	7800
Silicon	ug/l	--	2300	2300	2800	2700	2100	--	--	--	2400	2800	--	1500	1500	2500
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	--	--	--	<0.10	<0.10	--	<0.10	<0.10	<0.10
Sodium	ug/l	--	28000	32000	44000	54000	42000	--	--	--	47000	27000	--	26000	25000	48000
Strontium	ug/l	--	3300	3500	4200	5300	3800	--	--	--	5400	3200	--	3000	2800	4900
Sulfur	ug/l	--	79000	87000	130000	140000	96000	--	--	--	130000	92000	--	83000	88000	130000
Thallium	ug/l	0.3 [33]	<0.050	<0.050	<0.050	<0.050	<0.050	--	--	--	0.068	<0.050	--	<0.050	<0.050	<0.050
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-5 23-Feb-2016 SS-5	SS-5 21-Mar-2016 [9] SS-5	SS-5 26-Apr-2016 SS-5	SS-5 31-May-2016 [2] 5	SS-5 30-Jun-2016 [2] 5	SS-5 13-Jul-2016 SS-5	SS-5 04-Aug-2016 [2] 5	SS-5 20-Sep-2016 [2] 5	SS-5 26-Oct-2016 [9] SS-5	SS-5 11-Nov-2016 SS-5	SS-5 14-Dec-2016 SS-5	SS-5 23-Jan-2017 SS-5	SS-5 14-Feb-2017 [3] 5	SS-5 27-Mar-2017 SS-6	SS-5 21-Apr-2017 SS-5
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	170000	110000	160000	--	--	160000	--	--	120000	180000	180000	180000	--	160000	150000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	--	--	<20	--	--	<20	<20	<20	<20	--	<20	<20
Ammonia Nitrogen	ug/l	--	<50	260	<50	--	--	<50	--	--	<50	<50	150	<50	--	140	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	--	--	<2000	--	--	<2000	2000	<2000	<2000	--	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	<4000	9200	10000	--	--	21000	--	--	11000	17000	12000	17000	--	10000	13000
Chloride	ug/l	--	64000	44000	27000	--	--	86000	--	--	48000	39000	30000	28000	--	36000	37000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	--	--	<5	--	--	<5	<5	<5	<5	--	<5	<5
Conductivity (Field)	uS/cm	--	375	700	712	--	--	535	--	--	865	969	925	865	--	834	726
Dissolved Organic Carbon	ug/l	--	2800	2400	4800	--	--	3400	--	--	2900	5800	6200	5200	--	4200	4300
Hardness, Calcium Carbonate	ug/l	--	510000	290000	330000	--	--	560000	--	--	470000	540000	450000	410000	--	370000	330000
Nitrate as N	ug/l	--	760	1040	100	--	--	110	--	--	590	170	100	120	--	270	230
Nitrite as N	ug/l	--	<10	<10	<10	--	--	<10	--	--	<10	<10	<10	<10	--	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	230	470	110	--	--	300	--	--	120	390	500	250	--	360	220
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.96	7.76	7.76	--	--	7.7	--	--	7.8	7.10	7.6	7.46	--	7.66	7.17
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	6	<4	7	--	--	25	--	--	<4	13	7	12	--	13	6
Sulphate	ug/l	--	360000	190000	170000	--	--	380000	--	--	340000	330000	280000	250000	--	190000	190000
Temperature (Field)	deg c	-- [24]	0	1.3	6.4	--	--	21	--	--	16	7.0	3	1.3	--	0.6	7.9
Total Dissolved Solids	ug/l	--	828000	504000	464000	--	--	990000	--	--	812000	786000	656000	608000	--	554000	462000
Total Suspended Solids	ug/l	--	1000	1000	1000	--	--	53000	--	--	<2000	3000	5000	11000	--	3000	1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	43	31	33	--	--	83	--	--	45	48	40	38	--	34	37
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	130	75	74	--	--	**250**	--	--	130	94	73	69	--	76	87
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	150000	94000	110000	--	--	170000	--	--	130000	140000	150000	140000	--	120000	100000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	--	--	<5.0	--	--	<5.0	<5.0	<5.0	<5.0	--	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	--	--	<0.50	--	--	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
Copper	ug/l	5	<1.0	<1.0	<1.0	--	--	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.50	**1.2**	<0.50	--	--	<0.50	--	--	0.58	<0.50	<0.50	<0.50	--	<0.50	<0.50
Iron	ug/l	300	<100	<100	<100	--	--	**740**	--	--	<100	<100	**380**	140	--	<100	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	34000	19000	17000	--	--	38000	--	--	32000	26000	23000	21000	--	21000	19000
Manganese	ug/l	--	10	3.6	2.2	--	--	170	--	--	<2.0	3.9	87	23	--	9.2	2.3
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	--	--	<0.1	--	--	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	6000	6000	3800	--	--	8600	--	--	8900	5900	3800	3500	--	4600	5900
Silicon	ug/l	--	2400	1300	690	--	--	3200	--	--	2000	1800	1900	2200	--	1800	690
Silver	ug/l	0.1	<0.10	<0.10	<0.10	--	--	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10
Sodium	ug/l	--	43000	33000	19000	--	--	53000	--	--	42000	28000	21000	18000	--	28000	24000
Strontium	ug/l	--	4100	2500	2600	--	--	5200	--	--	3900	3400	2600	2700	--	2700	2600
Sulfur	ug/l	--	120000	68000	58000	--	--	150000	--	--	130000	120000	97000	86000	--	71000	65000
Thallium	ug/l	0.3 [33]	<0.050	<0.050	<0.050	--	--	0.074	--	--	<0.050	<0.050	<0.050	<0.050	--	<0.050	<0.050
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-5 23-May-2017 SS-5	SS-5 26-Jun-2017 SS-5	SS-5 21-Jul-2017 [48] 5	SS-5 11-Aug-2017 [2] 5	SS-5 08-Sep-2017 SS-5	SS-5 17-Oct-2017 SS-5	SS-5 17-Nov-2017 SS-5	SS-5 07-Dec-2017 [14] SS-5	SS-5 22-Jan-2018 SS-5	SS-5 16-Feb-2018 [3] 5	SS-5 13-Mar-2018 SS-5	SS-5 24-Apr-2018 SS-5	SS-5 18-May-2018 SS-5	SS-5 22-Jun-2018 [2] 5	SS-5 18-Jul-2018 [2] 5
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	180000	190000	--	--	190000	180000	160000	150000	198000	--	189000	162000	176000	--	--
Ammonia, unionized (Field)	ug/l	20	<20	<20	--	--	<20	<20	<20	<20	<20	--	<20	<20	<20	--	--
Ammonia Nitrogen	ug/l	--	170	670	--	--	<50	<50	<50	<50	80	--	560	240	580	--	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	--	--	<2000	<2000	<2000	<2000	<1000	--	<1000	<1000	<1000	--	--
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	14000	17000	--	--	11000	11000	9700	<4000	12000	--	12000	6000	11000	--	--
Chloride	ug/l	--	39000	63000	--	--	49000	76000	41000	81000	38000	--	21000	41000	45000	--	--
Chromium (III)	ug/l	8.9 [22]	<5	<5	--	--	<5	<5	<5	<5	**<10**	--	**<10**	**<10**	**<10**	--	--
Conductivity (Field)	uS/cm	--	833	923	--	--	928	1051	844	1206	572	--	714	661	808	--	--
Dissolved Organic Carbon	ug/l	--	4800	5300	--	--	4700	4500	3900	2700	4400	--	4700	4400	4400	--	--
Hardness, Calcium Carbonate	ug/l	--	380000	440000	--	--	420000	490000	400000	520000	420000	--	370000	291000	386000	--	--
Nitrate as N	ug/l	--	<100	<100	--	--	<100	<100	460	750	210	--	260	<100	120	--	--
Nitrite as N	ug/l	--	<10	<10	--	--	<10	<10	<10	<10	<100	--	<100	<100	<100	--	--
Nitrogen, Total Kjeldahl	ug/l	--	480	1200	--	--	230	240	190	140	400	--	900	300	700	--	--
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.86	7.50	--	--	7.53	6.67	7.28	7.30	6.87	--	7.60	8.01	7.83	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	9	60	--	--	10	8	12	5	<2	--	53	63	27	--	--
Sulphate	ug/l	--	220000	240000	--	--	260000	330000	270000	340000	223000	--	156000	167000	180000	--	--
Temperature (Field)	deg c	-- [24]	12.7	16.2	--	--	14.9	12.1	2.8	1.6	0.1	--	0.4	6.1	9.8	--	--
Total Dissolved Solids	ug/l	--	580000	722000	--	--	686000	830000	655000	810000	541000	--	473000	446000	534000	--	--
Total Suspended Solids	ug/l	--	<1000	3000	--	--	<2000	<1000	<1000	<1000	22000	--	53000	<1000	<1000	--	--
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	43	58	--	--	54	56	38	46	40	--	40	30	40	--	--
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	89	120	--	--	120	120	88	130	80	--	70	80	80	--	--
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	130000	150000	--	--	150000	150000	130000	150000	132000	--	120000	90000	125000	--	--
Chromium	ug/l	-- [30]	<5.0	<5.0	--	--	<5.0	<5.0	<5.0	<5.0	<1	--	<1	<1	<1	--	--
Cobalt	ug/l	0.9	<0.50	<0.50	--	--	<0.50	<0.50	<0.50	<0.50	<0.2	--	<0.2	<0.2	<0.2	--	--
Copper	ug/l	5	<1.0	3.9	--	--	<1.0	<1.0	<1.0	<1.0	<1	--	<1	<1	<1	--	--
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.50	--	--	<0.50	<0.50	<0.50	0.56	**<10**	--	**<10**	**<10**	**<10**	--	--
Iron	ug/l	300	<100	**470**	--	--	<100	<100	<100	<100	50	--	140	<30	60	--	--
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	20000	25000	--	--	26000	28000	24000	35000	22000	--	17000	16000	18000	--	--
Manganese	ug/l	--	10	140	--	--	13	12	8.0	7.2	10	--	30	<10	20	--	--
Mercury	ug/l	0.2 [32]	<0.1	<0.1	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	--	--
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	4900	5200	--	--	6300	7500	6800	11000	5000	--	4000	5000	6000	--	--
Silicon	ug/l	--	1200	2200	--	--	2500	2700	1900	2300	1800	--	1700	900	900	--	--
Silver	ug/l	0.1	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	<0.1	--	<0.1	<0.1	<0.1	--	--
Sodium	ug/l	--	25000	31000	--	--	32000	39000	26000	51000	23000	--	17000	21000	26000	--	--
Strontium	ug/l	--	2500	3200	--	--	3600	3700	2800	4700	2790	--	2540	2700	2290	--	--
Sulfur	ug/l	--	73000	82000	--	--	86000	110000	83000	130000	53300	--	44700	42600	67000	--	--
Thallium	ug/l	0.3 [33]	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.1	--	<0.1	<0.1	<0.1	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO (1)	SS-5 24-Aug-2018 SS-5	SS-5 18-Sep-2018 (2) SS-5	SS-5 24-Oct-2018 SS-5	SS-5 20-Nov-2018 SS-5	SS-5 18-Dec-2018 SS-5	SS-5 25-Jan-2019 (3) 5	SS-5 21-Feb-2019 (3) 5	SS-5 13-Mar-2019 (3) 5	SS-5 17-Apr-2019 SS-5	SS-5 24-May-2019 SS - 5	SS-5 21-Jun-2019 SS-5	SS-5 18-Jul-2019 (2) SS-5	SS-5 21-Aug-2019 (2) SS-5	SS-5 18-Sep-2019 (2) SS-5	SS-5 29-Oct-2019 SS-5
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- (21)	160000	--	173000	205000	192000	--	--	--	106000	188000	173000	--	--	--	99000
Ammonia, unionized (Field)	ug/l	20	<20	--	<20	<20	<20	--	--	--	<20	<20	<20	--	--	--	<20
Ammonia Nitrogen	ug/l	--	70	--	20	220	70	--	--	--	30	31	<10	--	--	--	60
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	--	<1000	<1000	2000	--	--	--	<1000	<1000	<1000	--	--	--	3000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	11000	--	<5000	9000	11000	--	--	--	6000	12000	14000	--	--	--	36000
Chloride	ug/l	--	89000	--	72000	36000	35000	--	--	--	37000	13000	42000	--	--	--	65000
Chromium (III)	ug/l	8.9 (22)	<1	--	**<10**	**<10**	**<10**	--	--	--	1	1	<1	--	--	--	1
Conductivity (Field)	uS/cm	--	1126	--	1044	844	43	--	--	--	620	562	723	--	--	--	1031
Dissolved Organic Carbon	ug/l	--	4600	--	4600	5900	4500	--	--	--	1900	4700	4900	--	--	--	2700
Hardness, Calcium Carbonate	ug/l	--	431000	--	440000	460000	413000	--	--	--	251000	294000	344000	--	--	--	392000
Nitrate as N	ug/l	--	<100	--	180	150	330	--	--	--	910	170	<100	--	--	--	840
Nitrite as N	ug/l	--	<100	--	<100	<100	<100	--	--	--	<100	<100	<100	--	--	--	<100
Nitrogen, Total Kjeldahl	ug/l	--	500	--	300	1600	400	--	--	--	<100	310	250	--	--	--	300
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.53	--	7.55	7.20	7.40	--	--	--	7.23	8.17 (37)	6.90	--	--	--	7.65
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- (23)	12	--	<2	8	12	--	--	--	4	5	6	--	--	--	4
Sulphate	ug/l	--	363000	--	338000	259000	246000	--	--	--	141000	117000	176000	--	--	--	288000
Temperature (Field)	deg c	-- (24)	18.7	--	6.4	2.2	0	--	--	--	6.4	10.8	14.8	--	--	--	7.5
Total Dissolved Solids	ug/l	--	840000	--	805000	591000	583000	--	--	--	397000	338000	884000	--	--	--	629000
Total Suspended Solids	ug/l	--	2000	--	2000	6000	135000	--	--	--	<1000	<1000	2000	--	--	--	1000
Turbidity	ntu	-- (25)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- (26)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	80	--	<10	40	40	--	--	--	30	30	40	--	--	--	40
Beryllium	ug/l	-- (27)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 (28)	150	--	<10	80	60	--	--	--	50	60	110	--	--	--	130
Cadmium	ug/l	0.2 (29)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	133000	--	135000	148000	129000	--	--	--	79000	98000	108000	--	--	--	114000
Chromium	ug/l	-- (30)	<1	--	<1	2	<1	--	--	--	1	1	<1	--	--	--	1
Cobalt	ug/l	0.9	<0.2	--	<0.2	<0.2	<0.2	--	--	--	<0.2	<0.2	<0.2	--	--	--	<0.2
Copper	ug/l	5	<1	--	<1	<1	<1	--	--	--	<1	<1	<1	--	--	--	<1
Hexavalent Chromium	ug/l	1 (22)	**<10**	--	**<10**	**<10**	**<10**	--	--	--	<1	<1	<1	--	--	--	<1
Iron	ug/l	300	<30	--	<30	40	80	--	--	--	<30	<30	<30	--	--	--	<30
Lead	ug/l	-- (31)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	24000	--	25000	22000	22000	--	--	--	13000	12000	18000	--	--	--	26000
Manganese	ug/l	--	<10	--	<10	<10	30	--	--	--	<10	<10	<10	--	--	--	<10
Mercury	ug/l	0.2 (32)	<0.1	--	<0.1	<0.1	<0.1	--	--	--	<0.1	<0.1	<0.1	--	--	--	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	10000	--	8000	5000	5000	--	--	--	7000	3000	6000	--	--	--	9000
Silicon	ug/l	--	2300	--	1800	1600	1600	--	--	--	900	700	1100	--	--	--	1900
Silver	ug/l	0.1	<0.1	--	<0.1	<0.1	<0.1	--	--	--	<0.1	<0.1	<0.1	--	--	--	<0.1
Sodium	ug/l	--	46000	--	40000	23000	22000	--	--	--	24000	12000	22000	--	--	--	39000
Strontium	ug/l	--	4130	--	<1	3150	2500	--	--	--	1830	1630	2350	--	--	--	3760
Sulfur	ug/l	--	141000	--	124000	89600	89000	--	--	--	55500	40600	67200	--	--	--	103000
Thallium	ug/l	0.3 (33)	<0.1	--	<0.1	<0.1	<0.1	--	--	--	<0.1	<0.1	<0.1	--	--	--	<0.1
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 (29)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 (34)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-5 19-Nov-2019 SS-5	SS-5 18-Dec-2019 SS-5	SS-5 15-Jan-2020 SS-5	SS-5 19-Feb-2020 [3] SS-5	SS-5 19-Mar-2020 SS-5	SS-5 03-Apr-2020 SS-5	SS-5 08-May-2020 SS-5	SS-5 01-Jun-2020 SS-5	SS-5 21-Jul-2020 [2] SS-5	SS-5 25-Aug-2020 SS-5	SS-5 17-Sep-2020 SS-5	SS-5 23-Oct-2020 SS-5	SS-5 26-Nov-2020 SS-5	SS-5 11-Dec-2020 SS-5	SS-5 08-Jan-2021 SS-5
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	202000	201000	107000	--	175000	152000	146000	186000	--	194000	207000	128000	169000	172000	125000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	--	<20	<20	<20	<20	--	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	718	<10	<10	--	<10	<10	<10	582	--	230	111	<10	10	<10	<10
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	3000	<1000	3000	--	5000	<1000	<1000	7000	--	5000	4000	6000	2000	1000	3000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	<5000	12000	<5000	--	<5000	8000	13000	15000	--	13000	19000	<5000	<5000	6000	8000
Chloride	ug/l	--	33000	35000	38000	--	28000	23000	62000	17000	--	30000	28000	72000	62000	50000	70000
Chromium (III)	ug/l	8.9 [22]	<1	<1	6	--	**<10**	<1	<1	<1	--	<1	<1	<1	<1	<1	<1
Conductivity (Field)	uS/cm	--	885	1009	697	--	680	614	929	694	--	908	903	1125	1130	1113	1128
Dissolved Organic Carbon	ug/l	--	5300	5400	1900	--	3500	4100	4000	5400	--	7400	6600	2800	3600	3500	2200
Hardness, Calcium Carbonate	ug/l	--	389000	470000	277000	--	333000	281000	384000	323000	--	442000	437000	446000	500000	491000	470000
Nitrate as N	ug/l	--	210	170	750	--	130	<100	210	<100	--	<100	130	<500	340	1000	1470
Nitrite as N	ug/l	--	<100	<100	<100	--	<100	<100	<100	<100	--	<100	<100	<500	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	100	547	263	--	220	388	385	620	--	739	941	580	594	272	147
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.82	8.01	7.83	--	7.96	7.92	7.69	7.71	--	7.61	7.04	7.65	7.27	7.69	7.62
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	11	8	3	--	5	4	43	13	--	18	10	7	7	8	4
Sulphate	ug/l	--	217000	259000	199000	--	143000	122000	230000	139000	--	265000	254000	367000	355000	339000	385000
Temperature (Field)	deg c	-- [24]	0.9	0.3	0.3	--	1.7	5.2	4.4	6.9	--	17.7	12.9	11.5	4.1	2.6	0.2
Total Dissolved Solids	ug/l	--	580000	624000	454000	--	429000	394000	594000	423000	--	601000	598000	798000	791000	735000	798000
Total Suspended Solids	ug/l	--	9000	14000	<1000	--	<1000	1000	7000	20000	--	13000	11000	1000	7000	5000	<1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	40	40	20	--	30	30	50	30	--	60	50	50	50	40	40
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	70	70	90	--	80	60	110	80	--	130	80	180	100	110	140
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	123000	152000	83000	--	107000	91000	119000	108000	--	144000	142000	134000	159000	147000	134000
Chromium	ug/l	-- [30]	<1	<1	6	--	<1	<1	<1	<1	--	<1	<1	<1	<1	<1	1
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	--	<0.2	<0.2	0.5	<0.2	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Copper	ug/l	5	<1	<1	<1	--	<1	<1	<1	<1	--	<1	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	<1	<1	<1	--	**<10**	<1	<1	<1	--	<0.50	<0.50	0.6	<1	<0.5	0.84
Iron	ug/l	300	30	<30	**390**	--	<30	30	**480**	40	--	40	<30	<30	<30	70	<30
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	20000	22000	17000	--	16000	13000	21000	13000	--	20000	20000	27000	25000	30000	33000
Manganese	ug/l	--	<10	<10	<10	--	<10	<10	190	10	--	<10	<10	<10	<10	20	<10
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	5000	5000	7000	--	5000	4000	9000	4000	--	6000	5000	11000	9000	9000	12000
Silicon	ug/l	--	1500	1600	1600	--	1500	1000	1100	1200	--	3300	2000	2900	2500	2600	3000
Silver	ug/l	0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	22000	23000	31000	--	22000	15000	40000	15000	--	22000	21000	50000	42000	39000	56000
Strontium	ug/l	--	2650	2960	2290	--	3170	1850	2890	1920	--	3460	2890	4750	3570	3850	4180
Sulfur	ug/l	--	74000	97200	64500	--	52300	44200	89000	57900	--	97200	93800	134000	131000	134000	133000
Thallium	ug/l	0.3 [33]	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-5 18-Feb-2021 SS-5	SS-5 22-Mar-2021 SS-5	SS-5 09-Apr-2021 [49] SS-5	SS-5 28-May-2021 [2] SS5	SS-5 28-Jun-2021 SS-5	SS-5 15-Jul-2021 [2] SS5	SS-5 11-Aug-2021 [2] 5	SS-5 28-Sep-2021 SS5	SS-5 27-Oct-2021 SS5	SS-5 11-Nov-2021 SS5	SS-5 15-Dec-2021 SS5	SS-5 25-Jan-2022 [3] SS5	SS-5 24-Feb-2022 [4] 5	SS-5 17-Mar-2022 [19] SW5
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	189000	174000	176000	--	119000	--	--	161000	104000	171000	185000	--	--	119000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	--	<20	--	--	<20	<20	<20	<20	--	--	<20
Ammonia Nitrogen	ug/l	--	<10	10	<10	--	<10	--	--	<10	<10	<10	<10	--	--	69
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	5000	<1000	<1000	--	<1000	--	--	<1000	<1000	<1000	3000	--	--	1000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	14000	5000	9000	--	<5000	--	--	<5000	<5000	5000	9000	--	--	8000
Chloride	ug/l	--	70000	28000	23000	--	92000	--	--	73000	47000	40000	17000	--	--	74000
Chromium (III)	ug/l	8.9 [22]	<1	<1	<1	--	<1	--	--	<1	<1	<1	<1	--	--	<1
Conductivity (Field)	uS/cm	--	1256	799	698	--	1163	--	--	1080	810	1182	712	--	--	792
Dissolved Organic Carbon	ug/l	--	3200	4300	4700	--	2600	--	--	4200	2700	6200	7100	--	--	3200
Hardness, Calcium Carbonate	ug/l	--	581000	316000	347000	--	502000	--	--	509000	354000	433000	368000	--	--	354000
Nitrate as N	ug/l	--	480	<100	<500	--	440	--	--	<100	860	130	<100	--	--	750
Nitrite as N	ug/l	--	<100	<100	<500	--	<100	--	--	<100	<100	<100	<100	--	--	<100
Nitrogen, Total Kjeldahl	ug/l	--	1150	310	576	--	353	--	--	1350	319	430	326	--	--	283
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.62	7.56	7.51	--	7.67	--	--	7.56	7.90	7.77	7.70	--	--	7.84
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	30	4	5	--	8	--	--	5	2	3	3	--	--	6
Sulphate	ug/l	--	387000	202000	160000	--	401000	--	--	361000	258000	286000	180000	--	--	244000
Temperature (Field)	deg c	-- [24]	0.3	2.4	5.4	--	19.8	--	--	13.6	9.9	6.9	0.9	--	--	3.5
Total Dissolved Solids	ug/l	--	861000	501000	436000	--	840000	--	--	798000	590000	637000	463000	--	--	580000
Total Suspended Solids	ug/l	--	<1000	<1000	<1000	--	<1000	--	--	<1000	<1000	<1000	1000	--	--	<1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	50	30	30	--	50	--	--	60	40	50	20	--	--	30
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	130	40	60	--	**220**	--	--	160	100	70	40	--	--	100
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	180000	102000	116000	--	145000	--	--	156000	107000	137000	121000	--	--	102000
Chromium	ug/l	-- [30]	<1	<1	<1	--	<1	--	--	<1	<1	<1	<1	--	--	<1
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	--	<0.2	--	--	<0.2	<0.2	<0.2	<0.2	--	--	<0.2
Copper	ug/l	5	<1	<1	<1	--	<1	--	--	<1	<1	<1	<1	--	--	<1
Hexavalent Chromium	ug/l	1 [22]	<0.5	<0.5	<0.5	--	<0.50	--	--	<0.50	0.9	<0.50	<0.50	--	--	0.6
Iron	ug/l	300	100	<30	<30	--	<30	--	--	<30	<30	<30	<30	--	--	<30
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	32000	15000	14000	--	34000	--	--	29000	21000	22000	16000	--	--	24000
Manganese	ug/l	--	20	<10	<10	--	<10	--	--	<10	<10	<10	<10	--	--	<10
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	--	<0.1	--	--	<0.1	<0.1	<0.1	<0.1	--	--	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	7000	4000	3000	--	13000	--	--	11000	12000	8000	3000	--	--	8000
Silicon	ug/l	--	2000	1800	1500	--	2800	--	--	2700	2000	1800	1500	--	--	2600
Silver	ug/l	0.1	<0.1	<0.1	<0.1	--	<0.1	--	--	<0.1	<0.1	<0.1	<0.1	--	--	<0.1
Sodium	ug/l	--	48000	19000	15000	--	59000	--	--	47000	29000	28000	11000	--	--	46000
Strontium	ug/l	--	3680	2280	2390	--	4220	--	--	4090	2840	3030	1490	--	--	3200
Sulfur	ug/l	--	144000	71200	57100	--	141000	--	--	129000	109000	110000	60600	--	--	81200
Thallium	ug/l	0.3 [33]	<0.1	<0.1	<0.1	--	<0.1	--	--	<0.1	<0.1	<0.1	<0.1	--	--	<0.1
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO (1)	SS-5	SS-5	SS-5	SS-5
			28-Apr-2022	26-May-2022 (2)	24-Jun-2022	25-Jul-2022
			SS5	5	SS5	SS5
General Chemistry						
Alkalinity (Total as CaCO3)	ug/l	-- (21)	136000	--	178000	193000
Ammonia, unionized (Field)	ug/l	20	<20	--	<20	<20
Ammonia Nitrogen	ug/l	--	<10	--	95	<20
Bicarbonate	ug/l	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	--	2000	<1000
Carbonate (CO3)	ug/l	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	5000	--	5000	11000
Chloride	ug/l	--	100000	--	42000	51000
Chromium (III)	ug/l	8.9 (22)	<1	--	<1.0	<1
Conductivity (Field)	uS/cm	--	1103	--	804	946
Dissolved Organic Carbon	ug/l	--	3600	--	6300	7600
Hardness, Calcium Carbonate	ug/l	--	537000	--	425000	434000
Nitrate as N	ug/l	--	940	--	<100	<100
Nitrite as N	ug/l	--	<100	--	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	850	--	411	1250
Nitrogen, Organic	ug/l	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.86	--	7.29	7.02
Phosphate	ug/l	--	--	--	--	--
Phosphorus	ug/l	-- (23)	<2	--	7	11
Sulphate	ug/l	--	367000	--	251000	282000
Temperature (Field)	deg c	-- (24)	7.3	--	19.2	18.1
Total Dissolved Solids	ug/l	--	861000	--	572000	618000
Total Suspended Solids	ug/l	--	<1000	--	<1000	1000
Turbidity	ntu	-- (25)	--	--	--	--
Metals						
Aluminum, dissolved	ug/l	-- (26)	--	--	--	--
Barium	ug/l	--	50	--	50	60
Beryllium	ug/l	-- (27)	--	--	--	--
Boron	ug/l	200 (28)	110	--	120	160
Cadmium	ug/l	0.2 (29)	--	--	--	--
Calcium	ug/l	--	159000	--	134000	139000
Chromium	ug/l	-- (30)	<1	--	<1	<1
Cobalt	ug/l	0.9	<0.2	--	<0.2	<0.2
Copper	ug/l	5	<1	--	<1	<1
Hexavalent Chromium	ug/l	1 (22)	<0.50	--	<0.50	<0.5
Iron	ug/l	300	<30	--	<30	30
Lead	ug/l	-- (31)	--	--	--	--
Magnesium	ug/l	--	34000	--	22000	21000
Manganese	ug/l	--	<10	--	<10	<10
Mercury	ug/l	0.2 (32)	<0.1	--	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--
Nickel	ug/l	25	--	--	--	--
Potassium	ug/l	--	14000	--	7000	7000
Silicon	ug/l	--	1200	--	1900	3300
Silver	ug/l	0.1	<0.1	--	<0.1	<0.1
Sodium	ug/l	--	59000	--	27000	30000
Strontium	ug/l	--	3880	--	2890	3360
Sulfur	ug/l	--	140000	--	79700	95800
Thallium	ug/l	0.3 (33)	<0.1	--	<0.1	<0.1
Titanium	ug/l	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--
Zinc	ug/l	30 (29)	--	--	--	--
Phenols						
Phenolics, Total Recoverable	ug/l	1 (34)	--	--	--	--

Parameter	Unit	PWQO [1]	SS-6 25-Sep-2002 [2]	SS-6 31-Oct-2002	SS-6 28-Nov-2002	SS-6 15-Jan-2003 [4]	SS-6 12-Feb-2003 [4]	SS-6 15-Mar-2003 [4]	SS-6 28-Apr-2003 [4]	SS-6 24-May-2003 [4]	SS-6 24-Jun-2003 [4]	SS-6 16-Jul-2003 [4]	SS-6 14-Aug-2003	SS-6 30-Sep-2003 [4]	SS-6 30-Oct-2003 [5]	SS-6 19-Nov-2003
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	189000	280000	--	--	--	--	--	--	--	252000	--	--	158000
Ammonia, unionized (Field)	ug/l	20	--	<20	<20	--	--	--	--	--	--	--	<20	--	--	<20
Ammonia Nitrogen	ug/l	--	--	<20	<20	--	--	--	--	--	--	--	60	--	--	<20
Bicarbonate	ug/l	--	--	189000	280000	--	--	--	--	--	--	--	252000	--	--	158000
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	<1000	2000	--	--	--	--	--	--	--	<1000	--	--	<1000
Carbonate (CO3)	ug/l	--	--	<2000	<5000	--	--	--	--	--	--	--	<2000	--	--	<2000
Chemical Oxygen Demand	ug/l	--	--	20000	26000	--	--	--	--	--	--	--	36000	--	--	9000
Chloride	ug/l	--	--	8000	4000	--	--	--	--	--	--	--	5000	--	--	5000
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	450	500	--	--	--	--	--	--	--	440	--	--	295
Dissolved Organic Carbon	ug/l	--	--	9100	9400	--	--	--	--	--	--	--	15100	--	--	4600
Hardness, Calcium Carbonate	ug/l	--	--	260000	300000	--	--	--	--	--	--	--	260000	--	--	176000
Nitrate as N	ug/l	--	--	<100	<100	--	--	--	--	--	--	--	<100	--	--	<100
Nitrite as N	ug/l	--	--	<100	<100	--	--	--	--	--	--	--	<100	--	--	<100
Nitrogen, Total Kjeldahl	ug/l	--	--	500	500	--	--	--	--	--	--	--	1500	--	--	200
Nitrogen, Organic	ug/l	--	--	480	480	--	--	--	--	--	--	--	1440	--	--	180
pH (Field)	-	6.5 - 8.5	--	7.6	7.4	--	--	--	--	--	--	--	7.3	--	--	7
Phosphate	ug/l	--	--	40	50	--	--	--	--	--	--	--	40	--	--	<30
Phosphorus	ug/l	-- [23]	--	30	20	--	--	--	--	--	--	--	20	--	--	20
Sulphate	ug/l	--	--	63000	21000	--	--	--	--	--	--	--	8000	--	--	17000
Temperature (Field)	deg c	-- [24]	--	3	0	--	--	--	--	--	--	--	24	--	--	2
Total Dissolved Solids	ug/l	--	--	317000	359000	--	--	--	--	--	--	--	300000	--	--	222000
Total Suspended Solids	ug/l	--	--	<2000	2000	--	--	--	--	--	--	--	7000	--	--	2000
Turbidity	ntu	-- [25]	--	0.4	1.8	--	--	--	--	--	--	--	0.8	--	--	1
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	<10	<10	--	--	--	--	--	--	--	<10	--	--	10
Barium	ug/l	--	--	20	<10	--	--	--	--	--	--	--	30	--	--	20
Beryllium	ug/l	-- [27]	--	<1	<1	--	--	--	--	--	--	--	<1	--	--	<1
Boron	ug/l	200 [28]	--	<50	<50	--	--	--	--	--	--	--	<10	--	--	<10
Cadmium	ug/l	0.2 [29]	--	<0.1	<0.1	--	--	--	--	--	--	--	0.1	--	--	<0.1
Calcium	ug/l	--	--	96000	115000	--	--	--	--	--	--	--	96000	--	--	67000
Chromium	ug/l	-- [30]	--	<1	3	--	--	--	--	--	--	--	5	--	--	1
Cobalt	ug/l	0.9	--	0.3	0.3	--	--	--	--	--	--	--	<0.2	--	--	<0.2
Copper	ug/l	5	--	1	1	--	--	--	--	--	--	--	**7**	--	--	<1
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	10	40	--	--	--	--	--	--	--	200	--	--	20
Lead	ug/l	-- [31]	--	<1	<1	--	--	--	--	--	--	--	<1	--	--	<1
Magnesium	ug/l	--	--	5000	3000	--	--	--	--	--	--	--	5000	--	--	2000
Manganese	ug/l	--	--	9	1060	--	--	--	--	--	--	--	84	--	--	<10
Mercury	ug/l	0.2 [32]	--	<0.1	<0.1	--	--	--	--	--	--	--	<0.1	--	--	<0.1
Molybdenum	ug/l	40	--	<5	<5	--	--	--	--	--	--	--	<5	--	--	<5
Nickel	ug/l	25	--	<5	<5	--	--	--	--	--	--	--	2	--	--	<5
Potassium	ug/l	--	--	<1000	<1000	--	--	--	--	--	--	--	<1000	--	--	<1000
Silicon	ug/l	--	--	1100	2300	--	--	--	--	--	--	--	3300	--	--	1200
Silver	ug/l	0.1	--	<0.1	<0.1	--	--	--	--	--	--	--	<0.1	--	--	<0.1
Sodium	ug/l	--	--	8000	3000	--	--	--	--	--	--	--	4000	--	--	2000
Strontium	ug/l	--	--	121	148	--	--	--	--	--	--	--	181	--	--	93
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	--	**<1**	**<1**	--	--	--	--	--	--	--	**<1**	--	--	**<1**
Titanium	ug/l	--	--	<10	<10	--	--	--	--	--	--	--	<10	--	--	<10
Vanadium	ug/l	6	--	<1	1	--	--	--	--	--	--	--	1	--	--	<1
Zinc	ug/l	30 [29]	--	<5	<5	--	--	--	--	--	--	--	13	--	--	<10
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	<1	<1	--	--	--	--	--	--	--	<1	--	--	<1

Parameter	Unit	PWQO [1]	SS-6 23-Dec-2003 [4]	SS-6 27-Jan-2004 [4]	SS-6 20-Feb-2004 [4]	SS-6 24-Mar-2004 [4]	SS-6 12-Apr-2004	SS-6 12-May-2004	SS-6 28-Jun-2004	SS-6 19-Jul-2004	SS-6 17-Aug-2004	SS-6 30-Sep-2004	SS-6 07-Oct-2004 [4]	SS-6 23-Nov-2004 [4]	SS-6 09-Dec-2004 [4]	SS-6 14-Jan-2005 [4]
General Chemistry																
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	167000	177000	232000	169000	152000	238000	--	--	--	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	<20	<20	<20	<20	<20	<20	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	<30	80	<30	60	60	<30	--	--	--	--
Bicarbonate	ug/l	--	--	--	--	--	202000	211000	281000	202000	180000	283000	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	700	1000	2600	4900	1000	<500	--	--	--	--
Carbonate (CO3)	ug/l	--	--	--	--	--	<1000	<1000	<1000	<1000	1000	1000	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	11000	30000	44000	66000	48000	17000	--	--	--	--
Chloride	ug/l	--	--	--	--	--	9800	33300	14800	693000	14400	23600	--	--	--	--
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	285	500	480	425	380	495	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	3500	10900	9200	18900	14200	7500	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	199560	197500	269228	216700	289000	274000	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	<200	<200	<200	<200	<200	<200	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	<200	<200	<200	<2000	<200	<200	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	270	520	650	1440	1000	280	--	--	--	--
Nitrogen, Organic	ug/l	--	--	--	--	--	310	440	620	1380	940	250	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	7.1	7.1	7.2	7.1	7	7.8	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	<1000	<1000	<1000	<1000	<1000	<1000	--	--	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	8	8	66	28	18	3	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	26200	10700	25300	12000	117000	51000	--	--	--	--
Temperature (Field)	deg c	-- [24]	--	--	--	--	4	8	14	18	22	10	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	220000	290000	284000	1424000	398000	392000	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	2000	1000	9000	10000	4000	2000	--	--	--	--
Turbidity	ntu	-- [25]	--	--	--	--	0.3	0.6	5.4	1.8	1.4	0.5	--	--	--	--
Metals																
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	<5	<5	12	12	<5	6	--	--	--	--
Barium	ug/l	--	--	--	--	--	19	32	109	57	35	30	--	--	--	--
Beryllium	ug/l	-- [27]	--	--	--	--	<1	<1	<1	<1	<1	<1	--	--	--	--
Boron	ug/l	200 [28]	--	--	--	--	<5	6	15	11	18	<5	--	--	--	--
Cadmium	ug/l	0.2 [29]	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--
Calcium	ug/l	--	--	--	--	--	73100	73800	101000	75300	107000	100000	--	--	--	--
Chromium	ug/l	-- [30]	--	--	--	--	<5	10	11	<5	<5	<5	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	<0.1	<0.1	0.2	0.1	<0.1	<0.1	--	--	--	--
Copper	ug/l	5	--	--	--	--	<0.5	2.4	**5.8**	1.9	1.6	<0.5	--	--	--	--
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	<30	110	**940**	**340**	90	<30	--	--	--	--
Lead	ug/l	-- [31]	--	--	--	--	<0.5	<0.5	1.3	<0.5	<0.5	<0.5	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	4100	3200	4080	6930	5330	5870	--	--	--	--
Manganese	ug/l	--	--	--	--	--	<5	30	71	88	52	7	--	--	--	--
Mercury	ug/l	0.2 [32]	--	--	--	--	**0.61**	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--	<1	<1	<1	<1	<1	<1	--	--	--	--
Nickel	ug/l	25	--	--	--	--	<1	<1	<1	<1	<1	<1	--	--	--	--
Potassium	ug/l	--	--	--	--	--	500	300	1200	400	600	400	--	--	--	--
Silicon	ug/l	--	--	--	--	--	690	560	2430	1540	2260	1460	--	--	--	--
Silver	ug/l	0.1	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	--
Sodium	ug/l	--	--	--	--	--	4800	20100	10600	468000	8000	9600	--	--	--	--
Strontium	ug/l	--	--	--	--	--	153	160	157	1470	237	254	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	--	--	--	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	--	--	--	--
Titanium	ug/l	--	--	--	--	--	<5	<5	19	<5	<5	<5	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	<0.5	<0.5	0.8	<5	<0.5	<0.5	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	<5	6	11	25	8	<5	--	--	--	--
Phenols																
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	<1	<1	1	<1	<1	<1	--	--	--	--

Parameter	Unit	PWQO [1]	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6
			11-Feb-2005 [4]	14-Mar-2005 [4]	15-Apr-2005 [4]	29-May-2005 [4]	12-Jun-2005 [4]	12-Jul-2005 [4]	14-Aug-2005 [4]	24-Sep-2005 [4]	24-Oct-2005 [4]	16-Nov-2005 [4]	29-Dec-2005 [4]	19-Jan-2006 [4]	15-Feb-2006 [4]
General Chemistry															
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	--	--	--	--	--	--	--	--	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	--	--	--	--	--	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Temperature (Field)	deg c	-- [24]	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals															
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	ug/l	-- [30]	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	--	--	--	--	--	--	--	--	--	--	--	--	--
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	ug/l	0.2 [32]	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silicon	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Strontium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	ug/l	0.3 [33]	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols															
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-6 30-Mar-2006 [4]	SS-6 11-Apr-2006 [4]	SS-6 12-May-2006 [4]	SS-6 20-Jun-2006 [4]	SS-6 24-Jul-2006	SS-6 14-Aug-2006	SS-6 29-Sep-2006	SS-6 25-Oct-2006	SS-6 14-Nov-2006	SS-6 12-Dec-2006	SS-6 31-Jan-2007 [3]	SS-6 27-Feb-2007 [3]	SS-6 30-Mar-2007	SS-6 26-Apr-2007	SS-6 29-May-2007 T-3
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	154000	173000	170000	177000	174000	178000	--	--	154000	171000	224000
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	<20	<20	<20	<20	<20	<20	--	--	<20	<20	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	80	40	<20	<20	<20	<20	--	--	<20	<20	30
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	<1000	<1000	<1000	<1000	<1000	<1000	--	--	<1000	<1000	<1000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	10000	14000	12000	11000	5000	<5000	--	--	16000	<5000	7000
Chloride	ug/l	--	--	--	--	--	38000	35000	20000	19000	18000	21000	--	--	16000	21000	15000
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	495	495	510	400	425	455	--	--	525	390	430
Dissolved Organic Carbon	ug/l	--	--	--	--	--	5000	6400	6500	5400	5200	4500	--	--	3600	4700	5900
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	306000	326000	298000	250000	277000	263000	--	--	203000	274000	276000
Nitrate as N	ug/l	--	--	--	--	--	<100	<100	<100	230	550	900	--	--	590	<100	<100
Nitrite as N	ug/l	--	--	--	--	--	<100	<100	<100	<100	<100	<100	--	--	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	330	360	310	130	230	210	--	--	130	260	430
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	7.3	7.4	7.5	7.3	7.4	7.4	--	--	7.4	7.4	7.2
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	30	30	20	<10	10	30	--	--	30	<10	30
Sulphate	ug/l	--	--	--	--	--	146000	149000	126000	105000	90000	84000	--	--	59000	100000	68000
Temperature (Field)	deg c	-- [24]	--	--	--	--	13	11	9	3	3	2	--	--	3	4	10
Total Dissolved Solids	ug/l	--	--	--	--	--	455000	476000	411000	387000	366000	382000	--	--	299000	378000	382000
Total Suspended Solids	ug/l	--	--	--	--	--	4000	2000	2000	<2000	<2000	3000	--	--	<2000	<2000	<2000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	<10	<10	<10	<10	<10	<10	--	--	<10	<10	<10
Barium	ug/l	--	--	--	--	--	40	40	30	30	30	30	--	--	30	30	40
Beryllium	ug/l	-- [27]	--	--	--	--	<1	<1	<1	<1	<1	<1	--	--	<1	<1	<1
Boron	ug/l	200 [28]	--	--	--	--	40	30	40	50	60	40	--	--	90	70	110
Cadmium	ug/l	0.2 [29]	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	<0.1	<0.1	<0.1
Calcium	ug/l	--	--	--	--	--	106000	109000	101000	82000	91000	87000	--	--	65000	90000	89000
Chromium	ug/l	-- [30]	--	--	--	--	2	<1	<1	<1	<1	2	--	--	1	<1	2
Cobalt	ug/l	0.9	--	--	--	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	--	<0.2	<0.2	<0.2
Copper	ug/l	5	--	--	--	--	<1	<1	<1	<1	<1	<1	--	--	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron	ug/l	300	--	--	--	--	110	230	150	40	70	30	--	--	<30	<30	60
Lead	ug/l	-- [31]	--	--	--	--	<1	<1	<1	<1	<1	<1	--	--	<1	<1	<1
Magnesium	ug/l	--	--	--	--	--	10000	13000	11000	11000	12000	11000	--	--	10000	12000	13000
Manganese	ug/l	--	--	--	--	--	80	160	80	10	10	<10	--	--	10	<10	50
Mercury	ug/l	0.2 [32]	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	<5	<5	<5	<5	<5	<5	--	--	<5	<5	<5
Nickel	ug/l	25	--	--	--	--	<5	<5	<5	<5	<5	<5	--	--	<5	<5	<5
Potassium	ug/l	--	--	--	--	--	2000	2000	1000	2000	2000	2000	--	--	2000	3000	2000
Silicon	ug/l	--	--	--	--	--	1300	1400	1400	1200	900	800	--	--	1200	400	1200
Silver	ug/l	0.1	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	<0.1	<0.1	<0.1
Sodium	ug/l	--	--	--	--	--	20000	18000	15000	15000	15000	12000	--	--	17000	22000	18000
Strontium	ug/l	--	--	--	--	--	638	810	596	674	690	729	--	--	731	821	736
Sulfur	ug/l	--	--	--	--	--	48666.7	49700	42000	35000	30000	28000	--	--	19700	33300	22700
Thallium	ug/l	0.3 [33]	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	0.1	**0.4**	**0.5**
Titanium	ug/l	--	--	--	--	--	<10	<10	<10	<10	<10	<10	--	--	<10	<10	<10
Vanadium	ug/l	6	--	--	--	--	<1	1	1	<1	<1	<1	--	--	2	<1	1
Zinc	ug/l	30 [29]	--	--	--	--	<10	<10	<10	<10	<10	<10	--	--	<10	<10	<10
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	<1	<1	<1	<1	<1	<1	--	--	<1	<1	<1

Parameter	Unit	PWQO [1]	SS-6 26-Jun-2007	SS-6 23-Jul-2007 [4]	SS-6 28-Aug-2007	SS-6 28-Sep-2007 [4]	SS-6 25-Oct-2007 [2]	SS-6 29-Nov-2007	SS-6 18-Dec-2007 [3]	SS-6 08-Jan-2008	SS-6 06-Feb-2008 [4]	SS-6 31-Mar-2008	SS-6 25-Apr-2008	SS-6 22-May-2008	SS-6 25-Jun-2008	SS-6 09-Jul-2008	SS-6 08-Aug-2008
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	260000	--	178000	--	--	177000	--	133000	--	166000	163000	210000	197000	242000	273000
Ammonia, unionized (Field)	ug/l	20	<20	--	<20	--	--	<20	--	<20	--	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	60	--	<20	--	--	<20	--	200	--	<50	<50	<50	<50	140	130
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	3000	--	<1000	--	--	<1000	--	1000	--	<2000	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	20000	--	19000	--	--	7000	--	<5000	--	14000	12000	14000	13000	21000	17000
Chloride	ug/l	--	30000	--	21000	--	--	33000	--	33000	--	37000	14000	15000	24000	23000	18000
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	--	--	--	<5	<5	<5	<5	<5	<5
Conductivity (Field)	uS/cm	--	480	--	605	--	--	480	--	500	--	525	450	490	520	500	485
Dissolved Organic Carbon	ug/l	--	12000	--	10800	--	--	6600	--	2200	--	3800	4100	3900	5800	7000	5500
Hardness, Calcium Carbonate	ug/l	--	320000	--	389000	--	--	310000	--	341000	--	290000	220000	280000	330000	290000	340000
Nitrate as N	ug/l	--	<100	--	<100	--	--	<100	--	1720	--	300	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	<100	--	<100	--	--	<100	--	<100	--	<10	<10	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	1190	--	650	--	--	250	--	420	--	500	500	700	500	700	600
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.2	--	7.3	--	--	7.3	--	7.2	--	7.4	7.4	7.4	7.4	7.4	7.2
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	80	--	30	--	--	10	--	20	--	11	6	15	5	11	4
Sulphate	ug/l	--	94000	--	179000	--	--	150000	--	194000	--	143000	67000	78000	129000	99000	88000
Temperature (Field)	deg c	-- [24]	16	--	22	--	--	1	--	2	--	3	7	16	17	19	23
Total Dissolved Solids	ug/l	--	485000	--	482000	--	--	488000	--	502000	--	470000	330000	360000	440000	448000	446000
Total Suspended Solids	ug/l	--	14000	--	<2000	--	--	<2000	--	24000	--	<10000	<10000	<10000	<10000	<10000	<10000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	30	--	10	--	--	30	--	<10	--	--	--	--	--	--	--
Barium	ug/l	--	60	--	40	--	--	30	--	90	--	34	28	37	44	46	54
Beryllium	ug/l	-- [27]	<1	--	<1	--	--	<1	--	<1	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	80	--	70	--	--	30	--	150	--	80	80	80	100	90	100
Cadmium	ug/l	0.2 [29]	<0.1	--	<0.1	--	--	<0.1	--	<0.1	--	--	--	--	--	--	--
Calcium	ug/l	--	115000	--	136000	--	--	106000	--	87000	--	90000	75000	77000	100000	110000	110000
Chromium	ug/l	-- [30]	2	--	1	--	--	1	--	5	--	<5	<5	<5	<5	<5	<5
Cobalt	ug/l	0.9	0.5	--	<0.2	--	--	0.2	--	0.6	--	--	--	--	--	--	--
Copper	ug/l	5	1	--	<1	--	--	<1	--	<1	--	2	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	--	**<50**	--	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**
Iron	ug/l	300	**610**	--	<30	--	--	30	--	160	--	<100	<100	<100	<100	<100	<100
Lead	ug/l	-- [31]	<1	--	<1	--	--	<1	--	<1	--	--	--	--	--	--	--
Magnesium	ug/l	--	8000	--	12000	--	--	11000	--	30000	--	16000	10000	11000	12000	13000	13000
Manganese	ug/l	--	3360	--	<10	--	--	<10	--	20	--	6	3	<2	17	28	81
Mercury	ug/l	0.2 [32]	<0.1	--	<0.1	--	--	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	<5	--	<5	--	--	<5	--	<5	--	--	--	--	--	--	--
Nickel	ug/l	25	<5	--	<5	--	--	<5	--	<5	--	--	--	--	--	--	--
Potassium	ug/l	--	1000	--	1000	--	--	1000	--	6000	--	2500	2300	2100	1700	1900	2000
Silicon	ug/l	--	5200	--	2000	--	--	1400	--	2800	--	2000	1300	1300	1700	2100	2000
Silver	ug/l	0.1	<0.1	--	<0.1	--	--	<0.1	--	<0.1	--	--	--	--	--	--	--
Sodium	ug/l	--	26000	--	18000	--	--	28000	--	34000	--	37000	17000	15000	24000	25000	20000
Strontium	ug/l	--	287	--	956	--	--	920	--	3970	--	1100	1100	1100	1600	1300	1200
Sulfur	ug/l	--	31300	--	59700	--	--	50000	--	64700	--	46000	23000	20000	44000	34000	28000
Thallium	ug/l	0.3 [33]	<0.1	--	<0.1	--	--	<0.1	--	<0.1	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Titanium	ug/l	--	<10	--	<10	--	--	<10	--	<10	--	--	--	--	--	--	--
Vanadium	ug/l	6	1	--	2	--	--	<1	--	2	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	<10	--	<10	--	--	<10	--	<10	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	<1	--	<1	--	--	<1	--	<1	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-6 26-Sep-2008 [5]	SS-6 23-Oct-2008 [4]	SS-6 20-Nov-2008 [4]	SS-6 22-Dec-2008 [4]	SS-6 20-Jan-2009 [4] SS-6	SS-6 24-Feb-2009 [4] SS-6	SS-6 31-Mar-2009 T-5	SS-6 20-Apr-2009 SS-6	SS-6 22-May-2009 SS-6	SS-6 23-Jun-2009 T-5	SS-6 27-Jul-2009 SS-6	SS-6 13-Aug-2009 SS-6	SS-6 24-Sep-2009 [4] SS-6	SS-6 15-Oct-2009 SS-6	SS-6 18-Nov-2009 SS-6
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	--	--	169000	139000	243000	213000	195000	193000	--	202000	179000
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	--	<20	<20	<20	<20	<20	<20	--	<20	<20
Ammonia Nitrogen	ug/l	--	--	--	--	--	--	--	<50	<50	<50	110	<50	70	--	<50	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--	--	<2000	<2000	<2000	7000	<2000	<2000	--	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	--	14000	8000	20000	20000	27000	13000	--	15000	14000
Chloride	ug/l	--	--	--	--	--	--	--	37000	55000	28000	230000	32000	41000	--	50000	49000
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	--	<5	<5	<5	<5	<5	<5	--	<5	<5
Conductivity (Field)	uS/cm	--	--	--	--	--	--	--	745	595	765	605	910	890	--	980	985
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	--	4700	3400	7100	12900	8400	6800	--	5000	4100
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--	--	320000	290000	310000	290000	340000	360000	--	400000	420000
Nitrate as N	ug/l	--	--	--	--	--	--	--	1000	600	<100	<100	<100	<100	--	300	2100
Nitrite as N	ug/l	--	--	--	--	--	--	--	10	<10	<10	<10	<10	<10	--	<10	30
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	--	500	600	600	1500	700	600	--	300	600
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--	--	7.9	8	7.8	7.9	7.6	7.7	--	7.8	7.9
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	--	--	11	9	22	130	14	11	--	<2	<2
Sulphate	ug/l	--	--	--	--	--	--	--	180000	170000	86000	37000	160000	240000	--	260000	300000
Temperature (Field)	deg c	-- [24]	--	--	--	--	--	--	6	8	13	20	24.0	20	--	8	4
Total Dissolved Solids	ug/l	--	--	--	--	--	--	--	480000	470000	440000	750000	465000	586000	--	640000	665000
Total Suspended Solids	ug/l	--	--	--	--	--	--	--	<10000	<10000	<10000	10000	4000	3000	--	<1000	<1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	--	--	--	--	--	--	44	43	51	180	55	59	--	57	54
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	--	--	--	--	--	--	100	110	80	20	110	170	--	120	150
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	--	--	--	--	--	--	100000	93000	110000	100000	100000	110000	--	130000	130000
Chromium	ug/l	-- [30]	--	--	--	--	--	--	<5	<5	<5	<5	<5	<5	--	<5	<5
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	--	--	--	--	--	--	<1	<1	<1	2	<1	<1	--	<1	<1
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	--	**<5**	**<5**	**9**	**<5**	**<5**	**<5**	--	**<5**	**<5**
Iron	ug/l	300	--	--	--	--	--	--	<100	<100	**400**	**600**	200	200	--	300	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	--	--	--	--	--	--	16000	17000	14000	7100	15000	20000	--	25000	26000
Manganese	ug/l	--	--	--	--	--	--	--	12	10	340	570	78	220	--	140	33
Mercury	ug/l	0.2 [32]	--	--	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	--	--	--	--	--	--	3400	3600	3500	2400	3100	5200	--	4200	4800
Silicon	ug/l	--	--	--	--	--	--	--	2100	840	1700	5700	2500	1200	--	1600	2000
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	--	--	--	--	--	--	34000	41000	28000	140000	29000	54000	--	64000	61000
Strontium	ug/l	--	--	--	--	--	--	--	1600	1900	1400	590	1800	2300	--	2400	2700
Sulfur	ug/l	--	--	--	--	--	--	--	54000	56000	31000	14000	48000	75000	--	83000	89000
Thallium	ug/l	0.3 [33]	--	--	--	--	--	--	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	--	<0.05	<0.05
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6
			10-Dec-2009	20-Jan-2010 [4]	03-Feb-2010 [4]	31-Mar-2010	06-Apr-2010 [40]	06-May-2010 [4]	02-Jun-2010 [2]	07-Jul-2010	18-Aug-2010	29-Sep-2010	28-Oct-2010	22-Nov-2010	09-Dec-2010	12-Jan-2011	23-Feb-2011 [3]
			SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	160000	--	--	176000	162000	--	--	264000	198000	192000	224000	185000	276000	202000	--
Ammonia, unionized (Field)	ug/l	20	<20	--	--	<20	<20	--	--	<20	<20	<20	<20	<20	<20	<20	--
Ammonia Nitrogen	ug/l	--	<50	--	--	<50	<50	--	--	<50	<50	60	<50	<50	<50	160	--
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	--	--	3000	<2000	--	--	<2000	<2000	3000	<2000	<2000	<2000	<2000	--
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	10000	--	--	25000	13000	--	--	19000	27000	16000	15000	13000	25000	17000	--
Chloride	ug/l	--	45000	--	--	29000	32000	--	--	81000	72000	82000	62000	49000	63000	64000	--
Chromium (III)	ug/l	8.9 [22]	<5	--	--	<5	<5	--	--	<5	<5	<5	<5	<5	<5	<5	--
Conductivity (Field)	uS/cm	--	920	--	--	1010	880	--	--	899	995	590	890	805	701	490	--
Dissolved Organic Carbon	ug/l	--	3100	--	--	7200	4700	--	--	6400	6600	7300	5800	4700	6400	3400	--
Hardness, Calcium Carbonate	ug/l	--	380000	--	--	310000	340000	--	--	540000	460000	410000	420000	400000	430000	460000	--
Nitrate as N	ug/l	--	2900	--	--	<100	300	--	--	<100	<100	<100	<100	300	<100	700	--
Nitrite as N	ug/l	--	20	--	--	<10	<10	--	--	<10	<10	<10	<10	<10	<10	<10	--
Nitrogen, Total Kjeldahl	ug/l	--	500	--	--	700	600	--	--	600	500	700	400	400	700	500	--
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.6	--	--	7.7	7.8	--	--	7.7	7.7	7.6	7.6	7.6	7.81	7.7	--
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	5	--	--	21	3	--	--	14	11	18	<2	8	32	13	--
Sulphate	ug/l	--	290000	--	--	140000	170000	--	--	280000	270000	250000	210000	210000	160000	260000	--
Temperature (Field)	deg c	-- [24]	2	--	--	6	11.5	--	--	30	25	13	6	3	0.5	1	--
Total Dissolved Solids	ug/l	--	650000	--	--	424000	476000	--	--	780000	674000	674000	638000	544000	544000	664000	--
Total Suspended Solids	ug/l	--	1000	--	--	2000	<1000	--	--	3000	3000	3000	3000	2000	49000	4000	--
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	44	--	--	41	45	--	--	110	74	66	53	49	45	63	--
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	110	--	--	70	150	--	--	**230**	190	190	110	90	40	150	--
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	110000	--	--	100000	93000	--	--	170000	140000	130000	140000	130000	150000	140000	--
Chromium	ug/l	-- [30]	<5	--	--	<5	<5	--	--	<5	<5	<5	<5	<5	<5	<5	--
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.50	--
Copper	ug/l	5	<1	--	--	1	<1	--	--	1	<1	<1	<1	<1	<1	<1	--
Hexavalent Chromium	ug/l	1 [22]	**<5**	--	--	<0.5	**<5**	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	**<5**	--
Iron	ug/l	300	<100	--	--	100	<100	--	--	200	**400**	**500**	200	300	200	**700**	--
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	22000	--	--	12000	17000	--	--	26000	25000	26000	23000	22000	13000	31000	--
Manganese	ug/l	--	14	--	--	12	15	--	--	170	130	350	150	260	84	410	--
Mercury	ug/l	0.2 [32]	<0.1	--	--	<0.1	<0.1	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	3900	--	--	2500	3500	--	--	5100	5600	5500	4300	4000	2400	5000	--
Silicon	ug/l	--	1500	--	--	480	1100	--	--	1400	2600	2100	1200	1200	2000	2700	--
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.10	--
Sodium	ug/l	--	50000	--	--	25000	35000	--	--	62000	56000	73000	54000	48000	53000	60000	--
Strontium	ug/l	--	2300	--	--	1200	2100	--	--	3000	3300	3400	2700	2500	1100	3800	--
Sulfur	ug/l	--	85000	--	--	44000	61000	--	--	100000	93000	83000	82000	72000	49000	88000	--
Thallium	ug/l	0.3 [33]	<0.05	--	--	<0.05	<0.05	--	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	--
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-6 30-Mar-2011 SS-6	SS-6 14-Apr-2011 [50] SS-6	SS-6 12-May-2011 SS 6	SS-6 20-Jun-2011 SW-4	SS-6 19-Jul-2011 SS-6	SS-6 26-Aug-2011 [4] SS-6	SS-6 21-Sep-2011 S-3	SS-6 28-Oct-2011 SS-6	SS-6 14-Nov-2011 [9] SS-6	SS-6 08-Dec-2011 SS - 6	SS-6 11-Jan-2012 SS -6	SS-6 06-Feb-2012 SS- 6	SS-6 13-Mar-2012 [9] SS-6	SS-6 10-Apr-2012 SS-6	SS-6 24-May-2012 SS-6
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	170000	185000	235000	271000	210000	--	134000	245000	354000	252000	265000	224000	110000	280000	180000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	--	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	90	<50	140	<50	210	--	140	260	<50	<50	<50	<50	60	<50	150
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	<2000	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	18000	18000	32000	41000	24000	--	36000	24000	16000	16000	11000	22000	18000	16000	23000
Chloride	ug/l	--	20000	36000	87000	62000	64000	--	49000	77000	85000	62000	94000	97000	37000	62000	36000
Chromium (III)	ug/l	8.9 [22]	**19**	<5	<5	<5	<5	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
Conductivity (Field)	uS/cm	--	840	760	615	872	900	--	1386	925	1045	970	795	680	626	760	805
Dissolved Organic Carbon	ug/l	--	3900	4900	7300	12700	6600	--	9700	6200	5600	5500	6200	4700	2500	4900	2700
Hardness, Calcium Carbonate	ug/l	--	190000	260000	350000	330000	420000	--	910000	490000	600000	440000	420000	500000	240000	450000	360000
Nitrate as N	ug/l	--	<100	<100	<100	<100	<100	--	<100	<100	<100	300	<100	300	940	<100	<100
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10	--	<10	<10	<10	<10	<10	<10	10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	600	500	700	900	900	--	1000	700	400	400	300	400	1100	540	370
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.8	7.8	7.5	7.21	7.2	--	7.65	7.3	7.6	7.7	7.5	7.8	7.52	7.5	7.6
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	19	17	32	39	28	--	34	11	18	10	15	15	83	27	15
Sulphate	ug/l	--	43000	87000	150000	97000	260000	--	770000	260000	280000	210000	140000	250000	170000	190000	180000
Temperature (Field)	deg c	-- [24]	2	10	15	20.7	24	--	17.1	13	4	3	1	1	2	9	16
Total Dissolved Solids	ug/l	--	698000	390000	596000	552000	714000	--	1190000	800000	894000	668000	844000	764000	398000	678000	494000
Total Suspended Solids	ug/l	--	3000	2000	8000	1000	4000	--	1000	2000	1000	1000	3000	6000	15000	1000	3000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	31	38	74	70	80	--	130	64	93	58	55	77	33	73	58
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	50	100	120	80	140	--	140	110	90	77	170	54	96	59	160
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	86000	87000	120000	120000	150000	--	320000	160000	210000	160000	170000	190000	82000	160000	110000
Chromium	ug/l	-- [30]	<5	<5	<5	<5	<5	--	<5	<5	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	1	<1	1	1	<1	--	1	<1	<1	<1.0	<1.0	<1.0	<1.0	<1.0	1.1
Hexavalent Chromium	ug/l	1 [22]	<0.5	0.5	<0.5	<0.5	<0.5	--	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5
Iron	ug/l	300	100	**400**	**1800**	200	**1600**	--	<100	**600**	<100	120	110	220	290	190	**1100**
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	10000	15000	19000	15000	22000	--	28000	23000	27000	23000	39000	20000	17000	18000	18000
Manganese	ug/l	--	54	190	900	2400	660	--	61	430	53	380	4.9	88	20	180	540
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	1700	3000	4500	2900	4700	--	3600	3700	4400	3600	5100	2700	3600	3100	3400
Silicon	ug/l	--	1100	780	920	7100	3100	--	860	1900	2700	2200	3000	3000	1800	1700	1400
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	18000	32000	72000	60000	67000	--	57000	63000	78000	64000	64000	110000	32000	61000	39000
Strontium	ug/l	--	1200	1900	2200	1600	2900	--	2900	2600	2600	2200	4300	1500	2600	1600	2400
Sulfur	ug/l	--	24000	33000	54000	33000	89000	--	280000	85000	88000	78000	130000	76000	58000	67000	61000
Thallium	ug/l	0.3 [33]	<0.05	<0.05	<0.05	<0.05	<0.05	--	<0.05	<0.05	0.05	<0.050	<0.050	<0.050	<0.050	0.052	<0.050
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6
			29-Jun-2012	20-Jul-2012 [2]	29-Aug-2012 [2]	26-Sep-2012	10-Oct-2012	28-Nov-2012	17-Dec-2012 [3]	16-Jan-2013 [9]	26-Feb-2013 [3]	25-Mar-2013 [3]	01-Apr-2013 [4]	10-May-2013	21-Jun-2013	29-Jul-2013	14-Aug-2013
			T-4	s-6	s-6	SS-6	SS-6	SS-6	s-6	SS-6	ss6	s6	ss6	SS-6	SS-6	SS-6	SS-6
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	270000	--	--	240000	340000	300000	--	140000	--	--	--	240000	250000	270000	250000
Ammonia, unionized (Field)	ug/l	20	<20	--	--	<20	<20	<20	--	<20	--	--	--	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<50	--	--	910	110	100	--	150	--	--	--	130	<50	67	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	--	--	<2000	<2000	<2000	--	<2000	--	--	--	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	43000	--	--	20000	26000	22000	--	10000	--	--	--	23000	16000	36000	20000
Chloride	ug/l	--	65000	--	--	48000	64000	63000	--	62000	--	--	--	35000	38000	42000	41000
Chromium (III)	ug/l	8.9 [22]	<5	--	--	<5	<5	<5	--	<5	--	--	--	<5	<5	<5	<5
Conductivity (Field)	uS/cm	--	844	--	--	1040	1095	1070	--	880	--	--	--	828	882	627	937
Dissolved Organic Carbon	ug/l	--	15000	--	--	8100	8300	4600	--	3600	--	--	--	5900	7000	11000	8100
Hardness, Calcium Carbonate	ug/l	--	370000	--	--	500000	570000	570000	--	520000	--	--	--	390000	440000	370000	410000
Nitrate as N	ug/l	--	170	--	--	<100	<100	2100	--	910	--	--	--	<100	<100	<100	<100
Nitrite as N	ug/l	--	<10	--	--	<10	<10	<10	--	<10	--	--	--	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	1100	--	--	1400	770	550	--	690	--	--	--	950	490	870	500
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.29	--	--	7.7	7.8	7.7	--	7.8	--	--	--	7.7	7.53	7.22	7.15
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	49	--	--	5	9	42	--	7	--	--	--	25	5	29	13
Sulphate	ug/l	--	140000	--	--	320000	260000	300000	--	330000	--	--	--	180000	190000	120000	180000
Temperature (Field)	deg c	-- [24]	21.6	--	--	10	9	2	--	1	--	--	--	17	18.3	17.2	18.5
Total Dissolved Solids	ug/l	--	582000	--	--	820000	864000	824000	--	770000	--	--	--	554000	618000	580000	632000
Total Suspended Solids	ug/l	--	9000	--	--	4000	<1000	4000	--	4000	--	--	--	1000	<1000	<1000	2000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	70	--	--	91	82	100	--	54	--	--	--	56	48	80	51
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	110	--	--	150	79	73	--	140	--	--	--	120	**240**	95	95
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	120000	--	--	170000	190000	200000	--	150000	--	--	--	130000	120000	150000	140000
Chromium	ug/l	-- [30]	<5.0	--	--	<5.0	<5.0	<5.0	--	<5.0	--	--	--	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	--	--	<0.50	<0.50	<0.50	--	<0.50	--	--	--	<0.50	<0.50	0.51	<0.50
Copper	ug/l	5	1.1	--	--	<1.0	1.2	<1.0	--	<1.0	--	--	--	1.9	1.7	<1.0	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.5	--	--	<0.5	<0.5	<0.5	--	0.6	--	--	--	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	**490**	--	--	**2000**	300	**1100**	--	**370**	--	--	--	<100	<100	**2000**	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	19000	--	--	27000	24000	26000	--	32000	--	--	--	19000	33000	20000	20000
Manganese	ug/l	--	1900	--	--	1200	1100	980	--	100	--	--	--	120	2.6	870	27
Mercury	ug/l	0.2 [32]	<0.10	--	--	<0.10	<0.10	<0.10	--	<0.10	--	--	--	<0.10	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	1400	--	--	4600	3600	2900	--	5300	--	--	--	3900	7800	2100	2900
Silicon	ug/l	--	6200	--	--	2400	2500	2100	--	2300	--	--	--	2300	2100	4200	2700
Silver	ug/l	0.1	<0.10	--	--	<0.10	<0.10	<0.10	--	<0.10	--	--	--	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	61000	--	--	59000	72000	69000	--	61000	--	--	--	44000	55000	49000	43000
Strontium	ug/l	--	2000	--	--	3600	2100	1900	--	4000	--	--	--	2200	5900	2300	2300
Sulfur	ug/l	--	42000	--	--	110000	92000	110000	--	120000	--	--	--	58000	120000	46000	62000
Thallium	ug/l	0.3 [33]	<0.050	--	--	<0.050	<0.050	<0.050	--	<0.050	--	--	--	0.079	0.11	<0.050	<0.050
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6
			26-Sep-2013	25-Oct-2013	22-Nov-2013	23-Dec-2013	09-Jan-2014 [4]	04-Feb-2014 [4]	26-Mar-2014	22-Apr-2014	21-May-2014	19-Jun-2014	15-Jul-2014	25-Aug-2014	23-Sep-2014	27-Oct-2014	20-Nov-2014
			SS-6	SS-6	SS-6	SS-6	s6	s6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6	SS-6
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	250000	240000	230000	310000	--	--	260000	160000	230000	200000	230000	270000	270000	240000	270000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	--	--	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	150	200	<50	580	--	--	340	620	<50	<50	<50	<50	<50	64	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	--	--	12000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	21000	10000	13000	22000	--	--	99000	16000	15000	20000	26000	21000	12000	16000	15000
Chloride	ug/l	--	34000	38000	41000	42000	--	--	41000	25000	32000	37000	29000	32000	31000	32000	39000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	--	--	<5	<5	<5	<5	<5	<5	<5	<5	<5
Conductivity (Field)	uS/cm	--	895	610	994	733	--	--	1055	830	815	855	674	845	960	756	933
Dissolved Organic Carbon	ug/l	--	6700	5300	5200	5700	--	--	5100	4100	5300	5800	8000	6400	5500	5700	5300
Hardness, Calcium Carbonate	ug/l	--	410000	420000	430000	500000	--	--	450000	270000	340000	380000	300000	390000	390000	350000	430000
Nitrate as N	ug/l	--	<100	110	<100	<100	--	--	<100	930	210	<100	<100	<100	970	<100	<100
Nitrite as N	ug/l	--	<10	<10	<10	<10	--	--	<10	<10	<10	<10	<10	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	640	550	350	1100	--	--	3600	1000	360	650	970	830	400	410	430
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	6.85	7.6	7.56	7.62	--	--	7.55	7.6	7.6	7.65	7.36	7.7	7.7	7.50	7.49
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	19	6	28	41	--	--	130	14	8	15	32	43	10	17	24
Sulphate	ug/l	--	200000	220000	230000	220000	--	--	230000	130000	140000	210000	98000	160000	170000	140000	200000
Temperature (Field)	deg c	-- [24]	11.3	6	1.4	0	--	--	1.4	8	9	17.5	16.5	22	21	9.3	0.6
Total Dissolved Solids	ug/l	--	642000	684000	672000	696000	--	--	660000	400000	490000	686000	428000	548000	608000	506000	578000
Total Suspended Solids	ug/l	--	6000	<1000	12000	13000	--	--	200000	<1000	3000	5000	5000	7000	4000	1000	16000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	50	68	50	89	--	--	110	35	54	57	48	67	72	43	57
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	100	120	76	58	--	--	83	82	130	120	100	130	99	71	60
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	130000	150000	140000	170000	--	--	170000	85000	110000	140000	110000	130000	130000	130000	160000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	0.59	--	--	**1.1**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	<1.0	<1.0	<1.0	<1.0	--	--	3.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.50	<0.50	<0.50	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	<100	260	130	**1600**	--	--	**10000**	100	210	210	270	**610**	**500**	<100	290
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	20000	25000	22000	25000	--	--	25000	15000	16000	20000	14000	19000	20000	18000	22000
Manganese	ug/l	--	42	1500	35	3100	--	--	2600	91	530	97	320	990	660	52	260
Mercury	ug/l	0.2 [32]	<0.10	<0.10	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	3600	4300	3300	2500	--	--	3600	3300	3600	2800	2100	3500	3800	3300	2400
Silicon	ug/l	--	2200	2400	2000	4400	--	--	5100	1200	1600	2600	3900	2200	2200	3000	3800
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	38000	43000	41000	47000	--	--	41000	22000	35000	40000	33000	33000	34000	32000	38000
Strontium	ug/l	--	2300	2900	2400	2500	--	--	2500	2100	2300	2300	1900	2200	2500	1900	2100
Sulfur	ug/l	--	72000	78000	82000	80000	--	--	80000	51000	50000	68000	34000	55000	59000	52000	73000
Thallium	ug/l	0.3 [33]	<0.050	<0.050	<0.050	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-6 09-Dec-2014 [11] SS-6	SS-6 16-Mar-2015 SS-6	SS-6 07-Apr-2015 SS-6	SS-6 21-May-2015 SS-6	SS-6 23-Jun-2015 SS-6	SS-6 22-Jul-2015 [2] 6	SS-6 28-Aug-2015 SS-6	SS-6 25-Sep-2015 SS-6	SS-6 27-Oct-2015 SS-6	SS-6 20-Nov-2015 SS-6	SS-6 10-Dec-2015 SS-6	SS-6 26-Jan-2016 SS-6	SS-6 23-Feb-2016 [3] 6	SS-6 21-Mar-2016 SS-6	SS-6 26-Apr-2016 SS-6
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	370000	260000	220000	340000	240000	--	240000	280000	210000	210000	210000	230000	--	160000	210000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	--	<20	<20	<20	<20	<20	<20	--	<20	<20
Ammonia Nitrogen	ug/l	--	<50	380	<50	290	--	--	<50	<50	98	<50	<50	71	--	1600	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	6000	<2000	<2000	<2000	--	<2000	<2000	<2000	<2000	<2000	<2000	--	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	26000	38000	11000	30000	28000	--	56000	18000	14000	15000	15000	82000	--	13000	11000
Chloride	ug/l	--	47000	40000	31000	60000	39000	--	60000	61000	48000	45000	46000	42000	--	33000	40000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	--	<5	<5	<5	<5	<5	<5	--	<5	<5
Conductivity (Field)	uS/cm	--	1197	1030	853	765	8.52	--	591	795	836	910	1046	987	--	660	791
Dissolved Organic Carbon	ug/l	--	6900	12000	4100	9500	8800	--	22000	6200	5000	4800	4000	3900	--	3500	5100
Hardness, Calcium Carbonate	ug/l	--	620000	510000	400000	430000	390000	--	240000	490000	390000	450000	440000	450000	--	290000	360000
Nitrate as N	ug/l	--	<100	180	<100	240	<100	--	<100	<100	<100	<100	<100	<100	--	230	<100
Nitrite as N	ug/l	--	<10	<10	<10	13	<10	--	<10	<10	<10	<10	<10	<10	--	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	690	1200	320	1300	470	--	900	340	<500 [35]	310	250	410	--	1700	190
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.42	**8.62**	7.66	7.6	6.81	--	7.72	7.6	7.35	8.10	7.51	7.93	--	7.65	7.75
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	49	43	29	82	25	--	33	8	<4	11	33	140	--	<4	9
Sulphate	ug/l	--	250000	250000	190000	130000	180000	--	<1000	270000	190000	230000	260000	270000	--	150000	150000
Temperature (Field)	deg c	-- [24]	0.4	1.0	1.6	14	21.0	--	18.4	16	3.4	6.1	5.2	0.3	--	1.4	7.8
Total Dissolved Solids	ug/l	--	846000	632000	516000	678000	628000	--	396000	776000	616000	668000	734000	682000	--	308000	516000
Total Suspended Solids	ug/l	--	61000	8000	7000	7000	2000	--	4000	3000	<1000	<1000	11000	83000	--	<1000	1000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	82	56	52	84	60	--	51	79	40	47	54	50	--	34	44
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	60	63	70	88	110	--	14	110	56	58	51	80	--	61	62
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	200000	150000	130000	150000	140000	--	99000	170000	120000	140000	150000	150000	--	100000	110000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	<5.0	<5.0	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
Copper	ug/l	5	<1.0	<1.0	<1.0	1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<1.0	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50
Iron	ug/l	300	**670**	<100	120	**5600**	300	--	130	**320**	<100	<100	**360**	180	--	<100	<100
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	28000	22000	19000	18000	19000	--	4800	25000	18000	20000	21000	23000	--	15000	15000
Manganese	ug/l	--	2600	130	210	1200	380	--	11	570	2.7	16	180	40	--	2.1	13
Mercury	ug/l	0.2 [32]	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	2200	3200	2600	2800	1100	--	<200	4100	2800	3700	3200	3600	--	3600	4100
Silicon	ug/l	--	5500	2500	2200	2100	2400	--	1000	2400	2000	2900	2900	2400	--	1200	140
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10
Sodium	ug/l	--	48000	36000	29000	60000	36000	--	40000	44000	34000	34000	35000	36000	--	24000	30000
Strontium	ug/l	--	2600	2100	1700	2400	2100	--	330	3200	1800	2100	2100	2500	--	1700	1800
Sulfur	ug/l	--	87000	93000	66000	42000	--	--	3300	88000	61000	73000	84000	84000	--	51000	50000
Thallium	ug/l	0.3 [33]	<0.050	<0.050	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--	<0.050	<0.050
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-6 31-May-2016 SS-6	SS-6 30-Jun-2016 SS-6	SS-6 13-Jul-2016 SS-6	SS-6 04-Aug-2016 [2] 6	SS-6 20-Sep-2016 SS-6	SS-6 26-Oct-2016 SS-6	SS-6 11-Nov-2016 SS-6	SS-6 14-Dec-2016 SS-6	SS-6 23-Jan-2017 SS-6	SS-6 14-Feb-2017 [3] 6	SS-6 27-Mar-2017 SS-5	SS-6 21-Apr-2017 SS-6	SS-6 23-May-2017 SS-6	SS-6 26-Jun-2017 SS-6	SS-6 21-Jul-2017 SS-6
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	290000	250000	250000	--	170000	220000	250000	220000	270000	--	230000	190000	240000	220000	300000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	--	<20	<20	<20	<20	<20	--	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	270	1000	<50	--	<50	<50	<50	240	56	--	79	<50	150	93	<50
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	3000	<2000	--	<2000	<2000	2000	<2000	6000	--	<2000	<2000	<2000	<2000	<2000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	48000	48000	20000	--	23000	15000	19000	4900	650000	--	83000	20000	21000	26000	37000
Chloride	ug/l	--	41000	76000	80000	--	59000	63000	58000	43000	40000	--	40000	30000	33000	60000	37000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	--	<5	<5	<5	<5	<5	--	<5	<5	<5	<5	<5
Conductivity (Field)	uS/cm	--	779	495	480	--	1005	705	992	840	929	--	831	663	690	786	644
Dissolved Organic Carbon	ug/l	--	12000	10000	6000	--	8400	4100	5500	4600	4500	--	4800	6000	7100	8900	11000
Hardness, Calcium Carbonate	ug/l	--	390000	580000	580000	--	470000	560000	520000	460000	410000	--	340000	250000	290000	340000	280000
Nitrate as N	ug/l	--	<100	<100	<100	--	<100	<100	<100	170	<100	--	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	<10	<10	<10	--	<10	<10	<10	11	<10	--	<10	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	740	2200	450	--	430	180	340	480	430	--	440	250	450	540	550
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.42	7.7	7.7	--	7.64	7.6	7.44	7.5	7.45	--	7.83	7.15	7.84	7.51	7.20
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	150	93	34	--	16	8	20	<4	1200	--	140	30	20	27	60
Sulphate	ug/l	--	110000	320000	340000	--	290000	350000	260000	280000	210000	--	150000	78000	91000	100000	8900
Temperature (Field)	deg c	-- [24]	16.7	25	25	--	18.4	19	4.9	2	0.2	--	0.9	8.1	17.7	20.0	22.2
Total Dissolved Solids	ug/l	--	516000	908000	964000	--	748000	850000	738000	712000	630000	--	542000	354000	442000	552000	398000
Total Suspended Solids	ug/l	--	29000	16000	2000	--	1000	<1000	2000	3000	1600000	--	190000	14000	2000	2000	8000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	110	130	80	--	66	67	55	54	140	--	58	41	47	50	61
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	81	140	170	--	170	120	67	79	73	--	47	41	54	66	57
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	130000	190000	200000	--	150000	170000	150000	150000	150000	--	130000	92000	110000	120000	100000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	--	<5.0	<5.0	<5.0	<5.0	13	--	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50	**4.6**	--	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	<1.0	<1.0	<1.0	--	<1.0	<1.0	<1.0	<1.0	**30**	--	1.5	<1.0	<1.0	<1.0	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	**1600**	**530**	<100	--	<100	<100	<100	140	**16000**	--	**2300**	**1200**	120	**500**	**1700**
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	16000	25000	30000	--	19000	30000	20000	23000	21000	--	16000	9700	11000	14000	11000
Manganese	ug/l	--	3200	930	86	--	65	100	57	220	570	--	530	64	40	190	2100
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	1300	3700	4000	--	2800	6400	4900	3900	4200	--	3600	5800	6600	5200	6800
Silicon	ug/l	--	3300	7700	2700	--	3700	2300	3200	2000	13000	--	3500	2000	760	2100	4600
Silver	ug/l	0.1	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10	**0.30**	--	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	36000	47000	51000	--	39000	45000	38000	40000	32000	--	33000	27000	32000	34000	28000
Strontium	ug/l	--	2000	2800	3900	--	2100	3600	2200	2700	2200	--	1500	1100	1300	1600	1400
Sulfur	ug/l	--	36000	110000	120000	--	96000	120000	88000	91000	79000	--	52000	30000	31000	36000	4800
Thallium	ug/l	0.3 [33]	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050	0.18	--	<0.050	<0.050	<0.050	<0.050	<0.050
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO (1)	SS-6 11-Aug-2017 SS-6	SS-6 08-Sep-2017 SS-6	SS-6 17-Oct-2017 SS-6	SS-6 17-Nov-2017 SS-6	SS-6 07-Dec-2017 (14) SS-6	SS-6 22-Jan-2018 SS-6	SS-6 16-Feb-2018 (51) SS-6	SS-6 13-Mar-2018 SS-6	SS-6 24-Apr-2018 SS-6	SS-6 18-May-2018 SS-6	SS-6 22-Jun-2018 (52) SS-6	SS-6 18-Jul-2018 (2) 6	SS-6 24-Aug-2018 SS-6	SS-6 18-Sep-2018 SS-6	SS-6 24-Oct-2018 SS-6
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- (21)	290000	230000	230000	240000	210000	237000	460000	259000	177000	197000	259000	--	229000	263000	250000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	--	<20	<20	<20
Ammonia Nitrogen	ug/l	--	170	<50	<50	<50	<50	80	2880	210	460	660	130	--	110	1970	<20
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	2000	<2000	<2000	3000	<2000	1000	44000	9000	1000	1000	11000	--	<1000	1000	1000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	33000	19000	18000	39000	20000	16000	105000	29000	7000	17000	33000	--	20000	38000	10000
Chloride	ug/l	--	42000	40000	43000	41000	45000	76000	89000	42000	44000	50000	11000	--	62000	67000	65000
Chromium (III)	ug/l	8.9 (22)	<5	<5	<5	<5	<5	**<10**	<1	**<10**	**<10**	**<10**	**<10**	--	<0.1	**<10**	**<10**
Conductivity (Field)	uS/cm	--	755	710	816	779	788	998	1216	783	702	740	732	--	969	1124	933
Dissolved Organic Carbon	ug/l	--	13000	7800	6500	4700	4100	4700	12800	6800	3900	6200	12800	--	8000	19200	6400
Hardness, Calcium Carbonate	ug/l	--	310000	310000	360000	360000	360000	475000	646000	373000	267000	330000	329000	--	388000	537000	408000
Nitrate as N	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	--	<100	<100	<100
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10	<100	<100	<100	<100	<100	<100	--	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	670	270	330	230	120	300	12500	600	1900	900	1300	--	600	5300	400
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.20	7.22	7.08	7.11	7.24	7.32	6.74	7.51	7.84	7.60	7.69	--	7.39	7.39	7.42
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- (23)	42	8	10	110	32	12	365	36	68	29	52	--	23	98	8
Sulphate	ug/l	--	42000	82000	140000	110000	170000	240000	163000	100600	97000	111000	14000	--	234000	279000	226000
Temperature (Field)	deg c	-- (24)	19.6	13.7	7.5	0.6	1.3	0	0	0.2	10.2	14.9	14.7	--	18.8	19.6	6.1
Total Dissolved Solids	ug/l	--	560000	462000	570000	455000	450000	649000	910000	512000	432000	488000	489000	--	670000	754000	689000
Total Suspended Solids	ug/l	--	5000	1000	4000	14000	8000	9000	671000	6000	3000	1000	156000	--	12000	10000	4000
Turbidity	ntu	-- (25)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- (26)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	82	50	50	55	49	60	130	60	50	50	50	--	90	90	60
Beryllium	ug/l	-- (27)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 (28)	70	57	47	44	34	70	60	50	60	60	70	--	120	130	60
Cadmium	ug/l	0.2 (29)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	100000	110000	120000	120000	130000	154000	216000	128000	87000	109000	107000	--	129000	182000	137000
Chromium	ug/l	-- (30)	<5.0	<5.0	<5.0	<5.0	<5.0	<1	3	<1	<1	<1	<1	--	<1	<1	<1
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	**1.1**	<0.50	<0.2	**1.4**	<0.2	<0.2	<0.2	<0.2	--	<0.2	<0.2	<0.2
Copper	ug/l	5	<1.0	<1.0	<1.0	2.5	1.6	<1	3	<1	<1	<1	<1	--	<1	<1	<1
Hexavalent Chromium	ug/l	1 (22)	<0.50	<0.50	<0.50	<0.50	**2.1**	**<10**	<1	**<10**	**<10**	**<10**	**<10**	--	**<10**	**<10**	**<10**
Iron	ug/l	300	**980**	210	230	**4800**	**1300**	160	**3800**	**390**	80	280	**1390**	--	**350**	**510**	**380**
Lead	ug/l	-- (31)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	13000	14000	14000	15000	15000	22000	26000	13000	12000	14000	15000	--	16000	20000	16000
Manganese	ug/l	--	4600	350	140	250	97	70	1180	410	50	150	680	--	410	960	100
Mercury	ug/l	0.2 (32)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	6400	6000	5300	5400	5900	8000	9000	4000	6000	6000	4000	--	7000	7000	5000
Silicon	ug/l	--	5300	3000	3000	4700	2800	2600	6600	2900	1000	300	4000	--	3600	6300	3000
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1
Sodium	ug/l	--	34000	30000	27000	27000	27000	39000	48000	27000	24000	31000	32000	--	34000	39000	36000
Strontium	ug/l	--	1500	1700	1500	1400	1500	2430	2900	1510	1720	1540	1360	--	2910	2410	1790
Sulfur	ug/l	--	22000	28000	47000	39000	58000	48200	66900	31700	30900	44400	19800	--	90800	101000	79900
Thallium	ug/l	0.3 (33)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 (29)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 (34)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-6 20-Nov-2018 SS-6	SS-6 18-Dec-2018 SS-6	SS-6 25-Jan-2019 [3] 6	SS-6 21-Feb-2019 [53] SS-6	SS-6 13-Mar-2019 [3] 6	SS-6 17-Apr-2019 SS-6	SS-6 24-May-2019 SS - 6	SS-6 21-Jun-2019 SS-6	SS-6 18-Jul-2019 SS-6	SS-6 21-Aug-2019 SS-6	SS-6 18-Sep-2019 SS-6	SS-6 29-Oct-2019 SS-6	SS-6 19-Nov-2019 [54] SS-6	SS-6 18-Dec-2019 SS-6	SS-6 15-Jan-2020 SS-6
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	249000	295000	--	537000	--	164000	212000	247000	268000	220000	227000	214000	356000	304000	243000
Ammonia, unionized (Field)	ug/l	20	<20	<20	--	<20	--	<20	<20	<20	<20	<20	<20	<20	--	<20	<20
Ammonia Nitrogen	ug/l	--	70	90	--	1800	--	30	25	<10	1010	2400	50	60	<10	<10	53
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	4000	2000	--	16000	--	2000	4000	<1000	<1000	3000	3000	2000	6000	1000	10000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	71000	7000	--	130000	--	7000	14000	80000	21000	18000	22000	14000	50000	48000	57000
Chloride	ug/l	--	63000	66000	--	72000	--	30000	43000	50000	74000	68000	98000	68000	72000	48000	61000
Chromium (III)	ug/l	8.9 [22]	**<10**	**<10**	--	4	--	<1	<1	<1	<1	<1	<1	<1	**<10**	<1	1
Conductivity (Field)	uS/cm	--	17	1121	--	1264	--	511	700	773	915	1024	1089	984	1240	656	992
Dissolved Organic Carbon	ug/l	--	4900	4800	--	11700	--	4000	5300	6200	7000	18700	6900	6100	6900	5600	7900
Hardness, Calcium Carbonate	ug/l	--	484000	502000	--	826000	--	219000	322000	338000	383000	485000	605000	425000	510000	462000	468000
Nitrate as N	ug/l	--	<100	<100	--	<100	--	180	170	<100	<100	<100	<100	<100	<100	<100	180
Nitrite as N	ug/l	--	<100	<100	--	<100	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	7100	400	--	7800	--	300	600	390	1700	2500	500	300	1700	3760	2420
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.33	6.98	--	6.91	--	7.35	7.96 [37]	6.86	7.06	6.83	7.05	7.11	--	**8.73**	7.53
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	152	16	--	562	--	8	14	48	44	57	14	4	140	67	194
Sulphate	ug/l	--	204000	224000	--	152000	--	63000	113000	112000	145000	284000	269000	189000	182000	165000	230000
Temperature (Field)	deg c	-- [24]	0	0.3	--	0	--	7	14	20.5	22.1	17.8	15.5	10.8	0.9	-0.3	0.3
Total Dissolved Solids	ug/l	--	647000	728000	--	819000	--	333000	398000	904000	585000	715000	793000	626000	774000	641000	663000
Total Suspended Solids	ug/l	--	433000	3000	--	1100000	--	<1000	3000	3000	11000	3000	18000	2000	180000	47000	143000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	110	70	--	180	--	30	50	60	70	100	90	60	100	70	70
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	50	60	--	60	--	40	60	80	80	130	90	70	<100	40	60
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	164000	168000	--	298000	--	76000	109000	114000	127000	163000	206000	142000	173000	157000	156000
Chromium	ug/l	-- [30]	2	<1	--	4	--	<1	<1	<1	<1	<1	1	<1	<10	<1	1
Cobalt	ug/l	0.9	**1.2**	<0.2	--	**1.9**	--	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**<2**	0.5	0.3
Copper	ug/l	5	2	<1	--	3	--	<1	<1	<1	<1	<1	<1	<1	**<10**	1	<1
Hexavalent Chromium	ug/l	1 [22]	**<10**	**<10**	--	<1	--	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Iron	ug/l	300	**8060**	**690**	--	**8200**	--	40	190	**530**	**1020**	260	**580**	30	**5700**	**3880**	**2060**
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	18000	20000	--	20000	--	7000	12000	13000	16000	19000	22000	17000	19000	17000	19000
Manganese	ug/l	--	900	300	--	4100	--	20	100	410	590	1580	160	20	2300	630	390
Mercury	ug/l	0.2 [32]	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	5000	5000	--	6000	--	5000	7000	4000	5000	3000	7000	7000	4000	4000	8000
Silicon	ug/l	--	5100	3900	--	7600	--	1600	600	1500	4400	6000	3500	2900	5500	4100	3000
Silver	ug/l	0.1	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**<1**	<0.1	<0.1
Sodium	ug/l	--	34000	38000	--	40000	--	20000	28000	29000	40000	40000	52000	36000	38000	28000	39000
Strontium	ug/l	--	2230	2050	--	2900	--	933	1430	1690	2110	2370	2630	2100	2140	1850	2140
Sulfur	ug/l	--	66600	88500	--	48400	--	23000	35700	43400	66800	107000	101000	68200	60000	67400	77300
Thallium	ug/l	0.3 [33]	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**<1**	<0.1	<0.1
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-6 19-Feb-2020 [54] SS-6	SS-6 19-Mar-2020 SS-6	SS-6 03-Apr-2020 SS-6	SS-6 08-May-2020 SS-6	SS-6 01-Jun-2020 SS-6	SS-6 21-Jul-2020 [2] SS-6	SS-6 25-Aug-2020 SS-6	SS-6 17-Sep-2020 SS-6	SS-6 23-Oct-2020 SS-6	SS-6 26-Nov-2020 SS-6	SS-6 11-Dec-2020 [54] SS-6	SS-6 08-Jan-2021 SS-6	SS-6 18-Feb-2021 SS-6	SS-6 22-Mar-2021 SS-6	SS-6 09-Apr-2021 [49] SS-6
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	288000	142000	148000	213000	213000	--	220000	257000	211000	212000	257000	229000	363000	133000	205000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	--	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	250	140	<10	37	<10	--	180	15	<10	105	<10	<10	149	<10	<10
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	44000	9000	<1000	<1000	16000	--	6000	5000	7000	3000	4000	4000	9000	2000	<1000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	1010000	101000	6000	14000	46000	--	22000	27000	16000	9000	26000	27000	93000	<5000	8000
Chloride	ug/l	--	48000	28000	18000	40000	51000	--	67000	57000	49000	41000	46000	53000	57000	21000	48000
Chromium (III)	ug/l	8.9 [22]	**10**	**<10**	<1	<1	<1	--	<1	<1	<1	<1	5	<1	2	<1	<1
Conductivity (Field)	uS/cm	--	1054	599	466	828	778	--	855	946	914	601	946	1016	1265	555	724
Dissolved Organic Carbon	ug/l	--	5500	3100	3700	3900	10200	--	8900	8800	6400	4500	4300	5900	5800	3000	4800
Hardness, Calcium Carbonate	ug/l	--	418000	232000	206000	349000	322000	--	415000	408000	373000	335000	442000	472000	648000	189000	366000
Nitrate as N	ug/l	--	<100	<100	<100	<100	230	--	<100	<100	<500	120	<100	180	<100	<100	<500
Nitrite as N	ug/l	--	<100	<100	<100	<100	<100	--	<100	<100	<500	<100	<100	<100	<100	<100	<500
Nitrogen, Total Kjeldahl	ug/l	--	23900	4150	463	358	1410	--	1230	949	720	1180	1330	450	3740	571	674
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.30	7.30	7.61	7.65	7.83	--	6.71	7.21	7.43	7.72	7.35	7.46	7.11	7.31	7.45
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	1150	260	10	14	13	--	26	9	8	9	280	14	132	25	18
Sulphate	ug/l	--	139000	88000	52000	137000	124000	--	193000	178000	174000	122000	188000	260000	253000	73000	142000
Temperature (Field)	deg c	-- [24]	0.1	0.5	2.6	5.1	13	--	22.4	13.7	12.5	0.4	1.1	0.1	0.5	2.2	12.1
Total Dissolved Solids	ug/l	--	608000	330000	291000	508000	496000	--	629000	620000	558000	478000	593000	670000	793000	298000	499000
Total Suspended Solids	ug/l	--	3560000	722000	11000	21000	7000	--	19000	4000	1000	14000	236000	13000	254000	25000	3000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	500	100	30	60	40	--	70	60	60	40	130	70	120	30	50
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	100	50	40	70	90	--	110	80	70	40	60	60	50	<10	60
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	141000	78000	71000	115000	106000	--	140000	137000	128000	116000	149000	156000	225000	64000	125000
Chromium	ug/l	-- [30]	10	5	<1	<1	<1	--	<1	<1	<1	<1	5	<1	2	<1	<1
Cobalt	ug/l	0.9	**12**	**3.8**	<0.2	<0.2	<0.2	--	<0.2	<0.2	<0.2	<0.2	**4**	<0.2	**1.5**	<0.2	<0.2
Copper	ug/l	5	**<10**	**8**	<1	<1	<1	--	<1	<1	<1	<1	5	<1	2	<1	<1
Hexavalent Chromium	ug/l	1 [22]	<1	**<10**	<1	<1	<1	--	<0.50	<0.50	<0.50	<1	<0.5	<0.50	<0.5	<0.5	<0.5
Iron	ug/l	300	**66500**	**9100**	160	120	90	--	300	**560**	90	**1110**	**11700**	260	**23800**	**930**	160
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	16000	9000	7000	15000	14000	--	16000	16000	13000	11000	17000	20000	21000	7000	13000
Manganese	ug/l	--	4200	1100	70	110	90	--	170	340	30	110	570	110	2980	60	40
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	4000	4000	2000	8000	10000	--	11000	5000	6000	2000	4000	6000	4000	2000	4000
Silicon	ug/l	--	20400	4200	2300	1500	1200	--	6400	4200	4000	4000	6800	3900	5800	2600	2000
Silver	ug/l	0.1	**<1**	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	**<0.5**	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	30000	21000	12000	31000	36000	--	37000	37000	26000	23000	30000	36000	36000	14000	30000
Strontium	ug/l	--	2870	1570	819	1970	1870	--	2590	1870	2170	1070	1780	1970	1990	756	1480
Sulfur	ug/l	--	70000	36200	18700	53900	46900	--	73700	69000	65700	49000	69000	88600	97400	28400	55100
Thallium	ug/l	0.3 [33]	**<1**	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	**<0.5**	<0.1	<0.1	<0.1	<0.1
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-6 28-May-2021 SS-6	SS-6 28-Jun-2021 SS-6	SS-6 15-Jul-2021 SS-6	SS-6 11-Aug-2021 SS-6	SS-6 28-Sep-2021 SS6	SS-6 27-Oct-2021 SS6	SS-6 11-Nov-2021 SS6	SS-6 15-Dec-2021 SS6	SS-6 25-Jan-2022 [3] SS6	SS-6 24-Feb-2022 [4] 6	SS-6 17-Mar-2022 [3] 6	SS-6 28-Apr-2022 SS6	SS-6 26-May-2022 [20] SS6	SS-6 24-Jun-2022 SS6	SS-6 25-Jul-2022 SS6
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	263000	193000	262000	355000	246000	225000	260000	228000	--	--	--	189000	251000	239000	276000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	--	--	--	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<10	<10	<10	<10	25	<10	<10	<10	--	--	--	18	26	93	<20
Bicarbonate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	8000	4000	3000	3000	1000	<1000	1000	2000	--	--	--	<1000	<1000	3000	3000
Carbonate (CO3)	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chemical Oxygen Demand	ug/l	--	9000	14000	<5000	22000	10000	9000	12000	76000	--	--	--	9000	38000	15000	28000
Chloride	ug/l	--	74000	74000	70000	73000	82000	46000	57000	32000	--	--	--	54000	40000	52000	42000
Chromium (III)	ug/l	8.9 [22]	<1	<1	<1	<1	<1	<1	<1	<1	--	--	--	<1	<1	<1.0	<1
Conductivity (Field)	uS/cm	--	894	1109	1001	1145	992	776	1076	721	--	--	--	732	667	765	896
Dissolved Organic Carbon	ug/l	--	10600	5800	9400	12500	7200	7000	7500	5400	--	--	--	5500	8400	7900	11800
Hardness, Calcium Carbonate	ug/l	--	459000	518000	512000	525000	538000	367000	439000	347000	--	--	--	369000	361000	396000	425000
Nitrate as N	ug/l	--	<500	<100	<500	<500	<100	<100	<100	<100	--	--	--	<100	<100	<100	<100
Nitrite as N	ug/l	--	<500	<100	<500	<500	<100	<100	<100	<100	--	--	--	<100	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	1820	661	860	1790	1520	499	465	1370	--	--	--	549	610	673	1300
Nitrogen, Organic	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH (Field)	-	6.5 - 8.5	7.44	7.52	7.05	7.04	7.59	7.78	7.59	7.50	--	--	--	7.81	7.37	7.31	7.05
Phosphate	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	ug/l	-- [23]	30	27	18	39	7	4	4	117	--	--	--	<2	8	13	25
Sulphate	ug/l	--	186000	323000	228000	162000	293000	147000	190000	107000	--	--	--	173000	118000	166000	174000
Temperature (Field)	deg c	-- [24]	9.6	20.8	23.7	23.7	13.2	10.4	5.7	0.2	--	--	--	9.8	19.6	22.3	24
Total Dissolved Solids	ug/l	--	616000	784000	676000	767000	760000	557000	656000	470000	--	--	--	541000	489000	565000	586000
Total Suspended Solids	ug/l	--	18000	14000	4000	13000	<1000	<1000	12000	102000	--	--	--	<1000	1000	4000	11000
Turbidity	ntu	-- [25]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals																	
Aluminum, dissolved	ug/l	-- [26]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	ug/l	--	70	70	80	100	80	50	50	70	--	--	--	50	50	80	140
Beryllium	ug/l	-- [27]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	ug/l	200 [28]	70	200	120	110	110	60	50	40	--	--	--	70	80	80	140
Cadmium	ug/l	0.2 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Calcium	ug/l	--	154000	171000	172000	174000	179000	124000	146000	116000	--	--	--	123000	123000	134000	147000
Chromium	ug/l	-- [30]	<1	<1	<1	<1	<1	<1	<1	3	--	--	--	<1	<1	<1	<1
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	**1.8**	--	--	--	<0.2	<0.2	<0.2	0.3
Copper	ug/l	5	<1	<1	<1	<1	<1	<1	<1	2	--	--	--	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	<0.50	<0.5	<0.50	<0.5
Iron	ug/l	300	**550**	100	**490**	**470**	140	30	200	**3590**	--	--	--	<30	200	**410**	**1390**
Lead	ug/l	-- [31]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Magnesium	ug/l	--	18000	22000	20000	22000	22000	14000	18000	14000	--	--	--	15000	13000	15000	14000
Manganese	ug/l	--	390	230	400	2150	220	10	100	360	--	--	--	<10	180	510	9560
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	<0.1	<0.1	<0.1	<0.1
Molybdenum	ug/l	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	ug/l	25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	ug/l	--	5000	7000	6000	7000	9000	8000	7000	3000	--	--	--	9000	4000	6000	4000
Silicon	ug/l	--	2400	3600	5400	8700	4000	3900	3500	5300	--	--	--	1500	1900	3400	7000
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	43000	50000	44000	48000	45000	28000	36000	21000	--	--	--	37000	32000	35000	30000
Strontium	ug/l	--	1840	2640	2280	3350	2940	1670	1940	1150	--	--	--	1860	1540	2070	2190
Sulfur	ug/l	--	59400	114000	83000	64000	99700	58200	64800	37000	--	--	--	64400	31300	51400	67000
Thallium	ug/l	0.3 [33]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	--	<0.1	<0.1	<0.1	<0.1
Titanium	ug/l	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/l	6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	ug/l	30 [29]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenols																	
Phenolics, Total Recoverable	ug/l	1 [34]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Parameter	Unit	PWQO [1]	SS-7 31-Mar-2009 T-4	SS-7 20-Apr-2009 SS-7	SS-7 22-May-2009 SS-7	SS-7 23-Jun-2009 T-6	SS-7 27-Jul-2009 SS-7	SS-7 13-Aug-2009 SS-7	SS-7 24-Sep-2009 [4] SS-7	SS-7 15-Oct-2009 SS-7	SS-7 18-Nov-2009 SS-7	SS-7 10-Dec-2009 SS-7	SS-7 20-Jan-2010 [4] SS-7	SS-7 03-Feb-2010 [4] SS-7	SS-7 31-Mar-2010 SS-7	SS-7 06-Apr-2010 [40] SS-7	SS-7 06-May-2010 [4] SS-7
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	160000	175000	225000	241000	222000	258000	--	277000	237000	215000	--	--	174000	176000	--
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	--	<20	<20	<20	--	--	<20	<20	--
Ammonia Nitrogen	ug/l	--	<50	<50	<50	<50	<50	<50	--	<50	<50	<50	--	--	<50	<50	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	2000	<2000	<2000	--	<2000	<2000	<2000	--	--	<2000	4000	--
Chemical Oxygen Demand	ug/l	--	17000	16000	17000	44000	38000	28000	--	43000	16000	6000	--	--	19000	34000	--
Chloride	ug/l	--	130000	100000	280000	110000	58000	120000	--	60000	49000	51000	--	--	120000	150000	--
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	<5	--	<5	<5	<5	--	--	<5	<5	--
Conductivity (Field)	uS/cm	--	800	770	805	695	695	745	--	835	1005	910	--	--	965	965	--
Dissolved Organic Carbon	ug/l	--	5700	5400	5600	14700	11700	10100	--	14900	6400	6600	--	--	5400	10700	--
Hardness, Calcium Carbonate	ug/l	--	220000	260000	300000	260000	230000	240000	--	310000	310000	230000	--	--	230000	340000	--
Nitrate as N	ug/l	--	<100	<100	<100	<100	<100	<100	--	<100	<100	200	--	--	<100	200	--
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10	<10	--	<10	<10	<10	--	--	<10	<10	--
Nitrogen, Total Kjeldahl	ug/l	--	500	700	500	1200	700	600	--	900	600	400	--	--	800	700	--
pH (Field)	-	6.5 - 8.5	8.1	8.3	7.9	8.1	7.6	7.5	--	7.9	7.9	7.8	--	--	7.6	7.8	--
Phosphorus	ug/l	-- [23]	8	21	12	44	11	8	--	45	<2	<2	--	--	<2	28	--
Sulphate	ug/l	--	37000	79000	45000	19000	34000	53000	--	58000	95000	46000	--	--	40000	36000	--
Temperature (Field)	deg c	-- [24]	6	9	14	20	24.0	22	--	9	4	1	--	--	7	11.2	--
Total Dissolved Solids	ug/l	--	505000	520000	920000	510000	416000	605000	--	515000	485000	430000	--	--	460000	564000	--
Total Suspended Solids	ug/l	--	<10000	<10000	<10000	<10000	2000	<1000	--	3000	<1000	1000	--	--	<1000	4000	--
Metals																	
Barium	ug/l	--	55	51	200	72	62	96	--	66	63	68	--	--	64	70	--
Boron	ug/l	200 [28]	10	20	10	30	20	50	--	<10	20	<10	--	--	10	20	--
Calcium	ug/l	--	85000	99000	120000	89000	78000	93000	--	120000	120000	84000	--	--	86000	84000	--
Chromium	ug/l	-- [30]	<5	<5	<5	<5	<5	<5	--	<5	<5	<5	--	--	<5	<5	--
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	ug/l	5	2	<1	<1	<1	1	1	--	3	1	1	--	--	<1	2	--
Hexavalent Chromium	ug/l	1 [22]	**<5**	**<5**	**<5**	**<5**	**<5**	**<5**	--	**<5**	**<5**	**<5**	--	--	<0.5	**<5**	--
Iron	ug/l	300	<100	<100	<100	200	<100	<100	--	100	<100	<100	--	--	200	300	--
Magnesium	ug/l	--	4900	6100	7100	7200	4600	6600	--	7500	7400	6000	--	--	5300	5600	--
Manganese	ug/l	--	10	32	41	290	8	13	--	55	12	<2	--	--	18	47	--
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	--	--	<0.1	<0.1	--
Potassium	ug/l	--	700	700	800	1500	500	1600	--	2000	900	900	--	--	800	1700	--
Silicon	ug/l	--	1200	500	1200	3100	1800	2100	--	7000	1900	1600	--	--	950	1900	--
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	ug/l	--	78000	61000	170000	66000	53000	110000	--	56000	43000	48000	--	--	73000	97000	--
Strontium	ug/l	--	440	480	670	580	400	680	--	480	450	530	--	--	440	550	--
Sulfur	ug/l	--	13000	25000	15000	6000	9700	17000	--	19000	28000	15000	--	--	1200000	12000	--
Thallium	ug/l	0.3 [33]	<0.05	<0.05	<0.05	<0.05	<0.05	0.13	--	<0.05	<0.05	<0.05	--	--	<0.05	<0.05	--

Parameter	Unit	PWQO [1]	SS-7 02-Jun-2010 SS-7	SS-7 07-Jul-2010 [2] SS-7	SS-7 18-Aug-2010 SS-7	SS-7 29-Sep-2010 SS-7	SS-7 28-Oct-2010 [55] SS-7	SS-7 22-Nov-2010 SS-7	SS-7 09-Dec-2010 SS-7	SS-7 12-Jan-2011 [3] SS-7	SS-7 23-Feb-2011 [3] SS-7	SS-7 30-Mar-2011 SS-7	SS-7 14-Apr-2011 SS-7	SS-7 12-May-2011 SS 7	SS-7 20-Jun-2011 S-3	SS-7 19-Jul-2011 SS-7	SS-7 26-Aug-2011 [4] SS-7
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	169000	--	321000	209000	243000	202000	207000	--	--	177000	171000	243000	227000	291000	--
Ammonia, unionized (Field)	ug/l	20	<20	--	<20	<20	<20	<20	<20	--	--	<20	<20	<20	<20	<20	--
Ammonia Nitrogen	ug/l	--	<50	--	<50	<50	<50	<50	<50	--	--	<50	<50	<50	<50	<50	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	--	<2000	<2000	<2000	<2000	<2000	--	--	<2000	<2000	<2000	<2000	<2000	--
Chemical Oxygen Demand	ug/l	--	44000	--	36000	22000	20000	23000	20000	--	--	21000	19000	25000	37000	42000	--
Chloride	ug/l	--	98000	--	220000	67000	95000	48000	88000	--	--	310000	140000	130000	130000	74000	--
Chromium (III)	ug/l	8.9 [22]	<5	--	<5	<5	7	<5	<5	--	--	**10**	<5	<5	<5	<5	--
Conductivity (Field)	uS/cm	--	880	--	925	485	870	890	804	--	--	830	760	605	958	635	--
Dissolved Organic Carbon	ug/l	--	15900	--	9100	9200	8000	8200	7200	--	--	6100	6500	6700	9100	14100	--
Hardness, Calcium Carbonate	ug/l	--	200000	--	340000	220000	420000	220000	250000	--	--	200000	230000	320000	300000	340000	--
Nitrate as N	ug/l	--	<100	--	<100	<100	<100	<100	200	--	--	200	<100	<100	<100	<100	--
Nitrite as N	ug/l	--	<10	--	<10	<10	<10	<10	<10	--	--	<10	<10	<10	<10	<10	--
Nitrogen, Total Kjeldahl	ug/l	--	1100	--	400	600	500	400	500	--	--	500	600	500	600	1000	--
pH (Field)	-	6.5 - 8.5	7.6	--	7.6	7.4	7.7	7.6	7.63	--	--	7.6	7.9	7.6	8.16	7.5	--
Phosphorus	ug/l	-- [23]	24	--	4	17	<2	7	19	--	--	16	120	29	26	32	--
Sulphate	ug/l	--	17000	--	74000	66000	65000	40000	44000	--	--	37000	37000	65000	75000	55000	--
Temperature (Field)	deg c	-- [24]	19	--	27	13	5	2	0.5	--	--	2	9	14	25.3	27	--
Total Dissolved Solids	ug/l	--	420000	--	918000	458000	560000	408000	464000	--	--	904000	506000	598000	570000	548000	--
Total Suspended Solids	ug/l	--	3000	--	<1000	<1000	2000	<1000	3000	--	--	3000	2000	2000	2000	1000	--
Metals																	
Barium	ug/l	--	64	--	190	88	110	62	67	--	--	110	57	79	91	79	--
Boron	ug/l	200 [28]	30	--	30	30	20	10	<10	--	--	<10	10	20	20	20	--
Calcium	ug/l	--	76000	--	120000	83000	110000	82000	100000	--	--	120000	93000	130000	130000	140000	--
Chromium	ug/l	-- [30]	<5	--	<5	<5	<5	<5	<5	--	--	<5	<5	<5	<5	<5	--
Cobalt	ug/l	0.9	--	--	--	--	--	--	--	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	--
Copper	ug/l	5	<1	--	<1	1	<1	<1	<1	--	--	**6**	<1	1	<1	<1	--
Hexavalent Chromium	ug/l	1 [22]	<0.5	--	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	<0.5	<0.5	<0.5	<0.5	<0.5	--
Iron	ug/l	300	200	--	<100	<100	<100	<100	<100	--	--	<100	<100	300	100	300	--
Magnesium	ug/l	--	6400	--	8000	6400	7100	5500	6600	--	--	8500	5800	7600	8900	7800	--
Manganese	ug/l	--	110	--	16	23	19	21	<2	--	--	13	58	270	24	82	--
Mercury	ug/l	0.2 [32]	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	--
Potassium	ug/l	--	900	--	1100	1300	1200	900	900	--	--	1200	1300	1000	700	900	--
Silicon	ug/l	--	3700	--	2700	1800	1900	1400	1600	--	--	1200	1100	1400	3100	3900	--
Silver	ug/l	0.1	--	--	--	--	--	--	--	--	--	<0.1	<0.1	<0.1	<0.1	<0.1	--
Sodium	ug/l	--	63000	--	180000	84000	100000	49000	66000	--	--	180000	86000	77000	99000	56000	--
Strontium	ug/l	--	460	--	860	620	720	470	550	--	--	840	440	530	530	420	--
Sulfur	ug/l	--	5900	--	26000	24000	27000	14000	15000	--	--	13000	14000	23000	27000	21000	--
Thallium	ug/l	0.3 [33]	<0.05	--	<0.05	<0.05	<0.05	<0.05	<0.05	--	--	<0.05	<0.05	<0.05	<0.05	<0.05	--

Parameter	Unit	PWQO [1]	SS-7 21-Sep-2011 S-6	SS-7 28-Oct-2011 SS-7	SS-7 14-Nov-2011 [9] SS-7	SS-7 08-Dec-2011 SS - 7	SS-7 11-Jan-2012 [3] SS-7	SS-7 06-Feb-2012 [3] SS-7	SS-7 13-Mar-2012 SS-7	SS-7 10-Apr-2012 SS-7	SS-7 24-May-2012 SS-7	SS-7 29-Jun-2012 T-5	SS-7 20-Jul-2012 [2] s-7	SS-7 29-Aug-2012 [2] s-7	SS-7 26-Sep-2012 SS-7	SS-7 10-Oct-2012 SS-7	SS-7 28-Nov-2012 SS-7
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	199000	211000	222000	191000	--	--	130000	180000	220000	210000	--	--	190000	220000	240000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	--	--	<20	<20	<20	<20	--	--	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<50	<50	<50	<50	--	--	<50	<50	<50	<50	--	--	150	97	70
Biochemical Oxygen Demand, 5 Day	ug/l	--	3000	<2000	<2000	<2000	--	--	<2000	<2000	<2000	<2000	--	--	<2000	2000	<2000
Chemical Oxygen Demand	ug/l	--	47000	19000	18000	25000	--	--	23000	31000	23000	29000	--	--	27000	37000	29000
Chloride	ug/l	--	110000	130000	140000	83000	--	--	230000	340000	400000	160000	--	--	100000	110000	130000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	--	--	<5	<5	<5	<5	--	--	<5	<5	<5
Conductivity (Field)	uS/cm	--	925	620	620	640	--	--	660	880	775	1062	--	--	965	960	835
Dissolved Organic Carbon	ug/l	--	15700	5300	5800	7600	--	--	6200	8600	9800	9300	--	--	12000	12000	8300
Hardness, Calcium Carbonate	ug/l	--	430000	350000	370000	320000	--	--	200000	320000	360000	360000	--	--	460000	450000	390000
Nitrate as N	ug/l	--	<100	1900	700	300	--	--	370	<100	360	<100	--	--	<100	<100	180
Nitrite as N	ug/l	--	<10	<10	<10	<10	--	--	<10	<10	<10	<10	--	--	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	1400	500	400	800	--	--	580	930	500	1200	--	--	1600	1200	830
pH (Field)	-	6.5 - 8.5	7.45	7.4	7.4	7.3	--	--	7.4	7.6	7.9	7.81	--	--	7.8	7.7	7.6
Phosphorus	ug/l	-- [23]	46	9	15	28	--	--	26	3	12	24	--	--	36	23	16
Sulphate	ug/l	--	260000	210000	220000	150000	--	--	41000	63000	98000	140000	--	--	310000	250000	170000
Temperature (Field)	deg c	-- [24]	23.8	15	5	2	--	--	2	10	16	24.7	--	--	11	8	2
Total Dissolved Solids	ug/l	--	782000	806000	790000	582000	--	--	658000	978000	1090000	726000	--	--	876000	784000	700000
Total Suspended Solids	ug/l	--	3000	<1000	9000	4000	--	--	6000	3000	<1000	2000	--	--	2000	2000	1000
Metals																	
Barium	ug/l	--	160	120	130	66	--	--	68	130	150	91	--	--	75	70	67
Boron	ug/l	200 [28]	20	60	70	18	--	--	10	20	26	32	--	--	79	58	27
Calcium	ug/l	--	160000	130000	130000	120000	--	--	87000	120000	130000	120000	--	--	170000	160000	150000
Chromium	ug/l	-- [30]	<5	<5	<5	<5.0	--	--	<5.0	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.5	<0.5	<0.5	<0.50	--	--	<0.50	<0.50	<0.50	<0.50	--	--	<0.50	<0.50	<0.50
Copper	ug/l	5	<1	1	2	2.4	--	--	1.1	1.5	2.2	**6.7**	--	--	<1.0	<1.0	1.4
Hexavalent Chromium	ug/l	1 [22]	<0.5	<0.5	0.5	<0.5	--	--	<0.5	<0.5	<0.5	<0.5	--	--	<0.5	<0.5	<0.5
Iron	ug/l	300	300	<100	<100	**320**	--	--	120	<100	<100	<100	--	--	<100	<100	**320**
Magnesium	ug/l	--	12000	12000	14000	9000	--	--	5900	9900	11000	10000	--	--	16000	15000	14000
Manganese	ug/l	--	150	10	15	62	--	--	17	12	21	33	--	--	62	39	200
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	--	--	<0.10	<0.10	<0.10	<0.10	--	--	<0.10	<0.10	<0.10
Potassium	ug/l	--	5100	2200	2300	1300	--	--	1300	1600	2000	990	--	--	2300	2600	2100
Silicon	ug/l	--	2500	2000	2500	2200	--	--	1300	820	950	2300	--	--	2600	2700	2400
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.10	--	--	<0.10	<0.10	<0.10	<0.10	--	--	<0.10	<0.10	<0.10
Sodium	ug/l	--	69000	130000	150000	73000	--	--	140000	200000	300000	110000	--	--	87000	96000	100000
Strontium	ug/l	--	680	1200	1400	610	--	--	650	1100	1200	620	--	--	1500	1300	1100
Sulfur	ug/l	--	85000	76000	71000	54000	--	--	14000	22000	34000	54000	--	--	110000	85000	66000
Thallium	ug/l	0.3 [33]	<0.05	<0.05	<0.05	<0.050	--	--	<0.050	<0.050	<0.050	<0.050	--	--	<0.050	<0.050	<0.050

Parameter	Unit	PWQO [1]	SS-7 17-Dec-2012 [3] s-7	SS-7 16-Jan-2013 [3] s7	SS-7 26-Feb-2013 [3] ss7	SS-7 18-Mar-2013 [3] s7	SS-7 01-Apr-2013 [4] ss7	SS-7 10-May-2013 SS-7	SS-7 21-Jun-2013 SS-7	SS-7 29-Jul-2013 SS-7	SS-7 14-Aug-2013 SS-7	SS-7 26-Sep-2013 SS-7	SS-7 25-Oct-2013 SS-7	SS-7 22-Nov-2013 SS-7	SS-7 23-Dec-2013 SS-7	SS-7 09-Jan-2014 [4] s7	SS-7 04-Feb-2014 [4] s7
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--	--	--	--	240000	250000	300000	270000	250000	210000	250000	280000	--	--
Ammonia, unionized (Field)	ug/l	20	--	--	--	--	--	<20	<20	<20	<20	<20	<20	<20	<20	--	--
Ammonia Nitrogen	ug/l	--	--	--	--	--	--	140	140	<50	64	52	260	<50	140	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--	--	--	--	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	--	--
Chemical Oxygen Demand	ug/l	--	--	--	--	--	--	30000	24000	23000	25000	29000	26000	24000	11000	--	--
Chloride	ug/l	--	--	--	--	--	--	110000	99000	120000	130000	49000	38000	59000	80000	--	--
Chromium (III)	ug/l	8.9 [22]	--	--	--	--	--	<5	<5	<5	<5	<5	<5	<5	<5	--	--
Conductivity (Field)	uS/cm	--	--	--	--	--	--	905	883	770	1072	733	835	851	-- [42]	--	--
Dissolved Organic Carbon	ug/l	--	--	--	--	--	--	8100	10000	9800	11000	9900	11000	7200	6100	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--	--	--	--	360000	300000	340000	270000	270000	200000	310000	380000	--	--
Nitrate as N	ug/l	--	--	--	--	--	--	<100	<100	<100	<100	<100	<100	<100	<100	--	--
Nitrite as N	ug/l	--	--	--	--	--	--	<10	<10	<10	<10	<10	<10	<10	<10	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--	--	--	--	820	560	760	620	560	770	280	630	--	--
pH (Field)	-	6.5 - 8.5	--	--	--	--	--	7.6	6.91	7.86	7.23	6.95	7.8	7.69	**8.58**	--	--
Phosphorus	ug/l	-- [23]	--	--	--	--	--	13	2	2	6	10	12	21	19	--	--
Sulphate	ug/l	--	--	--	--	--	--	130000	76000	88000	77000	72000	37000	97000	120000	--	--
Temperature (Field)	deg c	-- [24]	--	--	--	--	--	19	19.7	18.3	17.3	14.1	5	2.6	0	--	--
Total Dissolved Solids	ug/l	--	--	--	--	--	--	598000	532000	684000	616000	476000	360000	522000	584000	--	--
Total Suspended Solids	ug/l	--	--	--	--	--	--	2000	<1000	<1000	<1000	1000	2000	7000	<1000	--	--
Metals																	
Barium	ug/l	--	--	--	--	--	--	84	78	93	82	59	53	62	74	--	--
Boron	ug/l	200 [28]	--	--	--	--	--	37	30	35	28	31	13	22	17	--	--
Calcium	ug/l	--	--	--	--	--	--	130000	110000	140000	100000	96000	76000	110000	130000	--	--
Chromium	ug/l	-- [30]	--	--	--	--	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	--
Cobalt	ug/l	0.9	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--
Copper	ug/l	5	--	--	--	--	--	1.5	1.3	<1.0	1.1	<1.0	2.0	<1.0	<1.0	--	--
Hexavalent Chromium	ug/l	1 [22]	--	--	--	--	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--
Iron	ug/l	300	--	--	--	--	--	<100	<100	<100	<100	<100	<100	<100	<100	--	--
Magnesium	ug/l	--	--	--	--	--	--	10000	8100	10000	7800	7600	5400	8300	11000	--	--
Manganese	ug/l	--	--	--	--	--	--	110	40	3.0	7.5	9.7	6.0	7.4	12	--	--
Mercury	ug/l	0.2 [32]	--	--	--	--	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	--
Potassium	ug/l	--	--	--	--	--	--	1400	910	1000	1100	1300	920	1500	1400	--	--
Silicon	ug/l	--	--	--	--	--	--	1700	1500	2900	2300	1900	1400	1500	2500	--	--
Silver	ug/l	0.1	--	--	--	--	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	--
Sodium	ug/l	--	--	--	--	--	--	85000	91000	110000	130000	63000	50000	62000	70000	--	--
Strontium	ug/l	--	--	--	--	--	--	760	670	810	740	630	460	690	750	--	--
Sulfur	ug/l	--	--	--	--	--	--	45000	26000	33000	24000	26000	14000	35000	42000	--	--
Thallium	ug/l	0.3 [33]	--	--	--	--	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--	--

Parameter	Unit	PWQO [1]	SS-7 26-Mar-2014 SS-7	SS-7 22-Apr-2014 SS-7	SS-7 21-May-2014 SS-7	SS-7 19-Jun-2014 SS-7	SS-7 15-Jul-2014 SS-7	SS-7 25-Aug-2014 SS-7	SS-7 23-Sep-2014 SS-7	SS-7 27-Oct-2014 SS-7	SS-7 20-Nov-2014 SS-3	SS-7 09-Dec-2014 [11] SS-7	SS-7 16-Mar-2015 SS-7	SS-7 07-Apr-2015 SS-7	SS-7 21-May-2015 SS-7	SS-7 23-Jun-2015 SS-7	SS-7 22-Jul-2015 SS-7	SS-7 28-Aug-2015 SS-7
General Chemistry																		
Alkalinity (Total as CaCO3)	ug/l	-- [21]	260000	160000	200000	250000	280000	200000	240000	260000	270000	340000	260000	190000	210000	260000	240000	290000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	20	<20
Ammonia Nitrogen	ug/l	--	180	180	<50	<50	<50	<50	<50	80	<50	<50	290	<50	<50	--	73	<50
Biochemical Oxygen Demand, 5 Day	ug/l	--	2000	<2000	<2000	2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	22000	24000	25000	26000	28000	31000	25000	21000	13000	18000	120000	19000	25000	34000	22000	21000
Chloride	ug/l	--	230000	150000	130000	140000	94000	54000	79000	61000	61000	68000	470000	230000	480000	170000	180000	280000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Conductivity (Field)	uS/cm	--	1509	680	720	1007	860	595	710	795	903	1063	2074	1188	780	1196	1254	765
Dissolved Organic Carbon	ug/l	--	4900	8400	10000	9600	9900	11000	9800	8600	7100	7100	6300	4900	9000	10000	9300	8800
Hardness, Calcium Carbonate	ug/l	--	430000	200000	230000	260000	310000	190000	200000	290000	360000	470000	510000	300000	380000	370000	360000	260000
Nitrate as N	ug/l	--	<100	140	<100	<100	<100	<100	<100	<100	440	<100	<100	180	<100	<100	<100	<100
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	1400	740	480	460	460	820	840	410	360	380	4800	350	530	490	520	480
pH (Field)	-	6.5 - 8.5	7.97	7.5	7.6	7.58	7.48	7.8	7.8	7.97	7.85	7.94	7.99	7.83	7.6	8.11	7.63	7.5
Phosphorus	ug/l	-- [23]	65	<2	3	<10 [35]	7	32	12	15	23	29	28000	10	6	44	29	9
Sulphate	ug/l	--	130000	30000	33000	61000	49000	38000	42000	79000	120000	160000	93000	60000	58000	120000	110000	100000
Temperature (Field)	deg c	-- [24]	1.1	6	10	18.9	17.2	24	16	10.6	0.4	0.1	1.2	7.5	15	24.9	23.1	23
Total Dissolved Solids	ug/l	--	892000	472000	518000	596000	504000	340000	456000	504000	478000	708000	1170000	686000	1340000	820000	774000	940000
Total Suspended Solids	ug/l	--	32000	1000	<1000	2000	<1000	1000	3000	<1000	4000	1000	290000	<2000	3000	3000	1000	<1000
Metals																		
Barium	ug/l	--	120	60	75	77	70	61	62	63	64	84	240	84	170	100	130	120
Boron	ug/l	200 [28]	30	<10	12	32	36	15	22	30	25	42	22	17	21	51	44	33
Calcium	ug/l	--	180000	72000	80000	110000	110000	71000	74000	110000	140000	180000	190000	110000	150000	130000	130000	98000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**1.5**	<0.50	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	1.1	<1.0	2.1	<1.0	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	**6.5**	<1.0	<1.0	<1.0	1.6	1.3
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	**520**	<100	120	<100	<100	<100	100	<100	120	<100	**7300**	<100	<100	100	<100	<100
Magnesium	ug/l	--	15000	5400	6500	8600	8400	5000	5500	8800	11000	16000	15000	8900	12000	12000	12000	8600
Manganese	ug/l	--	520	7.6	15	5.7	8.4	12	37	3.7	80	130	2000	37	35	140	140	6.6
Mercury	ug/l	0.2 [32]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Potassium	ug/l	--	2400	1000	1300	1100	1500	1000	980	2900	2600	4100	2800	2200	2000	2600	2000	1600
Silicon	ug/l	--	2700	680	790	1700	3200	2000	2100	2200	2600	2800	5900	1600	1400	2300	5200	2500
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	140000	87000	100000	130000	82000	62000	86000	66000	56000	64000	240000	130000	280000	120000	120000	270000
Strontium	ug/l	--	1200	420	540	730	680	430	450	700	770	1200	1300	840	1100	1100	1000	840
Sulfur	ug/l	--	45000	9900	12000	23000	17000	13000	16000	31000	43000	59000	36000	22000	20000	--	39000	35000
Thallium	ug/l	0.3 [33]	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.062	<0.050	<0.050	<0.050	<0.050	<0.050

Parameter	Unit	PWQO [1]	SS-7 25-Sep-2015 SS-7	SS-7 27-Oct-2015 SS-7	SS-7 20-Nov-2015 SS-7	SS-7 10-Dec-2015 SS-7	SS-7 26-Jan-2016 SS-7	SS-7 23-Feb-2016 SS-7	SS-7 21-Mar-2016 SS-7	SS-7 26-Apr-2016 SS-7	SS-7 31-May-2016 SS-7	SS-7 30-Jun-2016 SS-7	SS-7 13-Jul-2016 SS-7	SS-7 04-Aug-2016 [2] 7	SS-7 20-Sep-2016 SS-7	SS-7 26-Oct-2016 SS-7	SS-7 11-Nov-2016 SS-7	SS-7 14-Dec-2016 SS-7
General Chemistry																		
Alkalinity (Total as CaCO3)	ug/l	-- [21]	270000	250000	230000	240000	260000	250000	170000	210000	270000	260000	270000	--	270000	250000	250000	200000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	--	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<50	<50	<50	<50	100	<50	110	<50	190	270	<50	--	<50	<50	<50	1300
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	<2000	<2000	<2000	4000	<2000	<2000	<2000	3000	<2000	<2000	--	<2000	<2000	<2000	<2000
Chemical Oxygen Demand	ug/l	--	21000	18000	22000	14000	180000	11000	16000	15000	62000	29000	27000	--	32000	22000	21000	16000
Chloride	ug/l	--	170000	130000	91000	91000	85000	150000	120000	130000	110000	390000	360000	--	150000	120000	100000	140000
Chromium (III)	ug/l	8.9 [22]	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	--	<5	<5	<5	<5
Conductivity (Field)	uS/cm	--	705	1165	870	1027	992	475	755	918	899	505	480	--	1260	540	958	640
Dissolved Organic Carbon	ug/l	--	9500	6500	8000	5700	6100	5800	5800	6500	12000	7600	7100	--	9600	7300	7700	8900
Hardness, Calcium Carbonate	ug/l	--	240000	390000	310000	360000	360000	360000	220000	290000	310000	440000	300000	--	400000	220000	360000	260000
Nitrate as N	ug/l	--	<100	<100	<100	<100	640	<100	<100	<100	<100	<100	<100	--	140	240	<100	110
Nitrite as N	ug/l	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	--	<10	<10	<10	<10
Nitrogen, Total Kjeldahl	ug/l	--	610	310	280	330	660	250	380	180	830	820	350	--	620	180	380	1900
pH (Field)	-	6.5 - 8.5	7.6	7.03	8.36	8.09	7.98	7.68	7.67	8.02	7.28	6.8	7.6	--	7.85	7.6	7.74	7.5
Phosphorus	ug/l	-- [23]	7	6	12	8	490	22	7	13	140	19	13	--	27	6	6	5
Sulphate	ug/l	--	89000	170000	110000	150000	130000	110000	42000	54000	62000	73000	100000	--	160000	110000	140000	59000
Temperature (Field)	deg c	-- [24]	16	5.5	7.1	5.6	0.4	0	3.3	7.9	27.0	25	26	--	22.2	18	5.7	1
Total Dissolved Solids	ug/l	--	660000	736000	568000	640000	614000	748000	430000	516000	576000	1120000	1040000	--	804000	620000	652000	550000
Total Suspended Solids	ug/l	--	2000	2000	<1000	<1000	290000	<1000	3000	<1000	9000	7000	2000	--	<1000	2000	1000	1000
Metals																		
Barium	ug/l	--	98	89	62	74	130	75	47	59	150	130	130	--	120	77	67	69
Boron	ug/l	200 [28]	30	27	19	23	35	24	14	20	42	29	30	--	52	26	25	18
Calcium	ug/l	--	89000	150000	100000	130000	160000	130000	82000	96000	110000	120000	110000	--	140000	80000	110000	89000
Chromium	ug/l	-- [30]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	<5.0	<5.0	<5.0	<5.0
Cobalt	ug/l	0.9	<0.50	<0.50	<0.50	<0.50	**1.2**	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50
Copper	ug/l	5	1.2	1.6	<1.0	<1.0	**7.0**	<1.0	<1.0	<1.0	<1.0	1.0	1.0	--	<1.0	2.1	<1.0	<1.0
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50	<0.50	<0.50	<0.50
Iron	ug/l	300	<100	<100	<100	<100	**3900**	<100	<100	<100	**340**	120	<100	--	<100	<100	<100	<100
Magnesium	ug/l	--	7000	13000	8800	11000	12000	11000	6200	7500	11000	11000	9200	--	11000	6700	9100	7100
Manganese	ug/l	--	22	13	5.7	13	870	16	8.4	20	3800	36	24	--	93	15	12	13
Mercury	ug/l	0.2 [32]	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1
Potassium	ug/l	--	1300	3400	2200	3400	3900	2800	1600	2000	2600	1800	1600	--	2700	1200	2200	1000
Silicon	ug/l	--	2400	2200	1500	1100	4000	2100	960	250	9700	2400	2400	--	3400	1900	2100	1700
Silver	ug/l	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	--	<0.10	<0.10	<0.10	<0.10
Sodium	ug/l	--	160000	87000	77000	71000	65000	110000	71000	81000	88000	250000	270000	--	130000	140000	80000	92000
Strontium	ug/l	--	670	1100	700	1000	1100	920	530	670	940	1000	870	--	1000	570	790	560
Sulfur	ug/l	--	30000	54000	34000	51000	45000	38000	16000	20000	29000	27000	36000	--	55000	38000	48000	22000
Thallium	ug/l	0.3 [33]	<0.050	<0.050	<0.050	<0.050	0.070	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	--	<0.050	<0.050	<0.050	<0.050

Parameter	Unit	PWQO [1]	SS-7 23-Jan-2017 SS-7	SS-7 14-Feb-2017 [3] 7	SS-7 27-Mar-2017 SS-7	SS-7 21-Apr-2017 SS-7	SS-7 23-May-2017 SS-7	SS-7 26-Jun-2017 [56] SS-7	SS-7 24-Jul-2017 [57] SS-7	SS-7 11-Aug-2017 SS-7	SS-7 08-Sep-2017 SS-7	SS-7 17-Oct-2017 SS-7	SS-7 17-Nov-2017 SS-7	SS-7 07-Dec-2017 SS-7	SS-7 22-Jan-2018 SS-7	SS-7 16-Feb-2018 SS-7	SS-7 13-Mar-2018 SS-7
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	210000	--	210000	180000	250000	250000	270000	310000	260000	280000	210000	230000	231000	280000	209000
Ammonia, unionized (Field)	ug/l	20	<20	--	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	<50	--	150	<50	52	810 [36]	130	150	150	61	<50	<50	120	110	80
Biochemical Oxygen Demand, 5 Day	ug/l	--	<2000	--	<2000	<2000	<2000	<2000	2000	<2000	<2000	<2000	<2000	<2000	<1000	2000	<1000
Chemical Oxygen Demand	ug/l	--	13000	--	14000	21000	31000	24000	37000	38000	25000	35000	24000	16000	15000	23000	18000
Chloride	ug/l	--	420000	--	280000	130000	110000	180000	63000	64000	81000	93000	37000	65000	256000	155000	237000
Chromium (III)	ug/l	8.9 [22]	<5	--	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**<10**	<1	**<10**
Conductivity (Field)	uS/cm	--	1919	--	1427	769	831	1122	651	773	723	869	597	715	1110	1120	1268
Dissolved Organic Carbon	ug/l	--	6300	--	6300	7900	12000	9100	14000	14000	11000	11000	7300	7000	6100	9400	5400
Hardness, Calcium Carbonate	ug/l	--	380000	--	320000	200000	260000	250000	240000	270000	230000	280000	210000	250000	328000	374000	359000
Nitrate as N	ug/l	--	110	--	160	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	110
Nitrite as N	ug/l	--	<10	--	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	250	--	440	310	580	750 [36]	790	680	900	520	320	170	400	800	500
pH (Field)	-	6.5 - 8.5	7.50	--	7.75	8.20	7.82	7.91	7.28	7.45	7.60	7.56	7.75	7.39	7.40	7.77	7.78
Phosphorus	ug/l	-- [23]	14	--	36	11	57	25	42	57	17	50	10	19	9	96	32
Sulphate	ug/l	--	83000	--	64000	38000	35000	39000	<1000	<1000	30000	55000	39000	51000	74000	53000	70000
Temperature (Field)	deg c	-- [24]	0.3	--	0.7	9.1	21.2	19.6	17.7	22.5	15.2	9.5	1.4	0.5	0	0	0.3
Total Dissolved Solids	ug/l	--	1120000	--	828000	424000	494000	648000	392000	534000	424000	545000	365000	370000	722000	728000	858000
Total Suspended Solids	ug/l	--	2000	--	3000	<1000	10000	2000	3000	6000	2000	9000	1000	2000	5000	61000	12000
Metals																	
Barium	ug/l	--	100	--	79	51	78	90	83	83	66	71	43	46	70	90	80
Boron	ug/l	200 [28]	19	--	15	13	20	19	18	24	19	24	14	14	10	10	10
Calcium	ug/l	--	140000	--	110000	69000	99000	88000	88000	94000	84000	99000	79000	89000	118000	135000	129000
Chromium	ug/l	-- [30]	<5.0	--	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1	<1	<1
Cobalt	ug/l	0.9	<0.50	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.2	0.3	<0.2
Copper	ug/l	5	1.1	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	<0.50	--	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	**<10**	<1	**<10**
Iron	ug/l	300	<100	--	<100	<100	170	<100	270	**360**	180	**390**	<100	190	260	**1160**	140
Magnesium	ug/l	--	11000	--	8900	5200	7200	6800	6200	6800	6000	7600	6000	6600	8000	9000	9000
Manganese	ug/l	--	12	--	28	7.6	220	79	500	300	48	140	21	41	140	520	60
Mercury	ug/l	0.2 [32]	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	ug/l	--	2500	--	2400	1300	1800	980	950	1200	1500	3500	1600	2000	3000	2000	3000
Silicon	ug/l	--	2200	--	1600	620	1200	2200	3300	4200	2500	3400	1800	1800	2100	2700	1700
Silver	ug/l	0.1	<0.10	--	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	<0.1	<0.1
Sodium	ug/l	--	230000	--	160000	81000	90000	150000	58000	60000	73000	69000	38000	45000	107000	89000	129000
Strontium	ug/l	--	1000	--	770	410	560	620	510	560	530	580	410	510	724	715	900
Sulfur	ug/l	--	30000	--	23000	12000	10000	14000	2600	2000	8600	20000	15000	18000	9500	21000	21000
Thallium	ug/l	0.3 [33]	<0.050	--	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.1	<0.1	<0.1

Parameter	Unit	PWQO [1]	SS-7 24-Apr-2018 SS-7	SS-7 18-May-2018 SS-7	SS-7 22-Jun-2018 SS-7	SS-7 18-Jul-2018 SS-7	SS-7 24-Aug-2018 SS-7	SS-7 18-Sep-2018 SS-7	SS-7 24-Oct-2018 SS-7	SS-7 20-Nov-2018 SS-7	SS-7 18-Dec-2018 SS-7	SS-7 25-Jan-2019 SS-7	SS-7 21-Feb-2019 SS-7	SS-7 13-Mar-2019 SS-7	SS-7 17-Apr-2019 SS-7	SS-7 24-May-2019 SS - 7	SS-7 21-Jun-2019 SS-7	SS-7 18-Jul-2019 SS-7
General Chemistry																		
Alkalinity (Total as CaCO3)	ug/l	-- [21]	180000	236000	275000	311000	255000	295000	266000	246000	241000	255000	263000	260000	137000	221000	246000	330000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	310	820	330	50	80	1710	20	470	<20	150	170	2170	20	33	<10	180
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	1000	5000	<1000	1000	<1000	<1000	2000	2000	2000	1000	<1000	<1000	<1000	8000
Chemical Oxygen Demand	ug/l	--	13000	23000	20000	52000	30000	31000	13000	<5000	11000	17000	15000	8000	8000	25000	170000	33000
Chloride	ug/l	--	170000	162000	37000	240000	128000	168000	137000	103000	155000	149000	279000	318000	93000	124000	137000	140000
Chromium (III)	ug/l	8.9 [22]	**<10**	**<10**	**<10**	**<10**	<0.1	**<10**	**<10**	**<10**	**<10**	<1	<1	<1	<1	1	<1	<1
Conductivity (Field)	uS/cm	--	888	1037	1114	1317	1012	1115	1062	640	459	32	1358	1592	572	819	879	975
Dissolved Organic Carbon	ug/l	--	5800	7500	11100	28800	11400	18900	8300	7300	5600	5800	5100	5600	4300	8600	10400	11400
Hardness, Calcium Carbonate	ug/l	--	222000	315000	560000	300000	271000	347000	292000	308000	326000	366000	359000	361000	155000	242000	227000	261000
Nitrate as N	ug/l	--	<100	<100	<100	<100	<100	<100	<100	130	110	100	<100	190	<100	<100	<100	<100
Nitrite as N	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	3700	900	600	1750	700	2800	600	1500	300	1000	1400	300	200	410	620	1300
pH (Field)	-	6.5 - 8.5	7.99	7.27	7.72	7.70	7.82	6.95	7.64	7.84	6.73	7.05	7.38	6.90	7.18	8.12 [37]	7.46	7.18
Phosphorus	ug/l	-- [23]	72	22	20	83	23	42	12	12	4	14	8	12	7	14	27	50
Sulphate	ug/l	--	44000	50000	8000	10000	86000	73000	119000	95000	92000	113000	110000	97000	17000	34000	28000	15000
Temperature (Field)	deg c	-- [24]	12.0	11.8	21.0	20.3	21.1	24.0	6.1	0	0	0	0	0.7	9.0	17.4	22.8	26.2
Total Dissolved Solids	ug/l	--	586000	682000	741000	838000	682000	774000	748000	590000	728000	754000	897000	1050000	375000	480000	593000	617000
Total Suspended Solids	ug/l	--	15000	2000	4000	7000	2000	6000	4000	5000	1000	4000	<1000	4000	<1000	3000	2000	15000
Metals																		
Barium	ug/l	--	70	90	100	80	100	110	80	70	80	90	90	100	40	60	70	110
Boron	ug/l	200 [28]	20	30	30	30	30	40	30	20	20	20	20	20	<10	20	20	30
Calcium	ug/l	--	79000	113000	155000	107000	97000	124000	102000	110000	114000	130000	129000	128000	57000	87000	81000	93000
Chromium	ug/l	-- [30]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Copper	ug/l	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	**<10**	<1	<1	<1	<1	<1	<1	<1
Iron	ug/l	300	120	220	90	270	140	150	110	120	70	150	100	100	<30	80	190	**620**
Magnesium	ug/l	--	6000	8000	42000	8000	7000	9000	9000	8000	10000	10000	9000	10000	3000	6000	6000	7000
Manganese	ug/l	--	60	360	90	1590	90	210	70	50	60	250	180	80	<10	80	170	810
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	ug/l	--	2000	3000	19000	2000	3000	3000	4000	4000	4000	4000	3000	4000	1000	2000	1000	2000
Silicon	ug/l	--	500	700	1500	6300	2600	3300	1900	1900	2000	2300	2400	2100	800	300	1100	4300
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	86000	99000	69000	142000	90000	117000	106000	76000	87000	91000	135000	163000	59000	89000	101000	101000
Strontium	ug/l	--	673	817	819	816	991	881	941	896	921	985	928	1160	312	531	570	774
Sulfur	ug/l	--	12300	22500	11700	5500	33700	26000	45800	31100	36000	42500	33900	34600	6100	11800	11300	6400
Thallium	ug/l	0.3 [33]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Parameter	Unit	PWQO [1]	SS-7 21-Aug-2019 [54] SS-7	SS-7 18-Sep-2019 SS-7	SS-7 29-Oct-2019 SS-7	SS-7 19-Nov-2019 SS-7	SS-7 18-Dec-2019 SS-7	SS-7 15-Jan-2020 SS-7	SS-7 19-Feb-2020 SS-7	SS-7 19-Mar-2020 SS-7	SS-7 03-Apr-2020 SS-7	SS-7 08-May-2020 SS-7	SS-7 01-Jun-2020 SS-7	SS-7 21-Jul-2020 SS-7	SS-7 25-Aug-2020 SS-7	SS-7 17-Sep-2020 SS-7	SS-7 23-Oct-2020 SS-7
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	340000	314000	218000	251000	262000	201000	282000	194000	141000	200000	277000	324000	232000	284000	237000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	520	240	150	<10	<10	<10	16	<10	<10	55	<10	<10	50	68	<10
Biochemical Oxygen Demand, 5 Day	ug/l	--	4000	<1000	2000	3000	5000	1000	7000	3000	<1000	<1000	12000	6000	8000	8000	8000
Chemical Oxygen Demand	ug/l	--	39000	27000	20000	18000	22000	13000	28000	9000	26000	22000	41000	67000	37000	28000	29000
Chloride	ug/l	--	182000	158000	84000	63000	137000	125000	193000	142000	106000	135000	188000	182000	132000	86000	99000
Chromium (III)	ug/l	8.9 [22]	<1	<1	<1	<1	<1	<1	**<10**	**<10**	<1	<1	<1	<1	<1	<1	<1
Conductivity (Field)	uS/cm	--	1163	1116	829	779	712	862	1262	876	648	878	844	697	681	880	846
Dissolved Organic Carbon	ug/l	--	31900	11500	7100	8500	8600	6300	8700	4800	4900	7400	13300	24200	12000	10600	9200
Hardness, Calcium Carbonate	ug/l	--	323000	418000	209000	246000	339000	254000	376000	257000	174000	215000	274000	338000	247000	266000	234000
Nitrate as N	ug/l	--	<100	<100	<100	<100	<100	100	<100	<100	<100	120	<100	<100	<100	<100	<100
Nitrite as N	ug/l	--	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	1800	1200	600	300	198	448	766	301	465	1270	4660	2400	1260	1330	951
pH (Field)	-	6.5 - 8.5	7.10	7.25	7.38	7.51	8.10	7.42	7.43	7.64	7.78	7.73	7.35	7.97	7.90	7.52	7.41
Phosphorus	ug/l	-- [23]	30	52	13	18	67	7	23	7	7	8	48	96	59	28	23
Sulphate	ug/l	--	33000	80000	67000	55000	81000	44000	75000	30000	18000	24000	5000	4000	58000	55000	52000
Temperature (Field)	deg c	-- [24]	21.5	16.7	12.8	0.7	-0.2	0.9	0.1	1.6	4.7	8.8	11.9	26.9	25.2	16.6	9.5
Total Dissolved Solids	ug/l	--	812000	806000	526000	506000	715000	554000	858000	571000	423000	559000	722000	754000	626000	569000	551000
Total Suspended Solids	ug/l	--	16000	12000	2000	9000	11000	8000	5000	3000	<1000	4000	14000	9000	10000	13000	9000
Metals																	
Barium	ug/l	--	100	120	50	60	80	50	100	70	40	60	120	130	90	80	70
Boron	ug/l	200 [28]	<100	20	20	20	20	20	20	10	<10	10	20	40	40	30	30
Calcium	ug/l	--	116000	151000	74000	87000	121000	92000	134000	93000	63000	78000	100000	122000	89000	95000	84000
Chromium	ug/l	-- [30]	<1	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt	ug/l	0.9	**<2**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2
Copper	ug/l	5	**<10**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Hexavalent Chromium	ug/l	1 [22]	<1	<1	<1	<1	<1	<1	<1	**<10**	<1	<1	<1	<0.5	<0.50	<0.50	<0.50
Iron	ug/l	300	**700**	**830**	90	260	300	90	**780**	60	50	30	**700**	**810**	300	260	190
Magnesium	ug/l	--	8000	10000	6000	7000	9000	6000	10000	6000	4000	5000	6000	8000	6000	7000	6000
Manganese	ug/l	--	1100	430	40	270	240	40	750	30	10	30	2250	1460	230	210	120
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Potassium	ug/l	--	1000	5000	2000	2000	4000	2000	5000	1000	<1000	<1000	1000	2000	3000	4000	2000
Silicon	ug/l	--	5300	3500	2000	2200	2100	1600	2600	1500	1000	200	1600	10000	4800	3300	3300
Silver	ug/l	0.1	**<1**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	127000	117000	86000	57000	94000	75000	115000	88000	61000	94000	126000	122000	106000	79000	79000
Strontium	ug/l	--	800	965	515	594	945	556	1170	592	331	468	637	874	736	802	662
Sulfur	ug/l	--	13200	28400	23400	18600	30200	14400	30600	11000	6520	9600	6590	2600	24100	19700	21700
Thallium	ug/l	0.3 [33]	**<1**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Parameter	Unit	PWQO [1]	SS-7	SS-7
			26-Nov-2020 [58]	11-Dec-2020 [58]
			7	7
General Chemistry				
Alkalinity (Total as CaCO3)	ug/l	-- [21]	--	--
Ammonia, unionized (Field)	ug/l	20	--	--
Ammonia Nitrogen	ug/l	--	--	--
Biochemical Oxygen Demand, 5 Day	ug/l	--	--	--
Chemical Oxygen Demand	ug/l	--	--	--
Chloride	ug/l	--	--	--
Chromium (III)	ug/l	8.9 [22]	--	--
Conductivity (Field)	uS/cm	--	--	--
Dissolved Organic Carbon	ug/l	--	--	--
Hardness, Calcium Carbonate	ug/l	--	--	--
Nitrate as N	ug/l	--	--	--
Nitrite as N	ug/l	--	--	--
Nitrogen, Total Kjeldahl	ug/l	--	--	--
pH (Field)	-	6.5 - 8.5	--	--
Phosphorus	ug/l	-- [23]	--	--
Sulphate	ug/l	--	--	--
Temperature (Field)	deg c	-- [24]	--	--
Total Dissolved Solids	ug/l	--	--	--
Total Suspended Solids	ug/l	--	--	--
Metals				
Barium	ug/l	--	--	--
Boron	ug/l	200 [28]	--	--
Calcium	ug/l	--	--	--
Chromium	ug/l	-- [30]	--	--
Cobalt	ug/l	0.9	--	--
Copper	ug/l	5	--	--
Hexavalent Chromium	ug/l	1 [22]	--	--
Iron	ug/l	300	--	--
Magnesium	ug/l	--	--	--
Manganese	ug/l	--	--	--
Mercury	ug/l	0.2 [32]	--	--
Potassium	ug/l	--	--	--
Silicon	ug/l	--	--	--
Silver	ug/l	0.1	--	--
Sodium	ug/l	--	--	--
Strontium	ug/l	--	--	--
Sulfur	ug/l	--	--	--
Thallium	ug/l	0.3 [33]	--	--

Parameter	Unit	PWQO [1]	SS-8 08-Jan-2021 SS-8	SS-8 18-Feb-2021 SS-7	SS-8 22-Mar-2021 [59] SS-8	SS-8 09-Apr-2021 [47] SS-8	SS-8 28-May-2021 SS-8	SS-8 28-Jun-2021 SS-8	SS-8 15-Jul-2021 SS-8	SS-8 11-Aug-2021 SS-8	SS-8 28-Sep-2021 SS8	SS-8 27-Oct-2021 SS8	SS-8 11-Nov-2021 SS8	SS-8 15-Dec-2021 SS8	SS-8 25-Jan-2022 [18] SS8	SS-8 24-Feb-2022 [4] 8	SS-8 17-Mar-2022 [60] SW8
General Chemistry																	
Alkalinity (Total as CaCO3)	ug/l	-- [21]	221000	270000	157000	172000	229000	218000	262000	280000	273000	195000	225000	205000	256000	--	159000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	--	<20
Ammonia Nitrogen	ug/l	--	<10	<10	<10	<10	<10	<10	<10	11	<10	<10	<10	<10	<10	--	39
Biochemical Oxygen Demand, 5 Day	ug/l	--	3000	5000	2000	<1000	2000	2000	2000	5000	2000	<1000	<1000	2000	<1000	--	2000
Chemical Oxygen Demand	ug/l	--	25000	23000	9000	11000	<5000	24000	<5000	<5000	<5000	18000	16000	18000	21000	--	18000
Chloride	ug/l	--	233000	334000	177000	230000	357000	480000	382000	336000	185000	37000	72000	142000	351000	--	980000
Chromium (III)	ug/l	8.9 [22]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1
Conductivity (Field)	uS/cm	--	1227	1552	884	1033	1343	1926	1680	1737	1052	464	700	886	113	--	2803
Dissolved Organic Carbon	ug/l	--	6800	6700	5300	6300	11900	6800	7700	7300	8200	8900	9900	9100	9000	--	5000
Hardness, Calcium Carbonate	ug/l	--	281000	333000	179000	249000	300000	319000	309000	327000	232000	176000	213000	239000	325000	--	383000
Nitrate as N	ug/l	--	270	190	<1000	<500	<100	<100	<100	220	<100	<100	<100	<100	<500	--	370
Nitrite as N	ug/l	--	<100	<100	<1000	<500	<100	<100	<100	<100	<100	<100	<100	<100	<500	--	<100
Nitrogen, Total Kjeldahl	ug/l	--	544	464	207	285	988	731	1040	838	2470	457	672	479	507	--	390
pH (Field)	-	6.5 - 8.5	7.91	7.32	7.62	7.83	7.56	7.88	7.44	7.10	7.99	8.01	8.01	7.89	8.42	--	7.84
Phosphorus	ug/l	-- [23]	33	16	5	7	17	14	12	20	8	8	6	6	20	--	19
Sulphate	ug/l	--	48000	48000	18000	27000	32000	67000	69000	87000	96000	24000	38000	21000	52000	--	40000
Temperature (Field)	deg c	-- [24]	0.5	0.4	6.8	13.6	15.1	25.7	22.9	23.0	15.9	12.4	6.5	0.9	0	--	4.7
Total Dissolved Solids	ug/l	--	806000	1030000	564000	682000	890000	339000	1180000	1190000	819000	349000	467000	564000	936000	--	2070000
Total Suspended Solids	ug/l	--	8000	6000	2000	2000	1000	4000	6000	6000	2000	2000	1000	2000	<1000	--	19000
Metals																	
Barium	ug/l	--	90	100	50	80	100	130	120	150	90	40	60	50	110	--	190
Boron	ug/l	200 [28]	10	20	<10	10	20	30	30	50	20	10	10	<10	10	--	<10
Calcium	ug/l	--	101000	117000	65000	90000	107000	113000	109000	113000	83000	64000	77000	86000	120000	--	137000
Chromium	ug/l	-- [30]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	<1
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.5	<0.2	<0.2	<0.2	<0.2	<0.2	--	0.2
Copper	ug/l	5	1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	--	<1
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	--	<0.50
Iron	ug/l	300	**400**	270	40	60	180	170	150	210	80	100	120	80	270	--	270
Magnesium	ug/l	--	7000	10000	4000	6000	8000	9000	9000	11000	6000	4000	5000	6000	11000	--	10000
Manganese	ug/l	--	50	50	10	20	140	50	130	540	20	<10	60	10	80	--	50
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1
Potassium	ug/l	--	1000	1000	<1000	1000	1000	2000	2000	2000	1000	1000	<1000	<1000	1000	--	2000
Silicon	ug/l	--	2300	1700	1500	1100	1900	2700	2800	4000	2400	2100	2300	1900	2800	--	2000
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1
Sodium	ug/l	--	137000	187000	84000	119000	184000	318000	285000	236000	182000	42000	67000	86000	177000	--	495000
Strontium	ug/l	--	609	760	364	579	613	765	763	1050	566	298	375	350	781	--	1320
Sulfur	ug/l	--	16200	19700	6700	10400	12100	25700	26600	31900	32900	9400	12600	7800	18800	--	13000
Thallium	ug/l	0.3 [33]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1

Parameter	Unit	PWQO [1]	SS-8 28-Apr-2022 SS8	SS-8 26-May-2022 [20] SS8	SS-8 24-Jun-2022 SS8	SS-8 25-Jul-2022 SS8
General Chemistry						
Alkalinity (Total as CaCO3)	ug/l	-- [21]	185000	231000	238000	274000
Ammonia, unionized (Field)	ug/l	20	<20	<20	<20	<20
Ammonia Nitrogen	ug/l	--	1170	36	75	<20
Biochemical Oxygen Demand, 5 Day	ug/l	--	<1000	<1000	2000	<1000
Chemical Oxygen Demand	ug/l	--	19000	33000	16000	19000
Chloride	ug/l	--	297000	458000	224000	284000
Chromium (III)	ug/l	8.9 [22]	<1	1	<1.0	<1
Conductivity (Field)	uS/cm	--	1203	1570	1011	1368
Dissolved Organic Carbon	ug/l	--	7900	8100	10500	10400
Hardness, Calcium Carbonate	ug/l	--	262000	308000	237000	203000
Nitrate as N	ug/l	--	110	<100	<100	120
Nitrite as N	ug/l	--	<100	<100	<100	<100
Nitrogen, Total Kjeldahl	ug/l	--	1600	521	755	1770
pH (Field)	-	6.5 - 8.5	7.99	7.81	7.76	7.85
Phosphorus	ug/l	-- [23]	11	4	9	13
Sulphate	ug/l	--	31000	45000	32000	52000
Temperature (Field)	deg c	-- [24]	13.0	17.6	23.5	22.1
Total Dissolved Solids	ug/l	--	890000	1130000	760000	890000
Total Suspended Solids	ug/l	--	<1000	<1000	<1000	2000
Metals						
Barium	ug/l	--	90	120	100	100
Boron	ug/l	200 [28]	<10	20	20	30
Calcium	ug/l	--	95000	110000	85000	73000
Chromium	ug/l	-- [30]	<1	1	<1	<1
Cobalt	ug/l	0.9	<0.2	<0.2	<0.2	<0.2
Copper	ug/l	5	<1	1	<1	2
Hexavalent Chromium	ug/l	1 [22]	<0.50	<0.5	<0.50	<0.5
Iron	ug/l	300	30	60	90	150
Magnesium	ug/l	--	6000	8000	6000	5000
Manganese	ug/l	--	<10	20	30	40
Mercury	ug/l	0.2 [32]	<0.1	<0.1	<0.1	<0.1
Potassium	ug/l	--	<1000	1000	1000	1000
Silicon	ug/l	--	1100	1300	2100	3200
Silver	ug/l	0.1	<0.1	<0.1	<0.1	<0.1
Sodium	ug/l	--	175000	291000	154000	207000
Strontium	ug/l	--	663	803	517	616
Sulfur	ug/l	--	12300	16000	11300	20200
Thallium	ug/l	0.3 [33]	<0.1	<0.1	<0.1	<0.1

Footnotes:

Tables should be read in conjunction with the accompanying document.
< Indicates parameter not detected above laboratory method detection limit.
> Indicates parameter detected above equipment analytical range.
-- Chemical not analyzed or criteria not defined.
Value Parameter is greater than PWQO
(1) Provincial Water Quality Objectives (July 1994, reprinted February 1999)
(2) Monitoring location was dry during this sampling event. No sample was collected.
(3) Monitoring location was frozen during this sampling event. No sample was collected.
(4) Pumps were not discharging water. No sample could be collected.
(5) No sample was collected.
(6) Revised Report: Dissolved metals were originally reported in error and have now been removed from the report.
(7) Metal Analysis: Sample was diluted for Calcium and RDL was adjusted accordingly.
(8) Results for dissolved magnessium are greater than total magnessium. The results have been confirmed by re-analysis.
(9) Total/Dissolved Chromium < Hexavalent Chromium: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.
(10) Metal Analysis:RDL of Calcium was adjusted due to high concentration of Strontium.
(11) Metals: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.
(12) Metal Analysis:RDL for Calcium was adjusted due to high concentration of Strontium.
(13) Metal analysis:RDL of Nickel was adjusted due to high concentration of Calcium.
(14) Hexavalent Chromium > Total/Dissolved Chromium: Both values fall within the method uncertainty for duplicates and are likely equivalent.
(15) Hexavalent Chromium > Total/Dissolved Chromium: Both values fall within the method uncertainty for duplicates and are likely equivalent. TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.
(16) No Cr(VI) bottle submitted; analysis performed from the unpreserved sample. Cr(VI) analysis performed past holding time.
(17) N-NO2 MRL elevated due to matrix interference (dilution was done).
(18) Cl & SO4 MRL elevated due to matrix interference (dilution was done).
(19) SO4 MRL elevated due to matrix interference (dilution was done).
(20) Cl & SO4 MRL elevated due to matrix interference (dilution was done).
(21) Alkalinity should not be decreased by more than 25% of the natural concentration.
(22) Adopted Canadian Water Quality Guidelines.
(23) Current scientific evidence is insufficient to develop a firm Objective at this time. Accordingly, the following phosphorus concentrations should be considered as general guidelines which should be supplemented by site-specific studies: To avoid nuisance concentrations of algae in lakes, average total phosphorus concentrations for the ice-free period should not exceed 20 ug/L; A high level of protection against aesthetic deterioration will be provided by a total phosphorus concentration for the ice-free period of 10 ug/L or less. This should apply to all lakes naturally below this value; Excessive plant growth in rivers and streams should be eliminated at a total phosphorus concentration below 30 ug/L.
(24) (1) General: The natural thermal regime of any body of water shall not be altered so as to impair the quality of the natural environment. In particular, the diversity, distribution and abundance of plant and animal life shall not be significantly changed. (2) Waste Heat Discharge: (a) Ambient Temperature Changes: The temperature at the edge of a mixing zone shall not exceed the natural ambient water temperature at a representative control location by more than 10°C (18°F). However, in special circumstances, local conditions may require a significantly lower temperature difference than 10°C (18°F). Potential dischargers are to apply to the MOEE for guidance as to the allowable temperature rise for each thermal discharge. This ministry will also specify the nature of the mixing zone and the procedure for the establishment of a representative control location for temperature recording on a case-by-case basis. (b) Discharge Temperature Permitted: The maximum temperature of the receiving body of water, at any point in the thermal plume outside a mixing zone, shall not exceed 30°C (86°F) or the temperature of a representative control location plus 10°C (18°F) or the allowed temperature difference, which ever is the lesser temperature. These maximum temperatures are to be measured on a mean daily basis from continuous records. (c) Taking and Discharging of Cooling Water: Users of cooling water shall meet both the Objectives for temperature outlined above and the "Procedures for the Taking and Discharge of Cooling Water" as outlined in the MOEE publication Deriving Receiving-Water Based, Point-Source Effluent Requirements for Ontario Waters(1994).
(25) Suspended matter should not be added to surface water in concentrations that will change the natural Secchi disc reading by more than 10 percent.
(26) At pH 4.5 to 5.5 the Interim PWQO is 15 µg/L based on inorganic monomeric aluminum measure in clay-free samples; At pH > 5.5 to 6.5, no condition should be permitted which would increase the acid soluble inorganic aluminum concentration in clay-free samples to more than 10% above natural background concentrations for waters representative of that geological area of the Province that are unaffected by man-made inputs. At pH > 6.5 to 9.0, the Interim PWQO is 75 µg/L based on total aluminum measured in clay-free samples. If natural background aluminum concentrations in water bodies unaffected by man-made inputs are greater than the numerical Interim PWQO (above), no condition is permitted that would increase the aluminum concentration in clay-free samples by more than 10% of the natural background level. Note: pH values of < 6.5 and > 8.5 are outside the range considered acceptable by the PWQO for pH. See the Scientific Criteria Document for Development of Provincial Water Quality Objectives and Guidelines - Aluminum for a discussion of analytical procedures.
(27) If hardness as CaCO3 < 75 mg/L, PWQO = 11 µg/L; if hardness as CaCO3 > 75 mg/L, PWQO = 1100 µg/L.
(28) See Section 1.2.3. of PWQO. This Interim PWQO was set for emergency purposes based on the best information readily available. Employ due caution when applying this value.
(29) An Interim PWQO also exists for this parameter. See Section 1.10 of the PWQO - Where both a PWQO and an Interim PWQO exist.
(30) PWQO values exist for Cr(III) and Cr(VI)
(31) If alkalinity as CaCO3 < 20 mg/L, PWQO = 5 µg/L; if alkalinity as CaCO3 from 20 to 40 mg/L, PWQO = 10 µg/L; if alkalinity as CaCO3 from 40 to 80 mg/L, PWQO = 20 µg/L; if alkalinity as CaCO3 > 80 mg/L, PWQO = 25 ug/L. An Interim PWQO also exists for this parameter. See Section 1.10 of the PWQO - Where both a PWQO and an Interim PWQO exist.
(32) In a filtered water sample.
(33) See Section 1.2.2. of PWQO. This Interim PWQO is currently under development. The value is subject to change upon publication by MOEE.
(34) Determined by the total reactive phenols test - the 4-AAP (4-amino-antipyrine) test. This objective should be used primarily as a screening tool. The isomer specific PWQOs for various phenolics should be employed where possible.
(35) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.
(36) TKN < NH4: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.
(37) Lab measured value. pH pen not working in field.
(38) Insufficient water for sample collection or analysis at this monitoring location during sampling event.
(39) Construction
(40) Dissolved Magnesium > total Magnesium. Reported results were confirmed by re-analysis of origiginal containers submitted.
(41) Due to turbidity, sample was filtered prior to Cr(VI) analysis; Cr(VI) souble reported.
(42) Field Parameters were not measured
(43) The ratio of sulphate to sulfur exceeded 3:1 ratio. This was confirmed by re-analysis.
(44) Except for sample 1383014, Cr(VI) samples for this report were filtered prior to analysis due to turbidity - soluble Cr(IV) reported.
(45) Alkalinity, Minerals+ Anions, N-NO2, N-NO3, BOD, and conductivity were analysed after being stored for an extended period of time outside of the optimal temperatures due to a power outage for the entire report.
(46) Cr(VI) analyzed past the holding time for unpreserved samples for this report.
(47) N-NO2 AND N-NO3 MRL elevated due to matrix interference (dilution was done).
(48) Monitoring location was stagnant during sampling event. No sample was collected.
(49) N-NO2 and N-NO3 MRL elevated due to matrix interference (dilution was done).
(50) Total Chromium < Hexavalent Chromium: Both values fall within acceptable RPD limits for duplicates and are likely equivalent.
(51) Metals analysis performed on a nitric acid digest of the sample material.
(52) Sample was filtered prior to Cr(VI) analysis - soluble Cr(VI) has been reported.
(53) Due to turbidity, sample was filtered prior to Cr(VI) analysis; soluble Cr(VI) reported.
(54) Metals MRL elevated due to matrix interference (dilution was done).
(55) The results for dissolved magnesium are greater than total magnesium. The results have been confirmed by re-analysis.
(56) TKN < Ammonia: Both values fall within the method uncertainty for duplicates and are likely equivalent.
(57) BOD Analaysis: Analysis was performed past sample holding time. This may increase the variability associated with these results.
(58) Monitoring location was not accessible.
(59) NO2 and NO3 MRL elevated due to matrix interference (dilution was done).
(60) Cl MRL elevated due to matrix interference (dilution was done).

APPENDIX F

Inputs to Hydrological Model

Figure F-1

Existing Conditions (Scenario 2) Model Schematic

WSP

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Checked by: KMM

Table F-1
Potential Evaporation Data

Month	Ottawa International Airport PE (1950 - 2013)		Ottawa International Airport PE (2018 - 2019) - Calibration	
	Rate (mm/month)	Coefficient	Rate (mm/month)	Coefficient
January	0.5	1	0.4	1
February	0.6	1	1.2	1
March	5.7	1	2.3	1
April	32.0	1	22.6	1
May	80.5	1	80.0	1
June	116.4	1	111.9	1
July	135.7	1	148.6	1
August	116.8	1	123.7	1
September	74.5	1	79.8	1
October	36.3	1	33.4	1
November	9.9	1	3.9	1
December	1.2	1	0.6	1

Note:

[1] Potential evaporation data was sourced from water budget data provided by Environment Canada for the Ottawa International Airport Meteorological Station (ID: 6106001, 1939 - 2021).

Entered by: MR
Checked by: KMM

Canopy Interception and Surface Depression Storage Inputs

Existing Conditions (Scenarios 2 & 4)				
Subbasin	Canopy Interception		Surface Depression Storage	
	Initial Storage (%)	Max Storage (mm)	Initial Storage (%)	Max Storage (mm)
Sub-catchment 1A	0	0.17	0	8
Sub-catchment 1B	0	0.00	0	4
Sub-catchment 1C	0	0.97	0	9
Sub-catchment 2	0	0.56	0	5
Sub-catchment 4A	0	0.43	0	10
Sub-catchment 4B	0	0.73	0	10
Sub-catchment 5A	0	1.00	0	10
Sub-catchment 5B	0	1.00	0	10
Sub-catchment 5C	0	0.84	0	10
Sub-catchment 6	0	1.00	0	5
Sub-catchment 7	0	0.95	0	10
Sub-catchment 7A	0	0.18	0	10
Sub-catchment 7B	0	0.48	0	10

Operational Conditions (Scenario 5)				
Subbasin	Canopy Interception		Surface Depression Storage	
	Initial Storage (%)	Max Storage (mm)	Initial Storage (%)	Max Storage (mm)
Sub-catchment 2	0	0.56	0	5
Sub-catchment 3A	0	0.00	0	2
Sub-catchment 4B	0	0.98	0	10
Sub-catchment 5A	0	0.00	0	2
Sub-catchment 5B	0	1.00	0	10
Sub-catchment 5C	0	0.00	0	2
Sub-catchment 6	0	1.00	0	5
Sub-catchment 7	0	0.95	0	10

Rehabilitated Conditions (Scenario 8)				
Subbasin	Canopy Interception		Surface Depression Storage	
	Initial Storage (%)	Max Storage (mm)	Initial Storage (%)	Max Storage (mm)
Sub-catchment 2	0	0.56	0	5
Sub-catchment 3A	0	0.00	0	10
Sub-catchment 4B	0	0.98	0	10
Sub-catchment 5B	0	1.00	0	10
Sub-catchment 6	0	1.00	0	5
Sub-catchment 7	0	0.95	0	10

Note:

[1] Sub-catchment 3 (i.e., Existing Stittsville Quarry) and Bell Quarry were not included in the tables above as their surplus estimates were calculated using discharge pumping records and a water balance assessment, respectively.

Table F-3
Inputs to Soil Moisture Accounting Method

Existing Conditions (Scenarios 2 and 4)														
Subbasin	Soil (%)	GW 1 (%)	GW 2 (%)	Max Infiltration (mm/hr)	Impervious (%)	Soil Storage (mm)	Tension Storage (mm)	Soil Percolation (mm/hr)	GW 1 Storage (mm)	GW 1 Percolation (mm/hr)	GW 1 Coefficeint (hr)	GW 2 Storage (mm)	GW 2 Percolation (mm/hr)	GW 2 Coefficient (hr)
Sub-catchment 1A	0	0	0	50	32%	155	0	150	200	30	40	0	0	0
Sub-catchment 1B	0	0	0	50	80%	45	0	150	200	30	40	0	0	0
Sub-catchment 1C	0	0	0	50	15%	321	0	150	200	30	40	0	0	0
Sub-catchment 2	0	0	0	50	40%	193	0	150	200	30	40	0	0	0
Sub-catchment 4A	0	0	0	50	0%	204	0	150	200	30	40	0	0	0
Sub-catchment 4B	0	0	0	50	55%	216	0	150	200	30	40	0	0	0
Sub-catchment 5A	0	0	0	50	0%	339	0	150	200	30	40	0	0	0
Sub-catchment 5B	0	0	0	50	55%	208	0	150	200	30	40	0	0	0
Sub-catchment 5C	0	0	0	50	0%	300	0	150	200	30	40	0	0	0
Sub-catchment 6	0	0	0	50	64%	223	0	150	200	30	40	0	0	0
Sub-catchment 7	0	0	0	50	54%	192	0	150	200	30	40	0	0	0
Sub-catchment 7A	0	0	0	50	14%	184	0	150	200	30	40	0	0	0
Sub-catchment 7B	0	0	0	50	5%	248	0	150	200	30	40	0	0	0

Operational Conditions (Scenario 5)														
Subbasin	Soil (%)	GW 1 (%)	GW 2 (%)	Max Infiltration (mm/hr)	Impervious (%)	Soil Storage (mm)	Tension Storage (mm)	Soil Percolation (mm/hr)	GW 1 Storage (mm)	GW 1 Percolation (mm/hr)	GW 1 Coefficeint (hr)	GW 2 Storage (mm)	GW 2 Percolation (mm/hr)	GW 2 Coefficient (hr)
Sub-catchment 2	0	0	0	50	40%	193	0	150	200	30	40	0	0	0
Sub-catchment 3A	0	0	0	50	100%	8	0	150	200	30	40	0	0	0
Sub-catchment 4B	0	0	0	50	67%	211	0	150	200	30	40	0	0	0
Sub-catchment 5A	0	0	0	50	100%	8	0	150	200	30	40	0	0	0
Sub-catchment 5B	0	0	0	50	55%	208	0	150	200	30	40	0	0	0
Sub-catchment 5C	0	0	0	50	100%	8	0	150	200	30	40	0	0	0
Sub-catchment 6	0	0	0	50	64%	223	0	150	200	30	40	0	0	0
Sub-catchment 7	0	0	0	50	54%	192	0	150	200	30	40	0	0	0

Rehabilitated Conditions (Scenario 8)														
Subbasin	Soil (%)	GW 1 (%)	GW 2 (%)	Max Infiltration (mm/hr)	Impervious (%)	Soil Storage (mm)	Tension Storage (mm)	Soil Percolation (mm/hr)	GW 1 Storage (mm)	GW 1 Percolation (mm/hr)	GW 1 Coefficeint (hr)	GW 2 Storage (mm)	GW 2 Percolation (mm/hr)	GW 2 Coefficient (hr)
Sub-catchment 2	0	0	0	50	40%	193	0	150	200	30	40	0	0	0
Sub-catchment 3A	0	0	0	50	0%	90	0	150	200	30	40	0	0	0
Sub-catchment 4B	0	0	0	50	67%	211	0	150	200	30	40	0	0	0
Sub-catchment 5B	0	0	0	50	55%	208	0	150	200	30	40	0	0	0
Sub-catchment 6	0	0	0	50	64%	223	0	150	200	30	40	0	0	0
Sub-catchment 7	0	0	0	50	54%	192	0	150	200	30	40	0	0	0

Note:
[1] Sub-catchment 3 (i.e., Existing Stittsville Quarry) and Bell Quarry were not included in the tables above as their surplus estimates were calculated using discharge pumping records and a water balance assessment, respectively.

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Table F-4
Baseflow Inputs

Subbasin	Simulated Groundwater Discharge (m^3/d)				
	Pre-development Conditions (Scenario 1)	Existing Conditions (Scenario 2)	Existing Conditions (Scenario 4)	Operational Conditions (Scenario 5)	Rehabilitated Conditions (Scenario 8)
Sub-catchment 1A	31.3	74	57	0.0	7.8
Sub-catchment 1B	51.3	2.6	1.9	0.0	0.0
Sub-catchment 1C	0	5.8	0	-	-
Sub-catchment 2	352.1	294	250	207	284
Sub-catchment 3	88.4	508	-	-	-
Sub-catchment 4A	196.65	96	26	-	-
Sub-catchment 4B	117.94	97	93	0	101
Sub-catchment 5A	0	0	-	-	-
Sub-catchment 5B	0	0	0	0	0
Sub-catchment 5C	0	3.5	-	-	-
Sub-catchment 6	460.95	448	436	227	471
Sub-catchment 7	778	764	671	521	712
Sub-catchment 7A	110.75	103	71	-	-
Sub-catchment 7B	0	0	0	-	-
Stittsville Quarry	-	(See catchment 3)	650	392	13
Stittsville 2 Quarry	-	-	-	1185	258
Bell Quarry	-	80	235	122	3

Note:
- =within quarry excavation
Bell Quarry excavation includes 5A, 5C during operations
Stittsville Quarry Excavation includes catchment 3
Stittsville 2 Quarry Excavation includes 1C, 4A, 7A, 7B

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Table F-5
Lag Time Inputs

Existing Conditions (Scenarios 2 and 4)						
Subbasin	Runoff Coefficient, C	Area (ha)	Watershed Slope, Sw (%)	Watershed Length, L (m)	Time of Concentration, tc (min)	Lag Time, tlag (min)
Sub-catchment 1A	0.491	39.39	0.9%	690.00	247.62	**148.57**
Sub-catchment 1B	0.700	2.60	1.4%	138.33	62.91	**37.74**
Sub-catchment 1C	0.409	4.17	0.6%	95.00	115.80	**69.48**
Sub-catchment 2	0.328	91.11	0.1%	1076.05	143.47	**86.08**
Sub-catchment 4A	0.178	18.68	0.6%	323.21	38.45	**23.07**
Sub-catchment 4B	0.195	8.54	0.9%	306.33	36.22	**21.73**
Sub-catchment 5A	0.350	14.20	2.0%	339.33	32.50	**19.50**
Sub-catchment 5B	0.184	2.89	0.8%	338.33	45.40	**27.24**
Sub-catchment 5C	0.366	9.00	1.7%	241.85	25.14	**15.08**
Sub-catchment 6	0.159	88.78	0.2%	1283.00	168.15	**100.89**
Sub-catchment 7	0.151	180.64	0.7%	1564.70	143.65	**86.19**
Sub-catchment 7A	0.360	38.89	1.1%	930.00	91.12	**54.67**
Sub-catchment 7B	0.394	14.37	1.0%	428.33	47.32	**28.39**

Operational Conditions (Scenario 5)						
Subbasin	Runoff Coefficient, C	Area (ha)	Watershed Slope, Sw (%)	Watershed Length, L (m)	Time of Concentration, tc (min)	Lag Time, tlag (min)
Sub-catchment 2	0.491	39.39	0.9%	690.00	247.62	**148.57**
Sub-catchment 3A	0.700	118.10	0.5%	883.00	229.46	**137.67**
Sub-catchment 4B	0.142	6.97	0.8%	243.67	29.72	**17.83**
Sub-catchment 5A	0.350	14.20	2.0%	339.33	32.50	**19.50**
Sub-catchment 5B	0.184	2.89	0.8%	338.33	45.40	**27.24**
Sub-catchment 5C	0.366	9.00	1.7%	241.85	25.14	**15.08**
Sub-catchment 6	0.159	88.78	0.2%	1283.00	168.15	**100.89**
Sub-catchment 7	0.151	180.64	0.7%	1564.70	143.65	**86.19**

Rehabilitated Conditions (Scenario 8)						
Subbasin	Runoff Coefficient, C	Area (ha)	Watershed Slope, Sw (%)	Watershed Length, L (m)	Time of Concentration, tc (min)	Lag Time, tlag (min)
Sub-catchment 2	0.491	39.39	0.9%	690.00	247.62	**148.57**
Sub-catchment 3A	0.100	118.10	0.8%	883.00	470.69	**282.41**
Sub-catchment 4B	0.142	6.97	0.8%	243.67	29.72	**17.83**
Sub-catchment 5B	0.184	2.89	0.8%	338.33	45.40	**27.24**
Sub-catchment 6	0.159	88.78	0.2%	1283.00	168.15	**100.89**
Sub-catchment 7	0.151	180.64	0.7%	1564.70	143.65	**86.19**

Note: 0.53183

[1] Where the C value is highlighted green, C > 0.4, therefore the Bransby Williams Formula method was considered, otherwise, the Airport Formula method was used.

[2] Sub-catchment 3 (i.e., Existing Stittsville Quarry) and Bell Quarry were not included in the tables above as their surplus estimates were calculated using discharge pumping records and a water balance assessment, respectively.

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Table F-6

Snowmelt / Accumulation Inputs

Existing, Operational, and Rehabilitation Conditions (Scenarios 2, 4, 5, & 8)										
Subbasin	Lapse Rate (^{o}C/1000 m)	PX Temperature (^{o}C)	Base Temperature (^{o}C)	ATI Coefficient	Welt Meltrate (mm/^{o}C-day	Rain Rate Limit (mm/day)	Cold Limit (mm/day)	Coldrate Coefficient	Water Capacity (%)	Groundmelt (mm/day)
Sub-catchment 1A	0	0.00	-0.4	1.0	3.3	0	0	0	5	0
Sub-catchment 1B	0	0.00	-0.4	1	3.3	0	0	0	5	0
Sub-catchment 1C	0	0.00	-0.4	1	3.3	0	0	0	5	0
Sub-catchment 2	0	0.00	-0.4	1	3.3	0	0	0	5	0
Sub-catchment 3A	0	0.00	-0.4	1	3.3	0	0	0	5	0
Sub-catchment 4A	0	0.00	-0.4	1	3.3	0	0	0	5	0
Sub-catchment 4B	0	0.00	-0.4	1	3.3	0	0	0	5	0
Sub-catchment 5A	0	0.00	-0.4	1	3.3	0	0	0	5	0
Sub-catchment 5B	0	0.00	-0.4	1	3.3	0	0	0	5	0
Sub-catchment 5C	0	0.00	-0.4	1	3.3	0	0	0	5	0
Sub-catchment 6	0	0.00	-0.4	1	3.3	0	0	0	5	0
Sub-catchment 7	0	0.00	-0.4	1	3.3	0	0	0	5	0
Sub-catchment 7A	0	0.00	-0.4	1	3.3	0	0	0	5	0
Sub-catchment 7B	0	0.00	-0.4	1	3.3	0	0	0	5	0

Note:

[1] ATI-Meltrate Function for HEC-HMS was defined by the degree-day equation for Eastern Canada Forested Basins (Pysklywec, 1968).

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APPENDIX G

Water Balance Results

Table G-1
Existing Land Uses, Soil Types, and Catchment Areas

Existing Condition

Type	WHC	Type of Land Use	Soil Type	Infiltration Factor (%)				Catchment Areas
				Topo	Soils	Cover	Total	(m^2)
Sub-Catchment 1A								
Forest (on Bedrock)	100 mm	Mature Forests	Bedrock	0.15	0.1	0.2	0.45	43,259
Forest (on Organic Deposits)	400 mm	Mature Forests	Silt Loam / Organic Deposits	0.15	0.2	0.2	0.55	1,931
Impervious Built-Up Areas	3 mm	Buildings / Concrete	n/a	0	0	0.0	0	90,721
Meadow / Grass (on Bedrock)	100 mm	Pastures and Shrubs	Bedrock	0.15	0.1	0.1	0.35	181,825
Meadow / Grass (on Organic Deposits)	250 mm	Pastures and Shrubs	Silt Loam / Organic Deposits	0.15	0.2	0.1	0.45	42,594
Existing Quarry Extraction Area	10 mm	Aggregate Extraction	Bedrock	0	0	0.0	0	27,929
Wetland (on Bedrock)	100 mm	Wetland Habitat	Bedrock	0	0	0.0	0	2,951
Wetland	150 mm	Wetland Habitat	Silt Loam / Organic Deposits	0	0	0.0	0	2,652
							Total	**393,861**
Sub-Catchment 1B								
Meadow / Grass (on Bedrock)	100 mm	Pastures and Shrubs	Bedrock	0.15	0.1	0.1	0.35	5,282
Existing Quarry Extraction Area	10 mm	Aggregate Extraction	Bedrock	0	0	0	0	20,689
							Total	**25,971**
Sub-Catchment 1C								
Forest (on Bedrock)	100 mm	Mature Forests	Bedrock	0.15	0.1	0.2	0.45	5,685
Forest (on Organic Deposits)	400 mm	Mature Forests	Silt Loam / Organic Deposits	0.15	0.2	0.2	0.55	28,971
Impervious Built-Up Areas	3 mm	Buildings / Concrete	n/a	0	0	0	0	5,998
Meadow / Grass (on Bedrock)	100 mm	Pastures and Shrubs	Bedrock	0.15	0.1	0.1	0.35	933
Existing Quarry Extraction Area	10 mm	Aggregate Extraction	Bedrock	0	0	0	0	67
							Total	**41,655**
Sub-Catchment 2								
Forest (on Bedrock)	100 mm	Mature Forests	Bedrock	0.15	0.1	0.2	0.45	270,308
Forest (on Organic Deposits)	400 mm	Mature Forests	Silt Loam / Organic Deposits	0.15	0.2	0.2	0.55	36,692
Impervious Built-Up Areas	3 mm	Buildings / Concrete	n/a	0	0	0	0	105,035
Meadow / Grass (on Bedrock)	100 mm	Pastures and Shrubs	Bedrock	0.15	0.1	0.1	0.35	145,606
Exposed Sand / Gravel Deposits (on Bedrock)	75 mm	Bare Deposit Area	Bedrock	0.15	0.1	0	0.25	92,761
Exposed Sand / Gravel Deposits	100 mm	Bare Deposit Area	Fine Sand	0.15	0.4	0	0.55	1,403
Wetland (on Bedrock)	100 mm	Wetland Habitat	Bedrock	0	0	0	0	113,208
Wetland	150 mm	Wetland Habitat	Silt Loam / Organic Deposits	0	0	0	0	146,066
							Total	**911,080**
Sub-Catchment 3								
Existing Quarry Extraction Area	10 mm	Aggregate Extraction	Bedrock	0	0	0	0	516,896
							Total	**516,896**
Sub-Catchment 4A								
Forest (on Bedrock)	100 mm	Mature Forests	Bedrock	0.15	0.1	0.2	0.45	62,320
Forest (on Organic Deposits)	400 mm	Mature Forests	Silt Loam / Organic Deposits	0.15	0.2	0.2	0.55	17,308
Wetland (on Bedrock)	100 mm	Wetland Habitat	Bedrock	0	0	0	0	96,797
Wetland	150 mm	Wetland Habitat	Silt Loam / Organic Deposits	0	0	0	0	10,406
							Total	**186,831**
Sub-Catchment 4B								

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Forest (on Bedrock)	100 mm	Mature Forests	Bedrock	0.15	0.1	0.2	0.45	13,139
Forest (on Organic Deposits)	400 mm	Mature Forests	Silt Loam / Organic Deposits	0.15	0.2	0.2	0.55	14,672
Impervious Built-Up Areas	3 mm	Buildings / Concrete	n/a	0	0	0	0	630
Meadow / Grass (on Bedrock)	100 mm	Pastures and Shrubs	Bedrock	0.15	0.1	0.1	0.35	7,927
Meadow / Grass (on Organic Deposits)	250 mm	Pastures and Shrubs	Silt Loam / Organic Deposits	0.15	0.2	0.1	0.45	2,383
Wetland (on Bedrock)	100 mm	Wetland Habitat	Bedrock	0	0	0	0	4,897
Wetland	150 mm	Wetland Habitat	Silt Loam / Organic Deposits	0	0	0	0	41,769
							Total	**85,416**
Sub-Catchment 5A								
Forest (on Bedrock)	100 mm	Mature Forests	Bedrock	0.15	0.1	0.2	0.45	141,984
							Total	**141,984**
Sub-Catchment 5B								
Forest (on Bedrock)	100 mm	Mature Forests	Bedrock	0.15	0.1	0.2	0.45	11,455
Forest (on Organic Deposits)	400 mm	Mature Forests	Silt Loam / Organic Deposits	0.15	0.2	0.2	0.55	1,449
Wetland (on Bedrock)	100 mm	Wetland Habitat	Bedrock	0	0	0	0	12,943
Wetland	150 mm	Wetland Habitat	Silt Loam / Organic Deposits	0	0	0	0	3,063
							Total	**28,910**
Sub-Catchment 5C								
Forest (on Bedrock)	100 mm	Mature Forests	Bedrock	0.15	0.1	0.2	0.45	71,675
Forest (on Organic Deposits)	400 mm	Mature Forests	Silt Loam / Organic Deposits	0.15	0.2	0.2	0.55	3,486
Exposed Sand / Gravel Deposits (on Bedrock)	75 mm	Bare Deposit Area	Bedrock	0.15	0.1	0	0.25	14,813
							Total	**89,974**
Sub-Catchment 6								
Forest (on Bedrock)	100 mm	Mature Forests	Bedrock	0.15	0.1	0.2	0.45	178,223
Forest (on Organic Deposits)	400 mm	Mature Forests	Silt Loam / Organic Deposits	0.15	0.2	0.2	0.55	144,975
Wetland (on Bedrock)	100 mm	Wetland Habitat	Bedrock	0	0	0	0	26,797
Wetland	150 mm	Wetland Habitat	Silt Loam / Organic Deposits	0	0	0	0	537,846
							Total	**887,841**
Sub-Catchment 7								
Forest (on Bedrock)	100 mm	Mature Forests	Bedrock	0.15	0.1	0.2	0.45	480,159
Forest (on Fine Sand)	250 mm	Mature Forests	Fine Sand	0.15	0.4	0.2	0.75	149,344
Forest (on Organic Deposits)	400 mm	Mature Forests	Silt Loam / Organic Deposits	0.15	0.2	0.2	0.55	77,882
Impervious Built-Up Areas	3 mm	Buildings / Concrete	n/a	0	0	0	0	17,755
Meadow / Grass (on Bedrock)	100 mm	Pastures and Shrubs	Bedrock	0.15	0.1	0.1	0.35	1,871
Meadow / Grass (on Fine Sand)	100 mm	Pastures and Shrubs	Fine Sand	0.15	0.4	0.1	0.65	32,718
Wetland (on Bedrock)	100 mm	Wetland Habitat	Bedrock	0	0	0	0	618,002
Wetland	150 mm	Wetland Habitat	Silt Loam / Organic Deposits	0	0	0	0	428,683
							Total	**1,806,415**
Sub-Catchment 7A								
Forest (on Bedrock)	100 mm	Mature Forests	Bedrock	0.15	0.1	0.2	0.45	46,739
Forest (on Organic Deposits)	400 mm	Mature Forests	Silt Loam / Organic Deposits	0.15	0.2	0.2	0.55	14,997
Impervious Built-Up Areas	3 mm	Buildings / Concrete	n/a	0	0	0	0	3,744

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Table G-1
Existing Land Uses, Soil Types, and Catchment Areas

Meadow / Grass (on Bedrock)	100 mm	Pastures and Shrubs	Bedrock	0.15	0.1	0.1	0.35	205,658
Meadow / Grass (on Organic Deposits)	250 mm	Pastures and Shrubs	Silt Loam / Organic Deposits	0.15	0.2	0.1	0.45	1,246
Exposed Sand / Gravel Deposits (on Bedrock)	75 mm	Bare Deposit Area	Bedrock	0.15	0.1	0	0.25	67,104
Wetland (on Bedrock)	100 mm	Wetland Habitat	Bedrock	0	0	0	0	45,939
Wetland	150 mm	Wetland Habitat	Silt Loam / Organic Deposits	0	0	0	0	3,518
							Total	**388,945**
Sub-Catchment 7B								
Forest (on Bedrock)	100 mm	Mature Forests	Bedrock	0.15	0.1	0.2	0.45	64,715
Forest (on Organic Deposits)	400 mm	Mature Forests	Silt Loam / Organic Deposits	0.15	0.2	0.2	0.55	476
Impervious Built-Up Areas	3 mm	Buildings / Concrete	n/a	0	0	0	0	6,901
Meadow / Grass (on Bedrock)	100 mm	Pastures and Shrubs	Bedrock	0.15	0.1	0.1	0.35	71,609
Meadow / Grass (on Organic Deposits)	250 mm	Pastures and Shrubs	Silt Loam / Organic Deposits	0.15	0.2	0.1	0.45	7
							Total	**143,709**
Bell Quarry								
Existing Quarry Extraction Area	10 mm	Aggregate Extraction	Bedrock	0	0	0	0	187,651
							Total	**187,651**
							Total Catchment Area	**5,837,139**

Note:
WHC - Water Holding Capacity

The infiltration factor is estimated by summing a factor for topography, soils and cover (MOE Stormwater Management Planning and Design Manual, 2003-Table 3.1)

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Table G-2

Summary of Results - Sub-Catchment Water Balance

Land Use	Existing Condition - Estimated Annual Average Water Balance								
	Area	Precipitation		Surplus		Baseflow		Surplus + Baseflow	
	(m^2)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)
Sub-Catchment 1A	393,861	750.2	295470	419.0	165,026	68.6	27010	487.6	192,036
Sub-Catchment 1B	25,971	750.2	19,480	466.2	12,108	36.5	949	502.8	13,057
Sub-Catchment 1C	41,655	750.2	31,250	380.5	15,849	0.0	0	380.5	15,849
Sub-Catchment 2	911,080	750.2	683,490	402.2	366,414	117.8	107,310	520.0	473,724
Sub-Catchment 3	516,896	750.2	387,780	554.1	286,397	0.0	0	554.1	286,397
Sub-Catchment 4A	186,831	750.2	140160	388.9	72,658	0.0	0	388.9	72,658
Sub-Catchment 4B	85,416	750.2	64,080	374.9	32,021	414.5	35,405	789.4	67,426
Sub-Catchment 5A	141,984	750.2	106,520	394.0	55,942	0.0	0	394.0	55,942
Sub-Catchment 5B	28,910	750.2	21,690	389.4	11,258	0.0	0	389.4	11,258
Sub-Catchment 5C	89,974	750.2	67500	395.7	35,600	0.0	0	395.7	35,600
Sub-Catchment 6	887,841	750.2	666,060	372.8	330,988	184.2	163,520	557.0	494,508
Sub-Catchment 7	1,806,415	750.2	1,355,170	383.5	692,696	154.4	278,860	537.8	971,556
Sub-Catchment 7A	388,945	750.2	291,790	396.5	154,201	96.7	37,595	493.1	191,796
Sub-Catchment 7B	143,709	750.2	107,810	398.7	57,300	0.0	0	398.7	57,300
Bell Quarry	187,651	750.2	140,780	484.7	90,945	155.6	29,200	640.3	120,145
TOTAL	**5,837,139**	**750.2**	**4,379,030**	**407.6**	**2,379,404**	**116.5**	**679,849**	**524.1**	**3,059,253**

Note:

[1] - Average annual surplus from Sub-catchment 3 is taken from effluent discharge records provided by Tomlinson between 2018 -2022. Therefore, the baseflow contribution is already considered.

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APPENDIX H

Water Supply Well Impact Assessment

Well ID	Year Well Drilled	Easting	Northing	Static Water Level (metres below ground surface)	Well Depth (metres below ground surface)	Lowest Water Found Depth (metres below ground surface)	Available Drawdown (metres)	Simulated Drawdown in TZ Under Full Development Compared to Existing Conditions (metres)	Percentage Decrease in Available Drawdown Predicted due to Quarry Dewatering at Full Quarry Development (%)
1502597	1950	424311	5008452	4.6	21.3	21.3	16.7	3.8	22.5%
1502824	1960	423651	5010512	3.0	9.1	9.1	6.1	8.5	140.4%
1502938	1961	422671	5009922	0.6	45.7	44.2	43.5	8.6	19.8%
1502939	1964	424251	5011202	3.0	14.6	9.1	6.1	2.3	37.1%
1502940	1964	424351	5011322	2.4	16.2	12.2	9.7	1.8	18.8%
1509891	1968	423616	5010682	1.5	50.3	49.3	47.8	6.6	13.8%
1509895	1968	422471	5009732	6.1	41.8	36.5	30.5	5.0	16.5%
1509995	1969	422566	5009822	4.6	99.1	97.4	92.9	6.8	7.3%
1511033	1971	423161	5010352	4.6	36.6	35.6	31.1	11.6	37.4%
1516027	1977	422430	5011221	7.6	53.3	52.7	45.1	1.7	3.9%
1516641	1978	422630	5010921	5.5	76.2	76.1	70.6	3.1	4.3%
1516650	1978	422530	5011121	9.1	61.0	59.4	50.2	2.2	4.3%
1516838	1978	423930	5011121	5.5	200.9	176.6	171.1	3.0	1.8%
1517038	1979	423330	5011921	3.0	38.1	36.2	33.2	1.1	3.4%
1517621	1981	424430	5011321	9.1	61.0	56.3	47.2	1.7	3.7%
1518255	1983	422330	5011321	3.7	96.0	57.9	54.2	1.4	2.6%
1519077	1984	422630	5010921	2.4	30.5	28.9	26.5	3.1	11.5%
1531945	2001	424306	5011260	1.8	152.4	140.7	138.9	2.0	1.5%
7109804	2008	423896	5011938	2.5	36.6	33.8	31.4	1.1	3.4%
7112987	2008	422435	5008851	6.2	38.1	36.0	29.8	1.2	4.0%
7132600	2009	423344	5009981	6.3	109.7	101.1	94.8	21.6	22.8%
7132601	2009	423295	5009832	8.2	115.8	113.3	105.1	21.0	20.0%
7132631	2009	423238	5009914	7.9	189.0	147.7	139.8	21.2	15.2%
7160144	2011	423652	5012001	-	91.4	-	-	1.0	-
7163243	2011	423343	5009788	8.0	176.8	173.0	165.0	21.1	12.8%
7167929	2011	424109	5010909	1.4	35.1	30.8	29.4	3.6	12.2%
7187467	2012	422398	5008745	23.5	38.1	34.4	11.0	1.2	11.1%
7252404	2015	424402	5011324	2.3	96.6	94.7	92.4	1.8	1.9%

Well ID	Year Well Drilled	Easting	Northing	Static Water Level (metres below ground surface)	Well Depth (metres below ground surface)	Lowest Water Found Depth (metres below ground surface)	Available Drawdown (metres)	Simulated Drawdown in TZ Under Full Development Compared to Existing Conditions (metres)	Percentage Decrease in Available Drawdown Predicted due to Quarry Dewatering at Full Quarry Development (%)
7310052	2018	421979	5010630	1.8	61.0	58.2	56.3	1.6	2.8%
7310053	2018	421789	5010751	4.4	91.4	85.0	80.6	1.0	1.3%
7314134	2018	423677	5010490	2.0	42.7	38.7	36.7	8.7	23.7%
7329128	2018	421897	5010606	4.5	61.0	58.8	54.3	1.4	2.5%
7329129	2018	421954	5010648	2.4	61.0	59.1	56.7	1.5	2.6%
7334852	2019	421883	5010719	2.2	36.6	33.5	31.3	1.3	4.0%
7334853	2019	422029	5010745	5.2	128.0	64.2	59.1	1.6	2.7%
7334854	2019	422089	5010730	4.6	128.0	66.1	61.4	1.8	2.9%
7347907	2019	421846	5010758	6.1	22.6	20.7	14.6	1.2	7.9%
7347981	2019	422834	5008270	3.3	52.1	45.5	42.2	1.5	3.5%
7351167	2019	422091	5010758	5.2	59.4	57.6	52.3	1.8	3.4%
7357248	2019	422064	5010777	5.9	86.9	85.0	79.0	1.7	2.1%
7357251	2020	422113	5010834	6.5	91.4	89.2	82.7	1.7	2.1%
7357252	2020	422149	5010798	6.5	91.4	89.5	83.0	1.9	2.3%

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