Appendix E.6

Phase I - Environmental Site Assessment (Beaver Dam),
- August 6, 2019
Completed for the Updated 2021 Beaver Dam Mine EIS

FINAL -
Phase I Environmental Site Assessment

Beaver Dam Property
181 Beaver Dam Mines Road, Marinette, NS

Prepared for:
Atlantic Gold

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Job No.: 121619250.2500.955

August 06, 2019

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Executive Summary

Site Description and Current Operations

Stantec Consulting Ltd. (Stantec) conducted a Phase I Environmental Site Assessment (Phase I ESA) of the proposed mining operations known as the Atlantic Gold Beaver Dam Project located in Marinette, Nova Scotia, herein referred to as the "Site". The Phase I ESA was conducted as part of project feasibility due diligence underway for the potential re-development of the gold mine at this location. The purpose of the Phase I ESA was to assess if evidence of potential or actual environmental contamination exists in connection with the Site, as a result of current or past activities on the Site or neighbouring properties.

The site area is currently woodland/overgrown, and is within the area to be occupied by the future extent of the Beaver Dam open pit mine and associated infrastructure. At the time of the site visit there was no activity on the site other than various consultants and contractors conducting various due diligence and preparation for a drill program to further delineate the resources.

Records Review

Based on the historical information gathered during the Phase I ESA, central portions of the Site were developed in 1860s when gold was discovered in Nova Scotia. Between 1868 and 1930s there were various surface excavations, mine shafts of various depths, and numerous stamp mills or crushers utilized for the extraction and processing of gold from the quartzite ore. Based on a previous feasibility study from the 1980s, much of the early work at this location was undocumented. In 1899 there was sufficient mining in the area to warrant the naming of the area as the "Beaver Dam Gold District" on a plan prepared by E.R. Faribault. Based on a plan drawn in 1902 and revised in 1928 by Mr. Faribault there were three areas of mining. One was located to the west of Crusher Lake at Forge Hill which consisted of a stamp mill and cabin and various mine openings. The next was located near the northeast end of Crusher Lake where there was another stamp mill, cabin and other buildings. The largest operation was located further east which included the Austen Shaft and other surface operations including another stamp mill. Based on the Seabright feasibility study, between 1911 and 1983 roughly every 10 years there was limited mining and exploration of resources being conducted mainly in the area of Austen Shaft. This included dewatering existing shafts for further excavation as well as surface trenching. The records are unclear but based on a 2015 report there was approximately 3,345 tonnes of ore crushed and processed on-site prior to the Seabright operations.

In 1977 M.E.X Exploration Ltd. acquired the exploration rights and completed exploration drilling, surface trenching and collected a bulk sample of several hundred tonnes approximately 300 metres northeast of Crusher Lake and 200 metres west of the current settling pond. This was later identified as the M.E.X. pit.

Seabright Resources Inc. continued the exploration of the Beaver Dam site in the area of Austen Shaft in the mid-1980s which culminated in the development of a portal and incline which joined with the existing workings in 1986. Development on the surface included the construction of a maintenance garage, self-generated power, installation of trailers for offices and storage, improvement of the existing woods road, and the construction of a dam to retain water in the settling pond with a discharge to Cameron Flowage (a portion of the Killag River). Between 1986 and 1989 this underground mine was fully operational and the Report of Work and Expenditures indicated the mine operations included underground fuel storage and generators. This operation lasted until 1989 when the portal and infrastructure were removed and the area leveled and reclaimed by 1992. It appears from the aerial photographs that the waste rock was used to reclaim the area. Based on the Report of Work and Expenditures from 1986 to 1989 the mine advanced a total of 3,787 meters and 135,000 tonnes of rock was removed from the mine; of this, 41,000 tonnes of ore was milled at Gays River.

The historical practice of gold mining in the 1800s/early 1900s used crushers to render the ore into sand size particles. The sand size particles were then washed with water and mercury to recover the fine gold particles. The resulting tailings mixture was allowed to flow from the stamp mills into adjoining low lying areas in an uncontrolled manner with alternating amounts of water to push the tailings further from the stamp mill as needed. The base rock from which the gold was extracted was sandstone and slate of the Meguma Group Goldenville Formation; this formation is also known to be high in natural concentrations of arsenopyrite (FeAsS) which is associated with gold deposits in Nova Scotia. The tailings areas may contain both mercury and arsenic. Mapping provided by the Nova Scotia Department of Natural Resources illustrate numerous excavations, shafts and mining operations on the Site and surrounding areas. The Department also provided electronic mapping for three areas of suspected tailings deposits which align with the historical locations of operations in the 1920s.

Executive Summary (continued)

Records Review (continued)

A report prepared by the Department of Natural Resources titled Review of the Environmental Impacts of Historic Gold Mine Tailings in Nova Scotia from October 2015 indicated the following general information about tailings impacts from historical gold mining areas. There are an estimated 3 million tonnes of tailings from historical gold mines in Nova Scotia. In some areas the tailings have been reported to be several metres thick and have migrated in rivers and streams for more than 2 km. Based on this document there were no available test results for arsenic or mercury concentrations in the tailings at Beaver Dam. This report did indicate that between 1889 and 1989, 44,345 tonnes of tailings mass was produced from Beaver Dam, however it was noted that material generated in the 1980s (41,000 tonnes) was milled at Gays River.

The presence of the tailings and associated waste rock represents a potential environmental concern to the Site. The presence of the maintenance shop, reported on-site power generation, and underground fuel storage from the Seabright operation in the 1980s also represents a potential environmental concern to the Site.

Site Visit/Interviews

During the site visit completed between July 10-12, 2019, there was very little evidence of the historical mining operations at this location. There were no obvious foundations of stamp mills or areas of sandy tailings at surface. To the west in the area identified as Forge Hill some suspicious graded sand (suspected tailings), was discovered covered by a layer of moss in several locations near the reported location of historical mine operations. The wetlands and dense brush in this area prevented a more thorough investigation.

At the second area located north of Crusher Lake, the ruins of an old cabin were discovered. This is in the area of a reported stamp mill and office in the 1920s. Beside this ruin there is a holding pond and what appears to be a rock lined channel from Crusher Lake which now feeds a small brook which leads to Mud Pond to the north. There is an elevation change from Crusher Lake down to the brook of several metres; at the base of the slope there is a moss covered wetland area on either side of the brook. Under the moss layer there was graded sand material which was identified as suspected tailings. Following the remains of a woods road to the west, a similar rock cut channel was encountered and additional suspected tailings identified under a moss covering as well as other suspected waste rock piles. The observations made on-site suggest that various crushing operations may have operated along the northern side of Crusher Lake.

On the northeast corner of Crusher Lake there was a cluster of informal cottages which was identified as a squatters camp. There were signs posted for the owner of these buildings to remove them from Northern Timber property. The camp consisted of four buildings that appear to be in a state of disrepair. The four buildings were a "bunk house" which was unlocked and in a state of partial ruin, a "cabin" which was in better condition and locked, an unlocked shed and an outhouse. Potentially associated with this camp was a hunting blind located approximately 100 meters to the northwest.

The M.E.X. pit area was partially overgrown with several of the larger deeper excavations now filled with water. There was scattered metal debris and a plastic drum in this area.

Where the Beaver Dam Mines Road ends there is a fork in the road; to the west is the access road to Crusher Lake and to the north the road continues ten meters to another fork which leads to the east where the road follows the northern side of the settling pond to the earthen dam. The northern path leads to a drumlin to the north used for timber harvesting as well as several cleared paths to previous drill locations. At the first fork in the road there is a clearing approximately 20 metres by 20 metres. This appears to be an area of the historical mining operations in the early 1900s known as the Austen Shaft and in the 1980s the Seabright operations. With the exception of a suspected 1,000L plastic tote and some concrete sections near the access road there were no obvious signs of the historical mining in this area. There was a waste rock mound to the west between the road and the M.E.X. pit area and another mound to the south of the road that were mainly bare which aligns with the areas reclaimed by Seabright by 1992. Other areas of suspected waste rock around the settling pond appeared to be tree covered. At the eastern end of the settling pond there is an earthen dam with a washed out spillway. To the north of the settling pond there is a wetland and suspicious grey sand was noted during the site visit as potential tailings. Potential tailings in the settling pond from historical mining operations could not be assessed.

Executive Summary (continued)

Site Visit/Interviews (continued)

During the site visit, Stantec staff discussed with the McCallum representative conducting wetland delineations if they had noted obvious signs of tailings (sand like material in streams, around wetlands, with no vegetation). They indicated there were no obvious tailings.

Conclusions

The Phase I ESA has revealed evidence of potential environmental contamination associated with the Site.

Based on the information gathered there are suspected tailings and waste rock both within the area of the proposed open pit development as well the area of the adjacent pit operations, which are potentially impacted with arsenic, mercury and have potential acid generating potential. Additionally, the mine operation in the 1980s included power generation, maintenance work and underground fuel storage.

The statements made in this Executive Summary are subject to the same limitations included in the Closure (Section 7.0) and are to be read in conjunction with the remainder of this report.

Phase I Environmental Site Assessment

1.0 General Information

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Project Information:
Beaver Dam Gold Mine
121619250.2500.955

Site Information:
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181 Beaver Dam Mines Road
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Site Visit Date: 07/10/2019
Report Date: 08/06/2019
Site Assessor: Patrick Turner, B.Sc, P.Eng.
Report Preparer: Patrick Turner, B.Sc, P.Eng.
Senior Reviewer: Don Carey, M.Sc., P.Eng.

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Patrick Turner, B.Sc, P.Eng.
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Patrick Turner, B.Sc, P.Eng.
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Senior Reviewer:

Don Carey, M.Sc., P.Eng.
Senior Technical Reviewer

The environmental site assessment and preparation of this report were completed in general accordance with the objectives, requirements or standards of the CSA Phase I Environmental Site Assessment Standard Z768-01 (R2016).

2.0 Introduction

2.1 Objectives

Stantec Consulting Ltd. (Stantec) conducted a Phase I Environmental Site Assessment (Phase I ESA) of the area located at the Atlantic Gold Beaver Dam Project property located in Marinette, Nova Scotia, herein referred to as the "Site". The Phase I ESA was conducted as part of project due diligence underway for the potential re-development of the gold mine at this location. The purpose of the Phase I ESA was to assess if evidence of potential or actual environmental contamination exists in connection with the Site, as a result of current or past activities on the Site or neighbouring properties.

A site plan is included in Appendix A and selected photographs of the Site are included in Appendix B.

2.2 Scope of Work

The Phase I ESA carried out by Stantec on this property was conducted in general accordance with Stantec's Proposal Number 734713 dated June 12, 2019 and the Canadian Standards Association's (CSA) Phase I Environmental Site Assessment Standard Z768-01 (R2016) and consisted of the following:

- records review including, but not limited to, publicly available city directories, aerial photographs, fire insurance plans, geological and topographic maps
- provincial government regulatory search
- review of available environmental databases and records
- review of previous environmental reports and existing title searches, if made available
- interviews with persons having knowledge of the Site
- a site visit
- evaluation of information and preparation of the report provided herein

A Phase I ESA does not include sampling or testing of air, soil, groundwater, surface water or building materials. For this Phase I ESA, no enhancements to the CSA standard were made.

This assessment did not include a review or audit of operational environmental compliance issues, or of any environmental management systems, which may exist for the Site.

The assessment of the Site for the potential presence of hazardous building materials was based on the age of the building(s) and components, and a non-intrusive visual review of the Site. No sampling of materials was conducted. A Phase I ESA does not constitute a Hazardous Materials Survey or Designated Substances Survey.

The assessment of the Site for microbial contamination and moisture damage was made during the walk through of the building(s). This assessment was visual only and not every area was assessed. No sampling or intrusive investigation was conducted.

The professional qualifications of the project team are provided in Appendix C.

The site visit was conducted by Patrick Turner, P.Eng., Eric Arseneau, MES and Mike Parker of Stantec, between July 10 and 12, 2019. The Site and readily visible and publicly accessible portions of adjoining and neighbouring properties were observed for the presence of potential sources of environmental contamination. Stantec was unaccompanied during the site visit.

Interviews were carried out with wetland biologists with McCallum both on-site and prior to visiting the site who were delineating the wetlands within the project area. James Millard of Atlantic Gold provided some information related to operations in the 1970s and 1980s and the lime dosing station to the east. Pertinent information gathered from the interviews is presented within the appropriate sections of this report.

Due to the size of the property (approximately 385 Ha), the assessment consisted of driving portions of the available woods roads, walking overgrown woods roads, with limited bushwhacking to reach areas of proposed future development, and through review of historical aerial photographs, LIDAR imagery, and topographical and geologic maps of the area. It should be noted that significant portions of the Site are covered by thick vegetation which prevented a thorough assessment of the ground surface in those areas of the Site during the site visit.

2.0 Introduction (continued)

2.3 Regulatory Framework

In Nova Scotia, the Contaminated Site Regulations and associated Ministerial Protocols (effective on and after July 6, 2013), prescribe the regulatory process and time frames to notify the Department, assess the site, remediate the impacts and obtain "Closure" for a contaminated site. The first step in the full property remediation process is completing a Phase I ESA as prescribed in the applicable Ministerial Protocol. A Phase I ESA may identify potential environmental concerns on the property which may lead to additional assessment and remediation.

During a Phase I ESA samples are not collected, however, if there are previous soil or groundwater sample results available, the results are compared to applicable federal and provincial regulations and guidelines.

A Phase I ESA involves a review of any site buildings for the potential presence of hazardous materials related to building components and materials. Specific federal or provincial regulations, guidelines or codes of practice exist for these individual hazardous materials. Where required, this documentation was utilized to determine appropriate conclusions and formulate appropriate recommendations.

3.0 Records Review

3.1 Information Sources

The applicable search distance for the records review included the Site, properties immediately adjoining the Site and other neighbouring properties where activities considered to be potential sources of environmental contamination were apparent. Information sources obtained and reviewed as part of the records review are listed below.

SOURCE	INFORMATION/CONTACT
Aerial Photographs	1931, 1947, 1954, 1964 - National Airphoto Library 1982, 1992, 2003, 2006 and 2017 - Stantec Aerial Photography collection June 2004, September 2011 and June 2012 - GoogleEarth Pro Imagery accessed July 2019
Fire Insurance Plans	None available
City Directories	Nova available
Previous Environmental Reports	None provided
Company Records	NI 43101 - Technical Report of the Beaver Dam Gold Project, Halifax County, Nova Scotia. Prepared for Atlantic Gold Corporation by FSSI Consultants (Aust) Pty. Ltd., dated March 15, 2015. Beaver Dam Mine Project Description, Beaver Dam Mines Road, Marinette, Nova Scotia. Report prepared by GHD for Atlantic Gold Corporation, dated October 5, 2015. Project No. 088664.
Geological and Geotechnical Reports	Surficial Geology Map of the Province of Nova Scotia, Nova Scotia Department of Natural Resources, Map 92-3, 1992. Geological Map of the Province of Nova Scotia, Nova Scotia Department of Natural Resources, Map ME2000-1, 2000. Map Showing Potential Radon in Indoor Air in Nova Scotia, Province of Nova Scotia, Department of Natural Resources. Accessed interactive map in July 2019. Department of Natural Resources Report titled Review of the Environmental Impacts of Historic Gold Mine Tailings in Nova Scotia dated October 2015
Regulatory Infractions	None reported
Reportable Spill Occurrences	None reported
Contaminated Sites	None reported

3.0 Records Review (continued)

3.1 Information Sources (continued)

SOURCE	INFORMATION/CONTACT
Hazardous Waste Generator Registration	None reported
PCB Storage Sites	None reported
Landfill Records	None reported
Underground & Aboveground Storage Tanks	None reported
Other Available Information	Beaver Dam Project Preliminary Feasibility Study, report prepared by Seabright Resources Inc. dated February 21, 1986. Beaver Dam Property Development License 0078 report of Work and Expenditures for the period May 1, 1986 to April 30, 1989. Report prepared by Westminer Canada Limited, Seabright Operations. Department of Natural Resources File No. AR 89-213. Report Nova Scotia Department of Mines and Energy on Environmental Assessment of Beaver Dam Exploration, Beaver Dam, Nova Scotia. Prepared for Seabright Resources Inc. by Jacques Whitford (now Stantec), report dated June 27, 1986, File No. M1285. Department of Natural Resources File No. PR 86-005. Diamond Drilling Work carried out by Seabright Resources Inc. on Exploration License 9085, Beaver Dam, Halifax County Report No. BD86-1. Dated January 1986. Department of Natural Resources File No. AR 86-025. Report on the Beaver Dam Property Nova Scotia. Report prepared by MPH Consulting Limited for Seabright Resources Inc. dated February 25, 1986. Department of Natural Resources File No. AR 86-064. Beaver Dam East report of 2005 Exploration Conducted at Beaver Dam East, Halifax County, Nova Scotia by Henry Schenkles. Report dated February 6, 2006. Department of Natural Resources File No. AR 2006-032. Geological Survey of Canada Memoir 385, Gold Fields of Nova Scotia (first published 1929 as Memoir 156) a compilation by W. Malcolm based on the work of E.R. Faribault, reprinted 1976. Appendix N.1 Archaeological Assessment Beaver Dam Mine Site - part of the Beaver Dam Mine Project - Revised Environmental Impact Statement, Marinette, Nova Scotia. Prepared by Cultural Resources Management Group Limited for Conestoga-Rovers & Associates. Dated March 2015, CRM Project No. 2014-0015-01. and January 2019, CRM Project No. 2018-0015-02.

3.0 Records Review (continued)

3.1 Information Sources (continued)

SOURCE	INFORMATION/CONTACT
Other Available Information	
	M.E.X. Explorations Limited Progress Report on the Beaver Dam Gold Mines Property, dated February 7, 1978. Department of Natural Resources File No. AR 433165.
Water Well Records	Based on the Nova Scotia Groundwater Atlas accessed July 2019, there are no drinking water wells on the Site. The mapping does illustrate numerous drill locations from the various exploration drilling programs that have been conducted on the Site.
Historical Mapping	Geological Survey of Canada, Sheet 49 - Upper Musquodoboit Sheet, Dated 1899. Surveyed by E.R. Faribault. Scale 1:64,360.
	Beaver Dam Gold District, Scale 1 inch = 200 feet, Surveyed in 1902 and revised 1928 by E.R. Faribault.
	Department of Mines and Technical Services Sheet No. 11E/2 east half edition 2, Upper Musquodoboit, scale 1:50,000, published 1954 based on aerial photography taken 1948.
Topographic Mapping	Service Nova Scotia and Municipal Relations Topographic Map Sheet West Lake, Sheet No. 10 450500 62700, scale 1:10,000, based on aerial photography taken May 2006.

3.2 Previous Reports

Stantec obtained copies of various reports from the 1970s to the mid 2010s for the Site. These reports were not related to phased environmental assessment of the area. There were "environmental assessments" related to the proposed mine development along with various technical reports related to the mining and exploration activities as well as archaeological reports. Based on our review of these reports there was no specific information related to assessment, management or remediation of historical gold mine tailings at the Site. Information gathered from these reports about the use and development of the Site through the years is presented in Section 4.3 Historical Land Use.

A report prepared by the Department of Natural Resources titled Review of the Environmental Impacts of Historic Gold Mine Tailings in Nova Scotia from October 2015 indicated the following general information about tailings impacts from historical gold mining areas. There are an estimated 3 million tonnes of tailings from historical gold mines in Nova Scotia. In some areas the tailings have been reported to be several metres thick and have migrated in rivers and streams for more than 2 km. However, based on this document there were no available test results for arsenic or mercury concentrations in the tailings at Beaver Dam. This report did indicate that between 1889 and 1989, 44,345 tonnes of tailings mass was produced from Beaver Dam, however material generated in the 1980s (41,000 tonnes) was milled at Gays River, leaving 3,345 tonnes of tailings on-site.

The presence of the historical mining operations represent a potential environmental concern to the Site.

3.0 Records Review (continued)

3.3 Regulatory Information

We have received Nova Scotia Environment's response to our inquiry for the subject site and adjoining properties. It must be noted that our request to Nova Scotia Environment was limited due to the minimal number of civic addresses on the property records, and absence of dwellings with civic numbers (NSE files are based on civic addresses). We specifically did not request information about the development of the current proposed gold mine. Based on the information, NSE had no specific records related to the former mining operations on the Site. There were two water resource files that were subject to a Freedom of Information Protection of Privacy (FOIPOP) request. In discussion with Atlantic Gold it was realized that these are likely related to a lime station located to the east of the Site along the Killag River and not historical mine operations. These records related to the lime station were not requested. A copy of the NSE reply is attached in Appendix D.

3.4 Physical Setting

3.4.1 Surficial Geology

Based on an available surficial geology map, the native surficial soils of the Site consist of glacial till. The characteristic permeability of these soils is moderate. A site-specific determination would be required in order to obtain detailed soil profile and permeability information. Previous subsurface investigations conducted on the Site indicate the subsurface soil profile at the Site to consist of glacial till, as well as historical tailings and waste rock in some areas between 2 and 3 metres thick. Bedrock was encountered between 2 and 3 metres below grade.

3.4.2 Surface Water Drainage

The surfaces of the Site consist of a combination of open wetland, rock piles and woodland. Stormwater is anticipated to drain by infiltration and/or overland flow. Water in the eastern portion of the Site is directed toward an artificial settling pond with the remains of a earthern dam which is maintaining the water level in the pond.

3.4.3 Topography and Regional Drainage

The site area is mainly rolling hills with woodland which have re-grown after historical gold mining and timber harvesting, which included construction of various dams along local water ways, surface mining, water washing, and excavation of numerous mine shafts/pits.

Based on an available topographic map and the observed site topography, regional undisturbed surface drainage (anticipated shallow groundwater flow direction) appears to be to the north toward Crusher Lake, then via an unnamed brook to Mud Pond with eventual outflow into Killag River and Cameron Flowage.

It should be noted that the direction of the shallow groundwater flow in limited areas can also be influenced by the presence of underground mine workings and is not necessarily a reflection of regional or local groundwater flow or a replica of the Site or area topography.

3.4.4 Bedrock Geology

Based on an available bedrock geology map, bedrock in the area of the Site consists of slate and quartzite of the Goldenville Formation. A suspected bedrock outcrop was noted along the mine access road in the area of the Seabright Camp location.

4.0 Site Description

4.1 Property Information

The Site is located in a rural forested area near Marinette, a region of Halifax Regional Municipality. The Site is located 7 km northeast of Route 224 along Beaver Dam Mine Road which is a gravel road located approximately 17 km north-northwest of Sheet Harbour, Nova Scotia.

The Site consists of portions of several different properties owned by Northern Timber Nova Scotia Corp; Property Identification Numbers (PID Nos.) include:

- PID 40200990, Grant 13245;
- PID 40201014, Grant 15833;
- PID 40201022, Grant 13818;
- PID 41202359, Grant not listed;
- PID 40201071, Grant not listed;
- PID 40201006, Grant 14028;
- PID 40201030, Grant 9805;
- PID 41202334, Grant not listed;
- PID 40469405, Grant not listed;
- PID 40201048, Grant not listed;
- PID 00541656. Grant 10271;
- PID 40200941, Grant not listed;
- PID 40201063, Grant (portion of) 13245;
- PID 41202342, Grant (portion of) 13245;

In addition to the Northern Timber Nova Scotia Corp. lands, part of the greater proposed development of the mine operation includes undeveloped land owned by the Province of Nova Scotia, including portions of the following PID:

- PID 40219925

The PIDs are not currently serviced being in a rural portion of the province. A summary of the property information is provided below.

Current Site Owner:	Northern Timber Nova Scotia Corp. and the Province of Nova Scotia
Legal Description:	Refer to PIDs above
Property Area:	Approximately 385 Ha
Utility Providers:	
Water:	None
Storm and Sanitary Sewers:	None
Electricity:	None
Natural Gas:	None

4.2 On-Site Buildings and Structures

During the site visit a squatters camp was identified near the northeastern end of Crusher Lake. The camp consisted of four buildings; a "bunk house", a "cabin", a shed and an outhouse. Approximately 100 meters northwest of the camp accessed by following the brook from Crusher Lake and over several small wooden bridges, there was a tree-stand hunting blind. The foundation of a suspected former log cabin was discovered near the brook leading from Crusher Lake.

4.3 Historical Land Use

Historical land use for the Site was determined through historical records listed in Section 3.0. A summary of the historical information is presented below.

4.0 Site Description (continued)

4.3 Historical Land Use (continued)

Period/Date:	Land Use:
Pre-1865	The area was undeveloped woodland
1866 to mid 1930s	The area was sporadically mined for gold as part of the Beaver Dam Gold District from 1868 to the mid 1930s. Based on the reviewed information sources, there were at least three stamp mills operating at various times on the Site. Mine operations reportedly started and stopped frequently during this period with various operations operating under similar names. The waste rock and tailings generated during this period represent a potential environmental concern due to the mineral content of the base rock and the mercury used to recover the gold. It was noted that development of this area was limited due to the remote nature of the Site. During this time period the flow from Crusher Lake was altered; originally there were two brooks flowing north toward Mud Pond. By 1928 the western outflow had been blocked and at the eastern brook there was an office, stamp mill and other buildings. To the west of Crusher Lake there was an area identified as Forge Hill. In this area there was another stamp mill, camps and mine shafts. To the east of Crusher Lake was the Austen Shaft (sometimes recorded as Austin). This appears to be the most significant shaft in the Beaver Dam area; it was over 75 feet deep and had various laterals. On the surface there was a stamp mill and other mine related buildings. The 1931 aerial photograph matches the site plan from 1928 showing a scattering of buildings at Forge Hill, the buildings at the northeastern end of Crusher Lake and a clearing with buildings and suspected tailings area in the area of the Austen Shaft. A road connects each of these operations running along the northern edge of Crusher Lake. The Killag River (Cameron Flowage) is dammed to the east of the Site just north of the current road crossing. These historical mining areas have been identified on the drawing in Appendix A. A copy of the 1928 survey of the Beaver Dam Gold District prepared by E.R. Faribault has been included in the Appendix D.
Late 1930s to early 1970s	There was limited information available for this period of time, especially in the 1940s and early 1950s. Based on the available aerial photograph from 1947 there is a disturbed area in the general vicinity of the Austen Shaft and apparent buildings at this location and there are also several buildings near the northeastern tip of Crusher Lake. The dam at the southeastern end of Cameron Flowage has been removed. Observed in the 1964 aerial photograph there are a series of trenches that have been excavated along the northern side of Crusher Lake and the area is generally disturbed suggesting exploration activities in the area. In 1964 a cabin is still present near the northeastern tip of Crusher Lake in the approximate location of the future ruins observed during the site visit. The buildings that were located near the Forge Hill and Austen Shaft no longer appear and the areas are cleared but partially overgrown.
Late 1970s	M.E.X. Exploration Limited completed exploration work at the Beaver Dam mine in late 1977. This included several hundred feet of trenching and surface assessments for gold. This work included the eventual excavation of a "several hundred ton sample" which was sent off-site to be milled. A plan included with their 1978 report highlights various other trenches excavated in the 1950s and older trenches and pits in the area of Austen Shaft. The M.E.X. area of exploration has been identified on the drawing in Appendix A and a copy of the exploration plan attached in Appendix D.

4.0 Site Description (continued)

4.3 Historical Land Use (continued)

Period/Date:	Land Use:
Early 1980s to early 1990s	There was a renewed interest in the potential gold resources based on the work completed by M.E.X and other drilling programs in the early 1980s. This culminated with Westminer Canada Limited, Seabright Operations opening a portal which connected to the Austen Shaft in 1986. This portal consisted of 715 meters of ramping covering 400 meters of strike depth and 105 meters of vertical depth. There were eight levels and by 1989 the mine advanced a total of 3,787 meters, from which 135,000 tonnes of rock was removed and 41,000 tonnes of this was milled at Gays River. To support this operation a garage building, diesel powered air compressor and power generator, underground fuel storage, various trailers and supporting buildings were constructed to the west of the Austen Shaft. By the early 1990s the area had been reclaimed and there was no evidence of the portal or other infrastructure remaining; with the exception of the dam located to the east of the settling pond. The location of the Seabright portal and area that was reclaimed is presented on the drawing in Appendix A and a copy of the Seabright Operations Plan is included in Appendix D.
Late 1990s to present	The site is overgrown woodland, based on the aerial photographs timber harvesting over the past 20 years has been conducted in various locations of the Site. There has been limited drilling on the Site as part of the on-going interest in gold production from the Beaver Dam Site. Based on the archaeological report for the Crusher Lake stamp mill area, in 2008 the squatters camp was first noted; the age of this camp is unknown. In 2014 when the report was updated the camp had expanded with additional buildings. The structure identified as a cabin in the 1960s was a ruin by 2008. The archaeological report did note other foundations and depressions that may have been the stamp mill located north of Crusher Lake. Due to the mining activity in the 1980s there was no evidence of the Austen Shaft or mining operations in this area. In 2018 a separate archaeological report focused on the Forge Hill area to the west. Based on the report there was at least one possible cabin ruins identified along with evidence of past mining activities in the area. As part of the information requested for this project the Department of Natural Resources was contacted about tailings mapping that they have produced. An electronic file was provided to Stantec; based on this information three possible areas of tailings had been identified in the Beaver Dam Gold District. These area corresponded to the approximate locations of the historical operations previously identified as Forge Hill, Crusher Lake and Austen Shaft. The Austen Shaft area is under the area flooded by the construction of the dam in the 1980s.

The presence of the historical mining operations, reported maintenance operations and fuel storage in the 1980s represent a potential environmental concern to the Site.

5.0 Site Visit Findings

5.1 Current Site Operations

The Site is currently an historical gold mining area with suspected tailings and waste rock observed in various areas of the Site. The majority of the the Site is wetlands, trees, shrubs and other vegetation. There are various gravel access roads on and around the site that have been developed to support the timber harvesting activities. During the site visit, a squatters camp was identified near the northeastern end of Crusher Lake. There are no currently active operations on the Site.

5.2 Waste Generation and Storage

5.2.1 Solid and Liquid Wastes

No hazardous waste generation or storage was identified to be conducted on the Site. There were suspected areas of waste rock from the historical mining activities noted during the site visit along with occasional surface metal debris and at least one 205 L plastic drum and an abandoned television set. In the area of the squatters camp there was scattered debris and what appeared to be an outhouse.

5.2.2 Drains, Sumps, Septic Systems and Oil Water Separators

No floor drains, sumps, septic systems, interceptors, or separators were identified on the Site. During the site visit, in the area of the Seabright Portal and associated maintenance buildings, the remains of a pair of buried 1,000 liter plastic totes were identified. The Seabirght operations reportedly included a septic system which was piped from the camp area by pipe to the east of the access road. A copy of the Seabright operations layout is included in Appendix D. At the squatters camp there was a building that appeared to be an outhouse.

5.2.3 Air Discharges and Odours

No sources of air emissions that are suspected to result in residual contamination to the property were identified on the Site. Further, no strong, pungent, or unusual odours were identified during the site visit.

5.3 Fuel and Chemical Storage

5.3.1 Underground Storage Tanks (USTs)

During the site visit no chemical or fuel storage USTs were identified on the Site. Further, no vent or fill pipes indicating the potential presence of an abandoned or decommissioned UST were observed. As noted previously in Section 4.3 there was reported underground fuel storage in the 1980s which represents a potential environmental concern.

5.3.2 Aboveground Storage Tanks (ASTs)

During the site visit, no chemical or fuel storage ASTs were identified on the Site.

5.3.3 Other Storage Containers

No chemical storage was observed on the Site.

5.4 Building Systems/Equipment

5.4.1 Heating and Cooling Systems

No heating or cooling systems are on the Site, as the Site is undeveloped.

5.0 Site Visit Findings (continued)

5.4 Building Systems/Equipment (continued)

5.4.2 Hydraulic Equipment

No in-ground hydraulic equipment is on the Site, as the Site is undeveloped.

5.5 Exterior Site Observations

5.5.1 Surface Features

During the site visit several hydrocarbon stained gravel areas were observed along the southern access road, likely from the timber harvesting activities in the area. The presence of these stained areas are not considered to be a concern to the Site.

It was noted that in various locations there are exposed suspected waste rock areas that do not support vegetation. During the site visit, several water filled pits and trenches were noted associated with historical mining and exploration activities.

McCallum Environmental Ltd., consultants working for Atlantic Gold as part of the mine development, have more fully delineated the various water bodies, wetlands and brooks on the Site. A copy of the current mine layout Figure 1 (updated June 27, 2019) has been included in Appendix D showing the proposed layout of the mine along with watershed boundaries, watercourses, and wetlands. However, Crusher Lake is within the boundary of Site along with various wetlands and brooks, and the Site is adjacent to Killag River and Cameron Flowage. To the east of the Beaver Dam Mines Road and the former Seabright operations there is a man-made settling pond with the remains of an earthen dam at the eastern end which controls the flow to Cameron Flowage located further to the east. It was noted along the base of the dam that there were areas of red stained seepage, the spillway associated with the dam is in disrepair, and there is evidence of over topping and erosion.

5.5.2 Fill Materials

There are areas of exposed suspected historical waste rock at the Site. Based on information obtained during the document review, the Seabright area of mining in the 1980s produced 135,000 tonnes of rock of which 41,000 tonnes was shipped off-site. The remaining rock appears to have been used to regrade the areas disturbed during the operations on-site. Smaller piles of suspected waste rock were noted in the Forge Hill area and along the northern side of Crusher Lake.

5.5.3 Wells

During the site visit various sets of monitoring wells were observed both on-site and on the adjoining properties. No reports for these wells were provided to Stantec. Adjacent to the wells were coils of plastic tubing suggesting that they have been sampled in the past. Since the wells were located in clusters they are likely drilled to different depths. Additionally, historical boreholes with plastic standpipes were also observed in various locations on the Site. There were records for a number of drilled exploration holes as part of the assessment of the area for development of a mine both on the Site and in the surrounding area in a grid pattern. It is unknown how the historical drilled holes, which extended several hundred feet in some cases, were backfilled.

5.6 Hazardous Building Materials

5.6.1 Asbestos-Containing Materials (ACMs)

The common use of friable (crumbles easily by hand pressure) asbestos-containing materials (ACMs) in construction generally ceased voluntarily in the mid 1970s but was only banned through legislation in the mid-late 1980s. Asbestos was used in thousands of building products and the common uses of friable ACMs included boiler and pipe insulation, and spray-on fireproofing. Asbestos was also used in many manufactured products such as floor tiles, ceiling tiles, transite cement products and various other construction materials. Some cement drain piping currently used in the construction of buildings still contains asbestos (non-friable). Vermiculite used as insulation may be contaminated with asbestos fibres.

5.0 Site Visit Findings (continued)

5.6 Hazardous Building Materials (continued)

5.6.1 Asbestos-Containing Materials (ACMs) (continued)

As the age of the squatters camp is unknown there is potentially asbestos-containing materials associated with these small buildings on the Site. During the site visit, the Cabin building was locked preventing an assessment of the interior. The Shed and Bunk House had limited finishes and no suspected friable asbestos materials in poor condition were noted.

5.6.2 Polychlorinated Biphenyls (PCBs)

From the 1930s to the 1970s, PCBs were widely used as coolants and lubricants for electrical equipment, including transformers and capacitors, and in a number of industrial materials, including sealing and caulking compounds, inks and paint additives. The use of PCBs was prohibited in heat transfer and electrical equipment installed after September 1, 1977, and in transformers and capacitors installed after July 1, 1980. Regulations now require that PCB containing equipment be taken out of service prior to regulated deadlines.

No oil-filled transformers or lamps ballasts were observed on the Site.

5.6.3 Lead-Based Materials

In 1976, the lead content in interior paint was limited to 0.5% by weight under the federal Hazardous Products Act. Lead based water supply pipes were used greater than 50 years ago. Between 1930 and 1986, most buildings used copper pipe with lead-solder joints. Other lead-based products include wall shielding (x-ray rooms).

As the age of the squatters camp is unknown there is a potential that painted surfaces contain lead paint. During the site visit there was a single exterior door on the Cabin that was in fair condition with flaking paint. Other painted surfaces were observed to be in good condition.

5.6.4 Urea Formaldehyde Foam Insulation (UFFI)

Urea Formaldehyde Foam Insulation (UFFI) was used as an insulation product for existing houses between the mid-1970s and its ban in Canada in 1980. It was not commonly used for commercial or industrial buildings.

The potential use of UFFI is unlikely given the observed construction of the squatters camp.

5.6.5 Ozone-Depleting Substances (ODSs)

Refrigeration and air conditioning equipment in place before 1998 may contain refrigerants containing Ozone-depleting Substances. Non-ODS refrigerants have been developed and are available to replace these materials in newer equipment.

No equipment containing ozone-depleting substances (ODSs) was identified on the Site.

5.7 Special Attention Items

5.7.1 Radon Gas

Radon is a radioactive gas associated with uranium rich black shale and/or granite bedrock. Radon emits alpha particles and produces several solid radioactive products called radon daughters. Harmful levels of radon and radon daughters can accumulate in confined air spaces, such as basements and crawl spaces.

Based on a the online map supplied by the Nova Scotia Department of Natural Resources, the Site is in an area of low radon potential.

5.0 Site Visit Findings (continued)

5.7 Special Attention Items (continued)

5.7.2 Microbial Contamination (Mould) and Indoor Air Quality

The growth of mould in indoor environments is typically due to a moisture problem related to building envelope or mechanical systems deficiencies or design, and can produce adverse health effects. There is no practical way to eliminate all mould and mould spores in the indoor environment. The way to control mould is to control moisture.

Based on the condition of the squatters camp there may be mould in the various buildings observed. As these buildings are to be demolished and are not occupied the potential presence of mould is not considered a potential concern.

5.7.3 Electromagnetic Frequencies (EMFs)

Electrical currents induce electromagnetic fields. No scientific data supports definitive answers to questions about the existence or non-existence of health risks related to electromagnetic fields.

No high-voltage transmission lines or electrical substations, which could generate significant electromagnetic fields, were identified on or adjacent to the Site.

5.7.4 Noise and Vibration

The effects of noise and vibration on human health vary according to the susceptibility of the individual exposed, the nature of the noise/vibration and whether exposure occurs in the working environment or in the home.

No major or persistent sources of noise and vibration were identified on the Site at the time of the site visit.

5.8 Neighbouring Property Information

The current activities on neighbouring properties observed at the time of the site visit and a summary of historical information gathered through the records review are presented below.

The areas outside the proposed mine operation area are woodland used for timber harvesting since the 1800s. To the east of the site there is a lime station that was installed by the local salmon association in 2016. The station adds lime to the Killag River by an automated system which monitors pH levels in the river.

There were no concerns noted with the presence of the lime station or adjoining timber harvesting activities.

5.9 Client-Specific Items

No specific client requests were made with respect to this Phase I ESA.

6.0 Conclusions

The Phase I ESA has revealed evidence of potential environmental contamination associated with the Site.

Based on the information gathered there are suspected tailings and waste rock both within the area of the proposed open pit development as well the area of the adjacent pit operations, which are potentially impacted with arsenic, mercury and have potential acid generating potential. Additionally, the mine operation in the 1980s included power generation, maintenance work and underground fuel storage.

7.0 Closure

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential liabilities associated with the identified property.

This report provides an evaluation of selected environmental conditions associated with the identified portion of the property that was assessed at the time the work was conducted and is based on information obtained by and/or provided to Stantec at that time. There are no assurances regarding the accuracy and completeness of this information. All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

The opinions in this report can only be relied upon as they relate to the condition of the portion of the identified property that was assessed at the time the work was conducted. Activities at the property subsequent to Stantec's assessment may have significantly altered the property's condition. Stantec cannot comment on other areas of the property that were not assessed.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report, and are based solely on the scope of work described in the report, the limited data available and the results of the work. They are not a certification of the property's environmental condition. This report should not be construed as legal advice.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities or claims, howsoever arising, from third party use of this report.

This report is limited by the following:

- *Due to the size of the property (approximately 385 Ha), the wooded areas were assessed by driving portions of the available woods road and through review of historical aerial photographs, LIDAR imagery, and topographical and geologic maps of the area. It should be noted that portions of the Site are covered by thick vegetation which prevented a thorough assessment of the ground surface in those areas of the Site during the site visit.*

The locations of any utilities, buildings and structures, and property boundaries illustrated in or described within this report, if any, including pole lines, conduits, water mains, sewers and other surface or sub-surface utilities and structures are not guaranteed. Before starting work, the exact location of all such utilities and structures should be confirmed and Stantec assumes no liability for damage to them.

The conclusions are based on the site conditions encountered by Stantec at the time the work was performed at the specific testing and/or sampling locations, and conditions may vary among sampling locations. Factors such as areas of potential concern identified in previous studies, site conditions (e.g., utilities) and cost may have constrained the sampling locations used in this assessment. In addition, analysis has been carried out for only a limited number of chemical parameters, and it should not be inferred that other chemical species are not present. Due to the nature of the investigation and the limited data available, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire site. As the purpose of this report is to identify site conditions which may pose an environmental risk; the identification of non-environmental risks to structures or people on the site is beyond the scope of this assessment.

Should additional information become available which differs significantly from our understanding of conditions presented in this report, Stantec specifically disclaims any responsibility to update the conclusions in this report.

This report was prepared by Patrick Turner, P.Eng. and reviewed by Don Carey, M.Sc., P.Eng.

Appendix A

Site Plans

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4991000 4990000 4989000 4988000

N

Mud Pond

Areas of suspected tailings and waste rock observed

Approximate locations of Purdy's Mill stamp mill and mine shaft ~1928

MEX Pit from the 1970s - suspected waste rock

Abandonded hunting blind

General area of the Austin Shaft mining operations from the 1930s to 1957

Common Flowage (Killag River)

Sporadic areas of suspected waste rock

Area of suspected tailings and waste rock

Area of suspected tailings and waste rock along brook

Settling Pond from the 1980s

Dam Constructed in the 1980s

Apparent borrow pit/ quarry - electronic debris

Hunting camp buildings

Crescher Lake

Approximate location of Seabright office trailers, maintenance operations, aboveground/ underground fuel storage

Ruin of an old building - Stamp Mill and office buildings in 1928

Approximate location of the Seabright Resources Inc. exploration camp in the early 1980s

Killag River Lime Station

Approximate location of the Seabright portal- 1980s

Stream Crossing access road

Approximate Area reclaimed by Seabright post-1989

Area of rock excavation suspected quarry for road construction

Beaver Dam Mine Road

Access Road to Route 224

Stantec

Legend

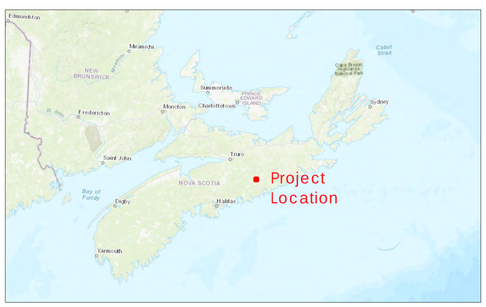
- Abandoned Mine Openings
- Snapping Turtle Nest (June 27, 2019)
- Camp
- Hunting Blind
- Portal
- Other
- Tracklog
- Beaver Dam Areas of Interest
- Project Area
- Beaver Dam Tailings (NSDNR)

0 260 520 metres

1:4,571 (At original document size of 34x44)

Notes

1. Coordinate System: NAD 1983 CSRS UTM Zone 20N
2. Base features: McCallum and Atlantic Gold
3. Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



Project Location 121619250

Prepared by MHS on 2019-07-31

Beave Dam, Nova Scotia

Client/Project

Beaver Dam

Appendix

A

Title

Phase 1 ESA Site Plan and Adjoining Properties

Appendix B

Photographs

View of earthen dam spillway looking west

Seepage from the base of the dam stained red looking east

View of settling pond looking west

Typical cluster of monitor wells installed in various locations on and around the Site

View of old 1,000 L totes buried in the former Seabright Operations area

Typical small water filled trench/opening found on-site

Abandoned hunting stand

Suspected mine tailings found north of Crusher Lake near brook under layer of organics

Ruins of a suspected cabin that dated from at least the 1960s

View of squatters camp looking southeast at the "Bunk house" with "Cabin" in the background

Interior of the "Bunk house"

Looking northeast at the squatters camp "Cabin" building

Looking east at the "Cabin", shed and outhouse buildings at the squatters camp

Water filled trench north of Crusher Lake

Brick debris along the access road toward the squatters camp

Old woods road that runs along the northern side of Crusher Lake

Typical gravel access road on the Site

Typical example of small surface staining less than 2 sq.m. in various locations on the Site

Looking northwest at the Killag River Lime dosing station located to the east of the Site

Looking northwest at the Killag River and bridge on the adjoining property to the east

Beaver Dam Mine Road looking north

Suspected waste rock on the south side of the access road to Crusher Lake

Appendix C

Assessor Qualifications

Patrick Turner, B.Sc., P.Eng.
Associate Environmental Services

Profile

Patrick Turner, B.Sc., P.Eng., has been with Stantec since 2000. Mr. Turner has conducted over 500 Phase I, II and III Environmental Site Assessments (ESAs) in Nova Scotia, New Brunswick, Newfoundland, Ontario and Quebec. These environmental assessments and remediation projects dealt with metal, hydrocarbon, polycyclic aromatic hydrocarbon, polychlorinated biphenyl and chlorinated solvent impacts in soil and/or groundwater. Properties assessed have ranged from single family dwellings to industrial oil refineries.

EDUCATION

B.Sc. – Dalhousie University – Math, 1997

Bachelor of Engineering (Civil) –
Technical University of Nova Scotia 1998

COMPENTENCY

Site Visit

Report Writer

Technical Report Review

PHASE I ENVIRONMENTAL SITE ASSESSMENT
ASSESSOR QUALIFICATIONS – Don Carey

Donald A. Carey, M.Sc., P.Eng.

Principal

Profile

Don Carey, M.Sc., P.Eng., is a Principal and Senior Hydrogeologist in the Dartmouth office of Stantec. He is also the Technical Leader for Site Investigation for Stantec's Canadian operations, and has been and continues to have responsibility for the development of standard operating procedures and quality for Phase I ESAs. Mr. Carey has more than 35 years' experience at Stantec in environmental site assessments, including senior technical review on more than 1,000 Phase I ESAs, for a wide variety of projects, from small residential properties, to large, complex industrial facilities.

Education M.Sc. – University of Waterloo – Hydrogeology, 1985
B.A.Sc. – University of Toronto – Geotechnical Enginering, 1977

Associations **Engineers of Nova Scotia**

Competencies Senior Review

Appendix D

Supporting Documentation

NOVA SCOTIA
Environment

Information Access and Privacy

PO Box 442
Halifax, Nova Scotia
B3J 2P8

ph: (902) 424-2549
fax: (902) 424-6925

June 26, 2019 Our file # ENV-2019-1597/1598

Email: patrick.turner@stantec.com

Patrick Turner
Stantec Consulting Ltd.
40 Highfield Park Drive
Dartmouth NS B3A 0A3

Dear Mr. Turner:

RE: 1178 Beaver Dam Mines Rd. (PID 40201048) and 181 Beaver Dam Mines Rd. (PID 40201030), Marinette

I refer to your enquiry of the Environmental Registry received June 14, 2019. We acknowledge receipt of payment for 2 properties.

Enclosed is the information that was located through the Environmental Registry with regards to 1178 Beaver Dam Mines Rd., Marinette.

No information was located through the Environmental Registry with regards to the remaining above referenced property.

Two water resource files (file# 95100-30-bed-2018-105032, 95100-30-bed-2017-107037) containing reports, correspondence, and applications and an Environmental Assessment project file (file#40100-30-274) pertaining to 1178 Beaver Dam Mines Rd., Marinette were located. These records, while not in the Environmental Registry, may be relevant to your request. Should you feel you require these records, they are subject to the Freedom of Information and Protection of Privacy (FOIPOP) Act. FOIPOP applications can be submitted by filling out the attached application form. Please quote the Environmental Registry number in your FOIPOP application.

Nova Scotia Environment makes no representations or warranties on the accuracy or completeness of the information provided.

Sincerely,

<Original signed by>

Tina Skeir
Information Access Office

NOVA SCOTIA

30 Damascus Road, Suite 115
Bedford NS
Canada B4A 0C1

902-424-7773 P
902-424-0597 F
www.novascotia.ca

APPROVAL

Province of Nova Scotia
Environment Act, S.N.S. 1994-95, c.1 s.1

APPROVAL HOLDER: NOVA SCOTIA SALMON ASSOCIATION

SITE PID: 40201048

APPROVAL NO: 2017-107037-00

EXPIRY DATE: September 30, 2017

Pursuant to Part V of the *Environment Act*, S.N.S. 1994-95, c.1 s.1 as amended from time to time, approval is granted to the Approval Holder subject to the Terms and Conditions attached to and forming part of this Approval, for the following activity:

Water Approval - Instream Structure

<Original signed by>

Administrator: Kevin G Garroway

Effective Date: August 18, 2017

The Minister's powers and responsibilities under the Act with respect to this Approval have been delegated to the Administrator named above. Therefore, any information or notifications required to be provided to the Minister under this Approval can be provided to the Administrator unless otherwise advised in writing.

TERMS AND CONDITIONS OF APPROVAL

Nova Scotia Environment

Approval Holder: NOVA SCOTIA SALMON ASSOCIATION

Project: West River Sheet Harbour - PID 40201048

Site:

PID	Civic #	Street Name	Street Type	Community	County
40201048				TEN MILE LAKE	HALIFAX COUNTY

Approval No: 2017-107037-00

File No: 95100-30-BED-2017-107037

Grid Reference: Easting - 523219, Northing - 4990058

Reference Documents

- Application submitted July 13, 2017 and attachments.

1. Definitions

a. Act means Environment Act, Chapter 1 of the Acts of 1994-95, and includes, unless the context otherwise requires, all regulations made pursuant to the Act.

b. Administrator means a person appointed by the Minister for the purpose of this Act, and includes an acting administrator.

c. Approval means an Approval issued pursuant to this Act with respect to an activity.

d. Department means the Department of Environment, and the contact for the Department for this approval is:
Nova Scotia Environment
Central Region, Bedford Office
30 Damascus Road, Suite 115
Bedford, Nova Scotia B4A 0C1

Phone: (902) 424-7773
Fax: (902) 424-0597

e. Erosion Protection means protective works constructed along the banks of water bodies to prevent erosion by surface runoff, stream flows and/or wave action.

f. Minister means the Minister of Environment and includes any person appointed as a designate of the Minister.

g. Nova Scotia Environment Watercourse Alteration Certification Training Manual means the training manual developed in accordance with the New Brunswick Watercourse Alteration Training Manual and Nova Scotia Watercourse Alteration Specifications current edition.

h. Recognized Individual means an individual who has successfully completed the Nova Scotia Environment Watercourse Alteration Certification Training Program.

i. Site means the location of the authorized work.

j. Watercourse means the bed and shore of every river, stream, lake, creek, pond, spring, lagoon or other natural body of water, and the water therein, within the jurisdiction of the Province, whether it contains water or not, and all groundwater.

k. Wetland means lands commonly referred to as marshes, swamps, fens, bogs, and shallow water areas that are saturated with water long enough to promote wetland of aquatic processes which are indicated by poorly drained soil, vegetation and various kinds of activity which are adapted to a wet environment.

2. Scope

a. This Approval (the "Approval") relates to the Approval Holder(s) and their application and supporting documentation, as listed in the reference documents above, to construct the Instream Structure on West River Sheet Harbour situated at or near PID: 40201048.

b. Under authority of this Approval, the watercourse alterations specified herein shall be conducted between June 1st and September 30th (inclusive) of the same calendar year unless otherwise stated in the site specific terms and conditions.

3. General

a. The Approval Holder(s) shall construct the watercourse alterations in accordance with provisions of the most recent version of:

   i. Environment Act S.N.S. 1994-1995, c.1, s.1 as amended from time to time

   ii. Regulations pursuant to the above Act, as amended from time to time

b. Nothing in this Approval relieves the Approval Holder(s) of the responsibility for obtaining and paying for all licenses, permits, approvals or authorizations necessary for carrying out the work authorized to be performed by this Approval

which may be required by municipal by-laws or provincial or federal legislation. The Minister does not warrant that such licenses, permits, approvals or other authorizations will be issued.

c. No authority is granted by this Approval to enable the Approval Holder(s) to construct the watercourse alterations on lands which are not in the control or ownership of the Approval Holder(s). It is the responsibility of the Approval Holder(s) to ensure that such a contravention does not occur. The Approval shall provide, to the Department, proof of such control or ownership upon expiry of any relevant lease or agreement. Failure to retain said authorization may result in this Approval being cancelled or suspended.

d. If there is a discrepancy between the reference documents and the terms and conditions of this Approval, the terms and conditions of this Approval shall apply.

e. The Minister may modify, amend or add conditions to this Approval at any time pursuant to Section 58 of the Act.

f. This Approval is not transferable without the consent of the Minister.

   i. If the Minister determines that there has been non-compliance with any or all of the terms and conditions contained in this Approval, the Minister may cancel or suspend the Approval pursuant to subsections 58A(1) and 58A(2) of the Act, until such time as the Minister is satisfied that all terms and conditions have been met

   ii. If the Minister cancels or suspends this Approval, the Approval Holder(s) remains subject to the penalty provisions of the Act and regulations

g. The Approval Holder(s) shall notify the Department prior to any proposed extensions or modifications of the activities outlined in the original Application for Approval.

h. Pursuant to Section 60 of the Act, the Approval Holder(s) shall submit to the Minister any new and relevant information respecting any adverse effect that actually results, or may potentially result, from any activity to which the Approval relates and that comes to the attention of the Approval Holder(s) after the issuance of the Approval.

i. The Approval Holder(s) shall immediately notify the Department of any incidents of non-compliance with this Approval.

j. The Approval Holder(s) shall bear all expenses incurred in carrying out the environmental monitoring required under the terms and conditions of this Approval.

k. Unless specified otherwise in this Approval, all samples required to be collected by this Approval shall be collected, preserved and analysed, by qualified

personnel, in accordance with recognized industry standards and procedures.

l. Unless written authorization is received otherwise from the Minister, all samples required by this Approval shall be analysed by a laboratory that meets the requirements of the Department's Policy on Acceptable Certification of Laboratories as amended from time to time.

m. The Approval Holder(s) shall submit any monitoring results or reports required by this Approval to the Department. Unless specified otherwise in this Approval, all monitoring results shall be submitted within 30 days following the month of monitoring.

n. The Approval Holder(s) shall ensure that this Approval, or a copy, is kept on site at all times and that personnel directly involved in the watercourse alterations are made fully aware of the terms and conditions which pertain to this Approval.

o. Failure to comply with the terms and conditions is an offence under the Environment Act.

p. The Approval Holder(s) shall notify the Department three business days prior to commencing construction of the Activity. The notification must include the Approval Number.

q. Within 14 days of completion of the work authorized under this Approval, the Approval Holder(s) is required to submit, to the Department, the enclosed form entitled Completion of the Approved Work.

4. Covenant Conditions

a. The Approval Holder(s) may alter the watercourse, or store water in any watercourse as authorized and, without limiting the generality of the foregoing, shall not alter or use the watercourse so as to:

   i. prejudice any riparian rights of any owner or of any person lawfully in possession of or holding any lands abutting the watercourse or any rights therein

   ii. suffer any loss, damage or nuisance to adjacent or abutting lands

b. The Approval Holder(s) shall not, at any time or for any purpose, place a pecuniary value on or claim any pecuniary value for the rights and privileges granted by this Approval, whether considered alone or in conjunction with any other property rights or privileges, over and above the amounts, if any, actually paid to the Minister by the Approval Holder(s) for said rights and privileges.

c. It is recognized and agreed that this Approval does not give sole or exclusive rights to any watercourse, and the Minister reserves the right to use the watercourse and water therein for any purpose and to allow others to use the

watercourse and water for any purpose, provided that such use or purpose does not constitute a substantial interference with the rights granted to the Approval Holder(s).

d. The Approval Holder(s) shall be responsible for obtaining and paying the costs of any and all approvals, services, easements, rights of way and authorizations of any kind necessary for the performance of any activities undertaken pursuant to this Approval. The Minister does not covenant that such approvals, services, easements, rights of way and authorizations of any kind will be issued by the Province of Nova Scotia, any other body or person.

e. The Approval Holder(s) shall maintain any bridge, culvert, dam, sluice, flume, conduit or other structure built or used in or on the watercourse in a state of good repair and in a clean and tidy condition to the satisfaction of the Minister. The Approval Holder(s) shall conform to any and all directions of the Minister concerning the rehabilitation of a watercourse or the construction, reconstruction, maintenance, removal, operation and location of any bridge, culvert, dam, sluice, flume, conduit or other structure built, used or maintained in and on the watercourse.

f. The Approval Holder(s) shall indemnify and save harmless the Minister against any loss, cost or damage occasioned by the Approval Holder(s)'s relocation of a watercourse or the construction of, repair, alteration or addition to any culvert, bridge, dam, sluice, flume, conduit or other structure. Such indemnity shall include, but not be restricted to, all losses, costs or damages occasioned by the improper or faulty relocation of a watercourse or the improper or faulty construction of repair, alteration or addition to any culvert, bridge, dam, sluice, flume, conduit or other structure in or on the watercourse, or by any trespass, negligence or willful act of the Approval Holder(s) or any employees, agents, contractors, or guests of the Approval Holder(s).

g. On the expiry or termination of this Approval or at the end of the useful life of the structure, as determined by the Minister, the Approval Holder(s) shall immediately cease operations and peaceably and quietly yield up and deliver possession of the watercourse in a condition satisfactory to the Minister, and the Minister shall incur no further expense, liability or cost in this regard.

h. The Approval Holder(s) shall remove any bridge, culvert, dam, sluice, flume, conduit or other structure or remnants thereof, and any equipment or personal property built, used or maintained in and on the watercourse at the end of the useful life of the structure, to the satisfaction of the Minister. In the event the Approval Holder(s) fails to remove such bridge, culvert, dam, sluice, flume, conduit or other structure or remnants thereof and any equipment or personal property, the Minister may, without any attaching liability, remove or demolish the same in whatever manner the Minister deems necessary. The Approval Holder(s) shall pay all expenses and costs of such removal or demolition.

i. The Minister or any employee, servant or agent of the Department will not be liable for any damage, loss or claim of any kind which may or hereafter arise.

j. If the Approval Holder(s) assigns or sublets their Approval or any part thereof except as is expressly provided herein, if the contractor becomes bankrupt or insolvent, if a receiver is appointed for any part of the assets of the Approval Holder(s), if any assignment is made for the benefit of the creditors of the Approval Holder(s), or if it is wound up or goes into liquidation, the Minister may terminate the Approval.

k. This Approval shall ensure to the benefit of and be binding upon the Minister, the Minister's successors, assigns and authorized representatives, and upon the Approval Holder(s), and the heirs, administrators, executors and assigns of the Approval Holder(s).

l. The failure of the Minister to insist upon a strict performance of any covenant, proviso or terms and conditions contained in this Approval shall not be deemed a waiver of any rights or remedies that the Minister may have and shall not be deemed a waiver of any subsequent breach or default in the covenants, provisos or terms and conditions contained in this Approval.

5. Construction

a. All construction activities within or immediately adjacent to the watercourse channel must be carried out in isolation of the streamflow (in the dry).

b. Prior to the commencement of the proposed activity, sediment control measures shall be installed to prevent sedimentation of the watercourse and maintained as required until all exposed erodible soil adjacent to both a watercourse and the road surface are stabilized. Erosion control measures include but are not limited to flow checks, sediment traps and/or filters.

c. Erosion control materials shall be clean, non-erodible, non-ore-bearing, non-watercourse derived and non-toxic materials. The Approval Holder(s) shall ensure the materials for this project, (i.e. aggregate, etc.) is suitable for the purpose intended.

d. Sulphide bearing materials are not to be used without prior written consent from the Minister. The Approval Holder(s) shall notify the Department immediately when sulphide bearing materials are encountered during any part of construction.

e. All potentially erodible areas shall be stabilized with erosion protection material as work progresses (not at the end of the project).

f. All work operations shall be conducted in a manner to protect the watercourse from siltation and disturbance to the adjacent and downstream areas. Silted water is not to be released directly into the watercourse. Any silt laden water pumped from work areas is to be directed to heavily vegetated areas, settling

ponds, or other treatment devices.

g. Any overland flow which has the potential to enter the construction area is to be diverted away from the construction site and into vegetated areas.

h. All construction site and roadway runoff shall be directed through natural vegetation before it reaches the watercourse. Where direction through natural vegetation is not possible, runoff shall be treated through erosion and sediment control devices to prevent siltation of watercourses.

i. Road drainage must not be discharged over a cut or fill unless appropriate vertically staged erosion control measures are in place on the slope from the crest to the toe along the face of the embankment.

j. Settling ponds shall meet a minimum requirement of 1/16 acre-ft. of storage for every acre of exposed construction area. Settling ponds are to be cleaned out when they are half full of sediment or when they no longer provide for the precipitation of solids.

k. The Approval Holder(s) shall ensure that the following discharge limits are met for any water which is discharged from the Site to a watercourse or wetland:

    i. Total Suspended Solids Clear Flows (Normal Background Conditions):

        (a) Maximum increase of 25 mg/L from background levels for any short term exposure (24 hours or less)

        (b) Maximum average increase of 5 mg/L from background levels for longer term exposure (inputs lasting between 24 hours and 30 days)

    ii. Total Suspended Solids High Flow (Spring Freshets and Storm Events):

        (a) Maximum increase of 25 mg/L from background levels at any time when background levels are between 25 mg/L and 250 mg/L

        (b) Shall not increase more than 10% over background levels when background is >250 mg/L.

l. The Approval Holder(s) shall limit the size of the disturbed area to the area of the watercourse alteration. Once the soils in the area of installation have been exposed for installation, the structure installation shall commence immediately.

m. The Approval Holder(s) shall limit the removal of riparian vegetation to the area of the watercourse alteration only.

n. All excavated material shall be placed in a location where it will not enter the watercourse. All debris resulting from construction activities shall be disposed of at a facility which is approved to accept the specific material. Any material not regulated by the Department shall be removed to an area where flood water will

not come in contact with the debris and excavated material must be removed from the areas adjacent to the watercourse and be disposed of in a manner acceptable to the Department.

o. On site machinery and potential pollutants are to be stored in an area above the flood water limits.

p. Fuel storage and refuelling or lubrication of equipment is to take place in an area such that an accidental pollutant discharge will not enter surface water or domestic water supplies. Under no circumstances will the designated area be within 30 metres of a watercourse or wetland. Note: this clause is not applicable to pile-driving equipment.

q. Blasting in or near a watercourse is not permitted unless authorized in writing by the Minister.

r. Machinery and equipment (e.g., concrete trucks) are not to be washed out within 30 metres of a body of water or in an area where wash water will run into a watercourse.

s. Equipment required to work within a watercourse is to be mechanically sound, having no leaking fuel tanks or leaking hydraulic connections.

6. Spills or Releases

a. Spills or releases shall be reported in accordance with the Act and the Environmental Emergency Regulations.

b. Spills or releases shall be cleaned up in accordance with the Act and the Contaminated Sites Regulations.

7. Site Specific Conditions

a. All work must be carried out as per the application and supporting documentation.

b. All work must adhere to the 'Nova Scotia Watercourse Alteration Standard' where applicable for the activity.

c. Concrete used in a watercourse that has not been isolated from water flow must be pre-cast and cured away from the watercourse.

d. Concrete used in a watercourse that has been isolated from water flow must be permitted to cure long enough prior to releasing water flow so that it does not contaminate the water after the flow is released.

e. Machinery must not enter the watercourse unless the work area has been isolated from the stream flow.

f. An emergency spill-kit must be kept on site when vehicles (including machinery) or equipment is used in a watercourse.

NOVA SCOTIA

File No:95100-30-BED-2017-107037

COMPLETION OF THE APPROVED WORK

A condition of this Approval requires that the Approval Holder notify Nova Scotia Environment that the work authorized is complete.

Please enter the information on this sheet and return it to Nova Scotia Environment at the following address:

Nova Scotia Environment
Inspection, Enforcement, and Compliance Division
Central Region, Bedford Office
30 Damascus Road, Suite 115
Bedford, NS, B4A 0C1

Phone: 902-424-7773
Fax: 902-424-0597
NSE Contact: Stephanie Barkhouse

APPROVAL NUMBER: 2017-107037-00

NAME OF APPROVAL HOLDER: NOVA SCOTIA SALMON ASSOCIATION

WORK AUTHORIZED: Instream Structure

DATE WORK WAS COMPLETED: Oct. 30/2017 [Wetted by Oct. 1]

NAME OF CONTRACTOR: Hawes Trucking + Excavation

COMMENTS: Work proceeded generally as planned. The structure was relocated 50m downstream from originally-intended site.

<Original signed by>

Signature

March 15/2018
Date

NOVA SCOTIA

30 Damascus Road, Suite 115
Bedford NS
Canada B4A 0C1

902-424-7773 P
902-424-0597 F
www.novascotia.ca

APPROVAL

Province of Nova Scotia
Environment Act, S.N.S. 1994-95, c.1 s.1

APPROVAL HOLDER: NOVA SCOTIA SALMON ASSOCIATION

SITE PID: 40201048, 40220915, 40231722, 40232613

APPROVAL NO: 2018-105032-00

EXPIRY DATE: September 30, 2018

Pursuant to Part V of the *Environment Act*, S.N.S. 1994-95, c.1 s.1 as amended from time to time, approval is granted to the Approval Holder subject to the Terms and Conditions attached to and forming part of this Approval, for the following activity:

Water Approval - Instream Structure

<Original signed by>

Administrator: Kevin G Garroway

Effective Date: August 7, 2018

The Minister's powers and responsibilities under the Act with respect to this Approval have been delegated to the Administrator named above. Therefore, any information or notifications required to be provided to the Minister under this Approval can be provided to the Administrator unless otherwise advised in writing.

TERMS AND CONDITIONS OF APPROVAL

Nova Scotia Environment

Approval Holder: NOVA SCOTIA SALMON ASSOCIATION

Project: West River Sheet Harbour - PID 40220915, West River Sheet Harbour - PID 40231722, West River Sheet Harbour - PID 40201048, West River Sheet Harbour - PID 40232613

Site:

PID	Civic #	Street Name	Street Type	Community	County
40201048	1178	BEAVER DAM MINES	RD.	MARINETTE	HALIFAX COUNTY
40220915				SHEET HARBOUR	HALIFAX COUNTY
40231722				MARINETTE	HALIFAX COUNTY
40232613				SHEET HARBOUR	HALIFAX COUNTY

Approval No: 2018-105032-00

File No: 95100-30-BED-2018-105032

Grid Reference: Easting - 534683, Northing - 4979272, Easting - 528541, Northing - 4980284, Easting - 525891, Northing - 4982821, Easting - 522778, Northing - 4990186

Reference Documents

- Application submitted May 25, 2018 and attachments.

1. **Definitions**

   a. Act means Environment Act, Chapter 1 of the Acts of 1994-95, and includes, unless the context otherwise requires, all regulations made pursuant to the Act.

   b. Administrator means a person appointed by the Minister for the purpose of this Act, and includes an acting administrator.

c. Approval means an Approval issued pursuant to this Act with respect to an activity.

d. Arch or open-bottom box culvert means a structure which conveys the flow of a surface water body under a roadway, railway, canal or other impediment which completely spans the water body from bank to bank, is supported by footings and the top of the cover material is graded to form the travel surface.

e. Bridge means a structure which conveys the flow of a surface water body under a roadway, railway, canal or other impediment which completely spans the water body from bank to bank, is supported by abutments and has stringers and a deck which form the travel surface.

f. Culvert means a Pipe Culvert and/or an Arch or Open-Bottom Box Culvert.

g. Department means the Department of Environment, and the contact for the Department for this approval is:
Nova Scotia Environment
Central Region, Bedford Office
30 Damascus Road, Suite 115
Bedford, Nova Scotia B4A 0C1

Phone: (902) 424-7773
Fax: (902) 424-0597

h. Erosion Protection means protective works constructed along the banks of water bodies to prevent erosion by surface runoff, stream flows and/or wave action.

i. Harvest Block means a contiguous geographical area of land designated to have the trees or vegetation harvested.

j. Minister means the Minister of Environment and includes any person appointed as a designate of the Minister.

k. Nova Scotia Environment Watercourse Alteration Certification Training Manual means the training manual developed in accordance with the New Brunswick Watercourse Alteration Training Manual and Nova Scotia Watercourse Alteration Specifications current edition.

l. Pipe Culvert means a closed conduit used for the conveyance of surface water under a roadway, railway, canal or other impediment which is embedded into the bed of the surface water body.

m. Recognized Individual means an individual who has successfully completed the Nova Scotia Environment Watercourse Alteration Certification Training Program.

n. Site means the location of the authorized work.

o. Temporary Bridge means a portable structure which conveys the flow of a surface water body under a roadway, railway, canal or other impediment which completely spans the water body from bank to bank, is supported by abutments and has stringers and a deck which form the travel surface. A temporary bridge shall be designated to convey at least the equivalent flow from a 1 to 2 year return period storm event. A temporary bridge shall not remain in place for a period greater than 30 days.

p. Watercourse means the bed and shore of every river, stream, lake, creek, pond, spring, lagoon or other natural body of water, and the water therein, within the jurisdiction of the Province, whether it contains water or not, and all groundwater.

q. Wetland means land commonly referred to as marsh, swamp, fen or bog that either periodically or permanently has a water table at, near or above the land's surface or that is saturated with water, and sustains aquatic processes as indicated by the presence of poorly drained soils, hydrophytic vegetation and biological activities adapted to wet conditions.

2. Scope

a. This Approval (the "Approval") relates to the Approval Holder(s) and their application and supporting documentation, as listed in the reference documents above, to construct the Instream Structure on West River Sheet Harbour, West River Sheet Harbour, West River Sheet Harbour, West River Sheet Harbour situated at or near 1178 BEAVER DAM MINES RD.

b. Under authority of this Approval, the watercourse alterations specified herein shall be conducted between June 1st and September 30th (inclusive) of the same calendar year unless otherwise stated in the site specific terms and conditions.

c. Temporary bridges can be installed between September 30th of the application year and March 31st of the following year provided they are temporarily removed prior to a 1 in 2 year (or larger) storm rainfall event. Installations of temporary bridges are restricted to a maximum time period of 30 days in one location. A extension may be obtained in writing should the bridge be required to remain in use longer than 30 days in one location.

3. General

a. The Approval Holder(s) shall construct the watercourse alterations in accordance with provisions of the most recent version of:

i. Environment Act S.N.S. 1994-1995, c.1, s.1 as amended from time to time

ii. Regulations pursuant to the above Act, as amended from time to time

b. Nothing in this Approval relieves the Approval Holder(s) of the responsibility for

obtaining and paying for all licenses, permits, approvals or authorizations necessary for carrying out the work authorized to be performed by this Approval which may be required by municipal by-laws or provincial or federal legislation. The Minister does not warrant that such licenses, permits, approvals or other authorizations will be issued.

c. No authority is granted by this Approval to enable the Approval Holder(s) to construct the watercourse alterations on lands which are not in the control or ownership of the Approval Holder(s). It is the responsibility of the Approval Holder(s) to ensure that such a contravention does not occur. The Approval shall provide, to the Department, proof of such control or ownership upon expiry of any relevant lease or agreement. Failure to retain said authorization may result in this Approval being cancelled or suspended.

d. If there is a discrepancy between the reference documents and the terms and conditions of this Approval, the terms and conditions of this Approval shall apply.

e. The Minister may modify, amend or add conditions to this Approval at any time pursuant to Section 58 of the Act.

f. This Approval is not transferable without the consent of the Minister.

   i. If the Minister determines that there has been non-compliance with any or all of the terms and conditions contained in this Approval, the Minister may cancel or suspend the Approval pursuant to subsections 58A(1) and 58A(2) of the Act, until such time as the Minister is satisfied that all terms and conditions have been met

   ii. If the Minister cancels or suspends this Approval, the Approval Holder(s) remains subject to the penalty provisions of the Act and regulations

g. The Approval Holder(s) shall notify the Department prior to any proposed extensions or modifications of the activities outlined in the original Application for Approval.

h. Pursuant to Section 60 of the Act, the Approval Holder(s) shall submit to the Minister any new and relevant information respecting any adverse effect that actually results, or may potentially result, from any activity to which the Approval relates and that comes to the attention of the Approval Holder(s) after the issuance of the Approval.

i. The Approval Holder(s) shall immediately notify the Department of any incidents of non-compliance with this Approval.

j. The Approval Holder(s) shall bear all expenses incurred in carrying out the environmental monitoring required under the terms and conditions of this Approval.

k. Unless specified otherwise in this Approval, all samples required to be collected by this Approval shall be collected, preserved and analysed, by qualified personnel, in accordance with recognized industry standards and procedures.

l. Unless written authorization is received otherwise from the Minister, all samples required by this Approval shall be analysed by a laboratory that meets the requirements of the Department's Policy on Acceptable Certification of Laboratories as amended from time to time.

m. The Approval Holder(s) shall submit any monitoring results or reports required by this Approval to the Department. Unless specified otherwise in this Approval, all monitoring results shall be submitted within 30 days following the month of monitoring.

n. The Approval Holder(s) shall ensure that this Approval, or a copy, is kept on site at all times and that personnel directly involved in the watercourse alterations are made fully aware of the terms and conditions which pertain to this Approval.

o. Failure to comply with the terms and conditions is an offence under the Environment Act.

p. The Approval Holder(s) shall notify the Department three business days prior to commencing construction of the Activity. The notification must include the Approval Number.

q. Within 14 days of completion of the work authorized under this Approval, the Approval Holder(s) is required to submit, to the Department, the enclosed form entitled Completion of the Approved Work.

4. Covenant Conditions

a. The Approval Holder(s) may alter the watercourse, or store water in any watercourse as authorized and, without limiting the generality of the foregoing, shall not alter or use the watercourse so as to:

   i. prejudice any riparian rights of any owner or of any person lawfully in possession of or holding any lands abutting the watercourse or any rights therein

   ii. suffer any loss, damage or nuisance to adjacent or abutting lands

b. The Approval Holder(s) shall not, at any time or for any purpose, place a pecuniary value on or claim any pecuniary value for the rights and privileges granted by this Approval, whether considered alone or in conjunction with any other property rights or privileges, over and above the amounts, if any, actually paid to the Minister by the Approval Holder(s) for said rights and privileges.

c. It is recognized and agreed that this Approval does not give sole or exclusive

rights to any watercourse, and the Minister reserves the right to use the watercourse and water therein for any purpose and to allow others to use the watercourse and water for any purpose, provided that such use or purpose does not constitute a substantial interference with the rights granted to the Approval Holder(s).

d. The Approval Holder(s) shall be responsible for obtaining and paying the costs of any and all approvals, services, easements, rights of way and authorizations of any kind necessary for the performance of any activities undertaken pursuant to this Approval. The Minister does not covenant that such approvals, services, easements, rights of way and authorizations of any kind will be issued by the Province of Nova Scotia, any other body or person.

e. The Approval Holder(s) shall maintain any bridge, culvert, dam, sluice, flume, conduit or other structure built or used in or on the watercourse in a state of good repair and in a clean and tidy condition to the satisfaction of the Minister. The Approval Holder(s) shall conform to any and all directions of the Minister concerning the rehabilitation of a watercourse or the construction, reconstruction, maintenance, removal, operation and location of any bridge, culvert, dam, sluice, flume, conduit or other structure built, used or maintained in and on the watercourse.

f. The Approval Holder(s) shall indemnify and save harmless the Minister against any loss, cost or damage occasioned by the Approval Holder(s)'s relocation of a watercourse or the construction of, repair, alteration or addition to any culvert, bridge, dam, sluice, flume, conduit or other structure. Such indemnity shall include, but not be restricted to, all losses, costs or damages occasioned by the improper or faulty relocation of a watercourse or the improper or faulty construction of repair, alteration or addition to any culvert, bridge, dam, sluice, flume, conduit or other structure in or on the watercourse, or by any trespass, negligence or willful act of the Approval Holder(s) or any employees, agents, contractors, or guests of the Approval Holder(s).

g. On the expiry or termination of this Approval or at the end of the useful life of the structure, as determined by the Minister, the Approval Holder(s) shall immediately cease operations and peaceably and quietly yield up and deliver possession of the watercourse in a condition satisfactory to the Minister, and the Minister shall incur no further expense, liability or cost in this regard.

h. The Approval Holder(s) shall remove any bridge, culvert, dam, sluice, flume, conduit or other structure or remnants thereof, and any equipment or personal property built, used or maintained in and on the watercourse at the end of the useful life of the structure, to the satisfaction of the Minister. In the event the Approval Holder(s) fails to remove such bridge, culvert, dam, sluice, flume, conduit or other structure or remnants thereof and any equipment or personal property, the Minister may, without any attaching liability, remove or demolish the

same in whatever manner the Minister deems necessary. The Approval Holder(s) shall pay all expenses and costs of such removal or demolition.

i. The Minister or any employee, servant or agent of the Department will not be liable for any damage, loss or claim of any kind which may or hereafter arise.

j. If the Approval Holder(s) assigns or sublets their Approval or any part thereof except as is expressly provided herein, if the contractor becomes bankrupt or insolvent, if a receiver is appointed for any part of the assets of the Approval Holder(s), if any assignment is made for the benefit of the creditors of the Approval Holder(s), or if it is wound up or goes into liquidation, the Minister may terminate the Approval.

k. This Approval shall ensure to the benefit of and be binding upon the Minister, the Minister's successors, assigns and authorized representatives, and upon the Approval Holder(s), and the heirs, administrators, executors and assigns of the Approval Holder(s).

l. The failure of the Minister to insist upon a strict performance of any covenant, proviso or terms and conditions contained in this Approval shall not be deemed a waiver of any rights or remedies that the Minister may have and shall not be deemed a waiver of any subsequent breach or default in the covenants, provisos or terms and conditions contained in this Approval.

5. Construction

a. All construction activities within or immediately adjacent to the watercourse channel must be carried out in isolation of the streamflow (in the dry).

b. Prior to the commencement of the proposed activity, sediment control measures shall be installed to prevent sedimentation of the watercourse and maintained as required until all exposed erodible soil adjacent to both a watercourse and the road surface are stabilized. Erosion control measures include but are not limited to flow checks, sediment traps and/or filters.

c. Erosion control materials shall be clean, non-erodible, non-ore-bearing, non-watercourse derived and non-toxic materials. The Approval Holder(s) shall ensure the materials for this project, (i.e. aggregate, etc.) is suitable for the purpose intended.

d. Sulphide bearing materials are not to be used without prior written consent from the Minister. The Approval Holder(s) shall notify the Department immediately when sulphide bearing materials are encountered during any part of construction.

e. All potentially erodible areas shall be stabilized with erosion protection material as work progresses (not at the end of the project).

f. All work operations shall be conducted in a manner to protect the watercourse

from siltation and disturbance to the adjacent and downstream areas. Silted water is not to be released directly into the watercourse. Any silt laden water pumped from work areas is to be directed to heavily vegetated areas, settling ponds, or other treatment devices.

g. Any overland flow which has the potential to enter the construction area is to be diverted away from the construction site and into vegetated areas.

h. All construction site and roadway runoff shall be directed through natural vegetation before it reaches the watercourse. Where direction through natural vegetation is not possible, runoff shall be treated through erosion and sediment control devices to prevent siltation of watercourses.

i. Road drainage must not be discharged over a cut or fill unless appropriate vertically staged erosion control measures are in place on the slope from the crest to the toe along the face of the embankment.

j. Settling ponds shall meet a minimum requirement of 1/16 acre-ft. of storage for every acre of exposed construction area. Settling ponds are to be cleaned out when they are half full of sediment or when they no longer provide for the precipitation of solids.

k. The Approval Holder(s) shall ensure that the following discharge limits are met for any water which is discharged from the Site to a watercourse or wetland:

    i. Total Suspended Solids Clear Flows (Normal Background Conditions):

        (a) Maximum increase of 25 mg/L from background levels for any short term exposure (24 hours or less)

        (b) Maximum average increase of 5 mg/L from background levels for longer term exposure (inputs lasting between 24 hours and 30 days)

    ii. Total Suspended Solids High Flow (Spring Freshets and Storm Events):

        (a) Maximum increase of 25 mg/L from background levels at any time when background levels are between 25 mg/L and 250 mg/L

        (b) Shall not increase more than 10% over background levels when background is >250 mg/L.

l. The Approval Holder(s) shall limit the size of the disturbed area to the area of the watercourse alteration. Once the soils in the area of installation have been exposed for installation, the structure installation shall commence immediately.

m. The Approval Holder(s) shall limit the removal of riparian vegetation to the area of the watercourse alteration only.

n. All excavated material shall be placed in a location where it will not enter the

watercourse. All debris resulting from construction activities shall be disposed of at a facility which is approved to accept the specific material. Any material not regulated by the Department shall be removed to an area where flood water will not come in contact with the debris and excavated material must be removed from the areas adjacent to the watercourse and be disposed of in a manner acceptable to the Department.

o. On site machinery and potential pollutants are to be stored in an area above the flood water limits.

p. Fuel storage and refuelling or lubrication of equipment is to take place in an area such that an accidental pollutant discharge will not enter surface water or domestic water supplies. Under no circumstances will the designated area be within 30 metres of a watercourse or wetland. Note: this clause is not applicable to pile-driving equipment.

q. Blasting in or near a watercourse is not permitted unless authorized in writing by the Minister.

r. Machinery and equipment (e.g., concrete trucks) are not to be washed out within 30 metres of a body of water or in an area where wash water will run into a watercourse.

s. Equipment required to work within a watercourse is to be mechanically sound, having no leaking fuel tanks or leaking hydraulic connections.

6. Spills or Releases

a. Spills or releases shall be reported in accordance with the Act and the Environmental Emergency Regulations.

b. Spills or releases shall be cleaned up in accordance with the Act and the Contaminated Sites Regulations.

7. Site Specific Conditions

a. All work activities shall adhere to Sections 3.1 to 3.5 of the Nova Scotia Watercourse Alterations Standard (2015).

b. Work and erosion and sediment control (ESC) activities are summarized in Table A-1, Appendix A and site plans available in Appendix B. The Approval Holder(s) shall immediately notify the Department of any changes in the proposed work plan and/or ESC activity due to site conditions.

c. An emergency spill-kit must be kept on site when vehicles (including machinery) or equipment is used in a watercourse.

d. The Approval holder shall ensure that the elevation of the intake pipe for the lime doser (installed under Approval 2017-107037) is not increased.

NOVA SCOTIA

File No:95100-30-BED-2018-105032

COMPLETION OF THE APPROVED WORK

A condition of this Approval requires that the Approval Holder notify Nova Scotia Environment that the work authorized is complete.

Please enter the information on this sheet and return it to Nova Scotia Environment at the following address:

Nova Scotia Environment
Inspection, Enforcement, and Compliance Division
Central Region, Bedford Office
30 Damascus Road, Suite 115
Bedford, NS, B4A 0C1

Phone: 902-424-7773
Fax: 902-424-0597
NSE Contact: Kelly L Henderson

APPROVAL NUMBER: 2018-105032-00

NAME OF APPROVAL HOLDER: NOVA SCOTIA SALMON ASSOCIATION

WORK AUTHORIZED: Instream Structure

DATE WORK WAS COMPLETED: _____

NAME OF CONTRACTOR: _____

COMMENTS: _____

_____

_____

_____

_____

_____ _____

Signature Date

Appendix A – Table

Approval 2018-105032

Table A-1: Erosion and Sediment Control and Work Activities

Location	ESC and work activity of Eastern side of river	ESC and work activity of Western side of river
Killam Lime Doser repair	Water diversion (partially coffered and water diverted from the work site) and a trash pump will be used to pump water, if required.	None - Work spans the river from bank-to-bank. The machine will be positioned on the Western Bank.
Repair habitat structures installed in 2016/2017	None – repair to structures will occur on the stream bank and outside of the water	None - repair to structures will occur on the stream bank and outside of the water. The machine may have to traverse (right angle crossing) to access the site.
Site 19	Water diversion (out of flow) – excavator complete deflector installation from bank	None - excavator single traverse near end of installation to construct submerged rock sill and smaller deflector
Site 20	Water diversion (out of flow) – excavator complete deflector installation from bank	None - excavator traverse twice (right angle crossing) near end of installation to construct rock sill and deflector
Site 21	Water diversion (out of flow) – excavator complete deflector installation from bank	None - excavator single traverse (right angle crossing) near end of installation to construct submerged rock sill and smaller deflector
Site 22	Water diversion (in the dry) – excavator complete deflector installation from bank	None - excavator single traverse (right angle crossing) near end of installation to construct submerged rock sill and smaller deflector
Site 23	Water diversion (in the dry) – excavator complete deflector installation from bank	None - excavator single traverse (right angle crossing) near end of installation to construct submerged rock sill and smaller deflector
Site 56 to 63	None - excavator single traverse (right angle crossing) near end of installation to construct rock sill and smaller deflector	Water diversion (out of flow) – excavator complete deflector installation from bank

Notes:
ESC – erosion and sediment control
Water Diversion – Temporary Plywood coffer dam to deflect water flow away from work site. Plywood wall installed in river bed with 3/4" rebar. Plywood covered in plastic tarps to provide seal at streambed and prevent water entering work zone.
Direction based on river running north to south
Site Access:

- Sites 19 and 20 have road access. No instream movement of excavator is required.
- Access between Sites 20 and 23 are expected to be done by walking the excavator along the river bank.
- Sites 56 to 63 will be access by existing wood road on the west side of the river and final approaches will be through a clear cut. No instream movement of excavator is required.

See appendix B for site plans.

Appendix B – Site Plans

Approval 2018-105032

Sites 19 to 23

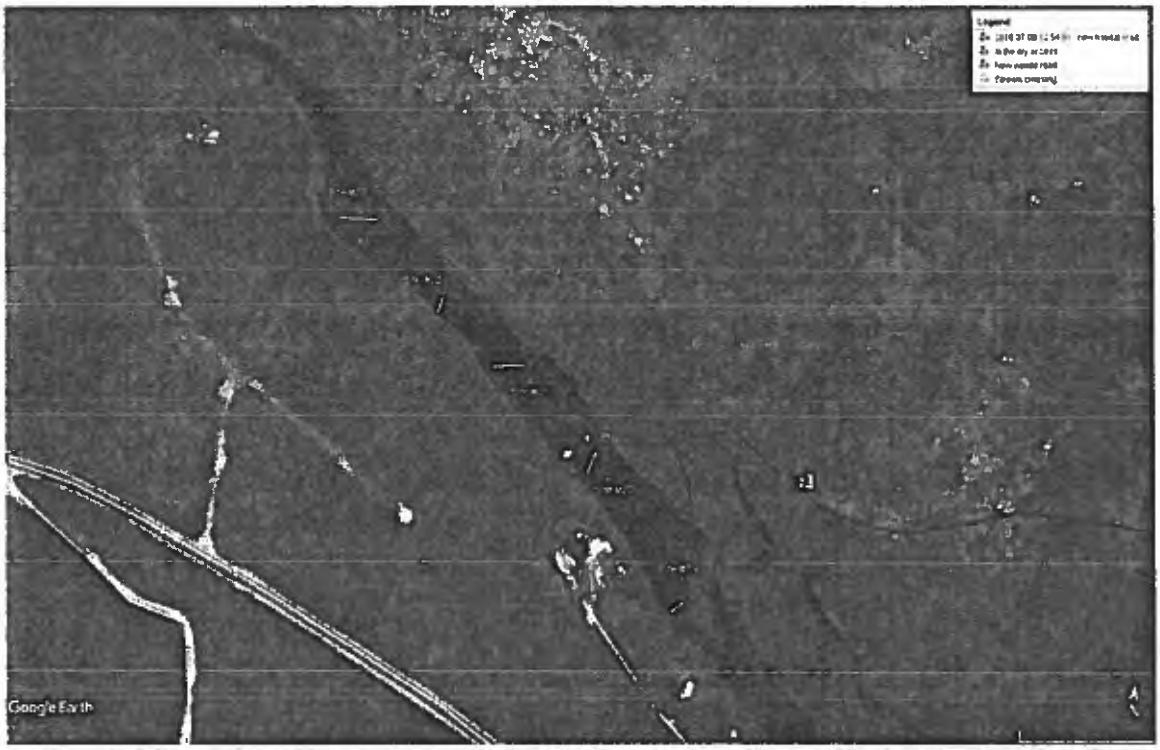


Figure 1 – Expected location of a) road access (blue), stream work that can be done with the machine on the bank or out of the water on top of newly constructed habitat structures (green) and expected locations of stream crossing by the excavator (yellow). Shown are sites #19 – 23.

Sites 56 to 63

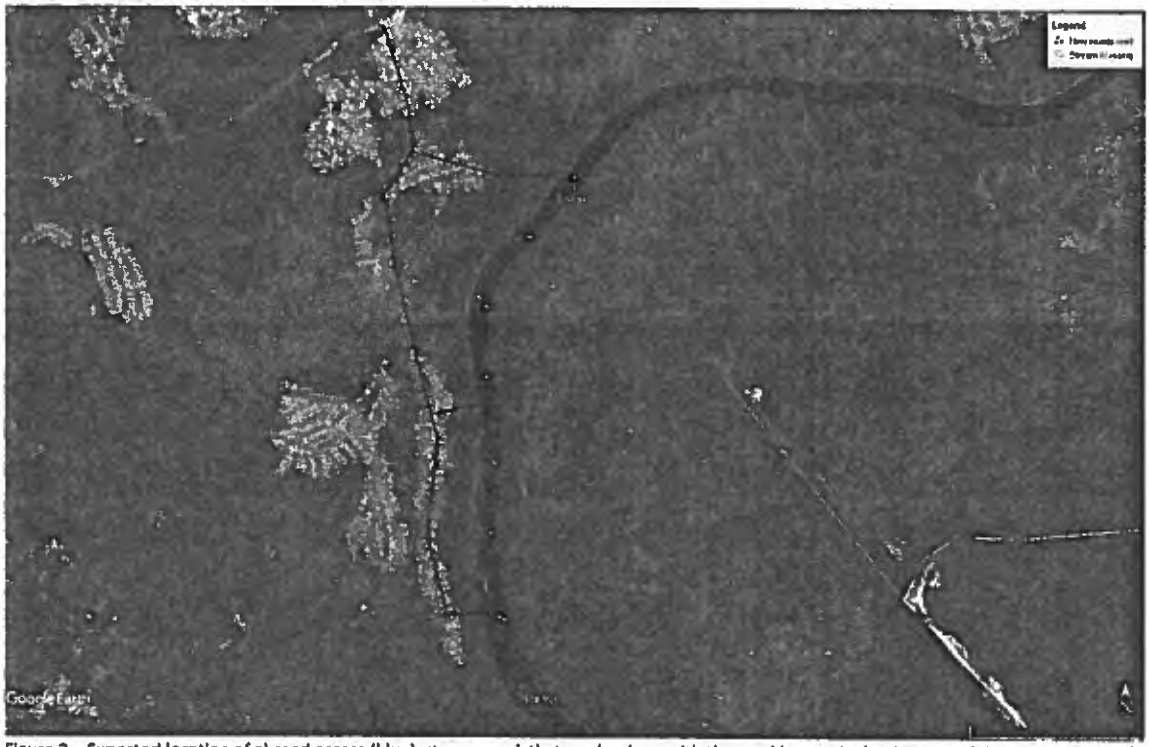


Figure 2 – Expected location of a) road access (blue), stream work that can be done with the machine on the bank or out of the water on top of newly constructed habitat structures (green) and expected locations of stream crossing by the excavator (yellow). Shown are sites #56 – 63.

Appendix C – DFO Review

Approval 2018-105032

Fisheries and Oceans Canada | Pêches et Océans Canada

Bedford Institute of Oceanography
1 Challenger Drive
P.O. Box 1006, Station P410
Dartmouth, Nova Scotia, B2Y 4A2

June 25, 2018

Your file / Votre référence
2018-105032

Our file / Notre référence
18-W-210

Kelly Henderson
Nova Scotia Environment
30 Damascus Rd. Suite 115
Bedford, NS
B4A 0C1

Subject: West River Sheet Harbour, Habitat Restoration– Serious Harm to Fish and Prohibited Effects on Listed Aquatic Species at Risk Can Be Avoided or Mitigated

Dear Ms. Henderson:

The Fisheries Protection Program (the Program) of Fisheries and Oceans Canada (DFO) received the proposal on May 30th, 2018. We understand that the proponent proposes to:

- Install rock stills to restore pool riffle structure and improve fish migration, spawning and rearing habitats. Repair intake of Killag River lime doser, repair habitat restoration structures installed in 2016-2017, install 5 new habitat restoration structures in the lower West River (#19-23) and install 8 new habitat restoration structures in the middle West River (#56-63).

Our review considered the following information:

- Nova Scotia Environment Application for Approval and all supporting documents and plans – file #2018-105032 received on May 31st, 2018.

The proposal has been reviewed to determine whether it is likely to result in serious harm to fish which is prohibited under subsection 35(1) of the *Fisheries Act* unless authorized. The proposal has also been reviewed to determine whether it is likely to affect listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in a manner which is prohibited under sections 32, 33 and subsection 58(1) of the *Species at Risk Act*, unless authorized.

Provided that the plans are implemented in the manner, and during the timeframe, described, the Program has determined that the proposal will not result in serious harm to

fish or prohibited effects on listed aquatic species at risk. As such, an authorization under the *Fisheries Act* or a permit under the *Species at Risk Act* is not required.

Should your plans change or if you have omitted some information in your proposal, further review by the Program may be required. Consult our (http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html) or consult with a qualified environmental consultant to determine if further review may be necessary. It remains your responsibility to avoid causing serious harm to fish in compliance with the *Fisheries Act*, and avoid prohibited effects on listed aquatic species at risk, any part of their critical habitat or the residences of their individuals in compliance with the *Species at Risk Act*.

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, serious harm to fish that are part of or support a commercial, recreational or Aboriginal fishery. Such notifications should be directed to http://www.dfo-mpo.gc.ca/pnw-ppe/violation-infraction/index-eng.html.

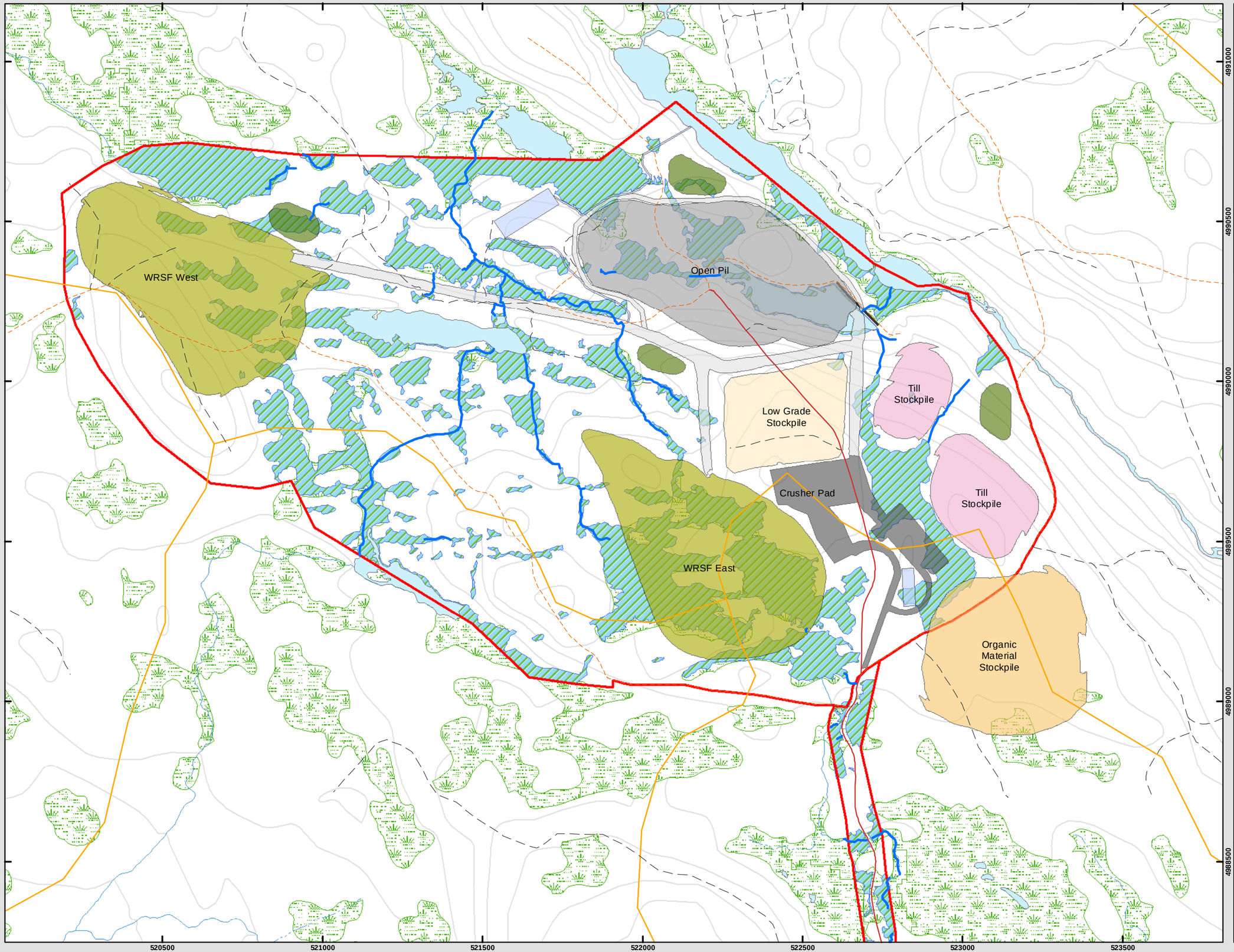
A copy of this letter should be kept on site while the work is in progress. It remains your responsibility to meet all other federal, territorial, provincial and municipal requirements that apply to your proposal.

If you have any questions with the content of this letter, please contact Tanya Pelrine at our Dartmouth office at 902-402-2578 or by email at tanya.pelrine@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

<Original signed by>

Tanya Pelrine
Hydro and Flows Biologist
Fisheries Protection Program



Prepared For:

ATLANTICGOLD

FIGURE 1
Beaver Dam
EIS Infrastructure Layout
UPDATE 27-JUN-19

Location
Melrose, NS

Updated Infrastructure

- LG SP
- Open Pit
- Crusher Pad
- Organic Material Stockpile
- Road
- Topsoil Stockpile
- Till Stockpile
- WRSF
- Water Management
- Tertiary Watershed Boundaries
- Field Delineated Watercourses
- Field Delineated Wetlands
- NSE Wetlands
- Project Area

Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 125 250 500 m

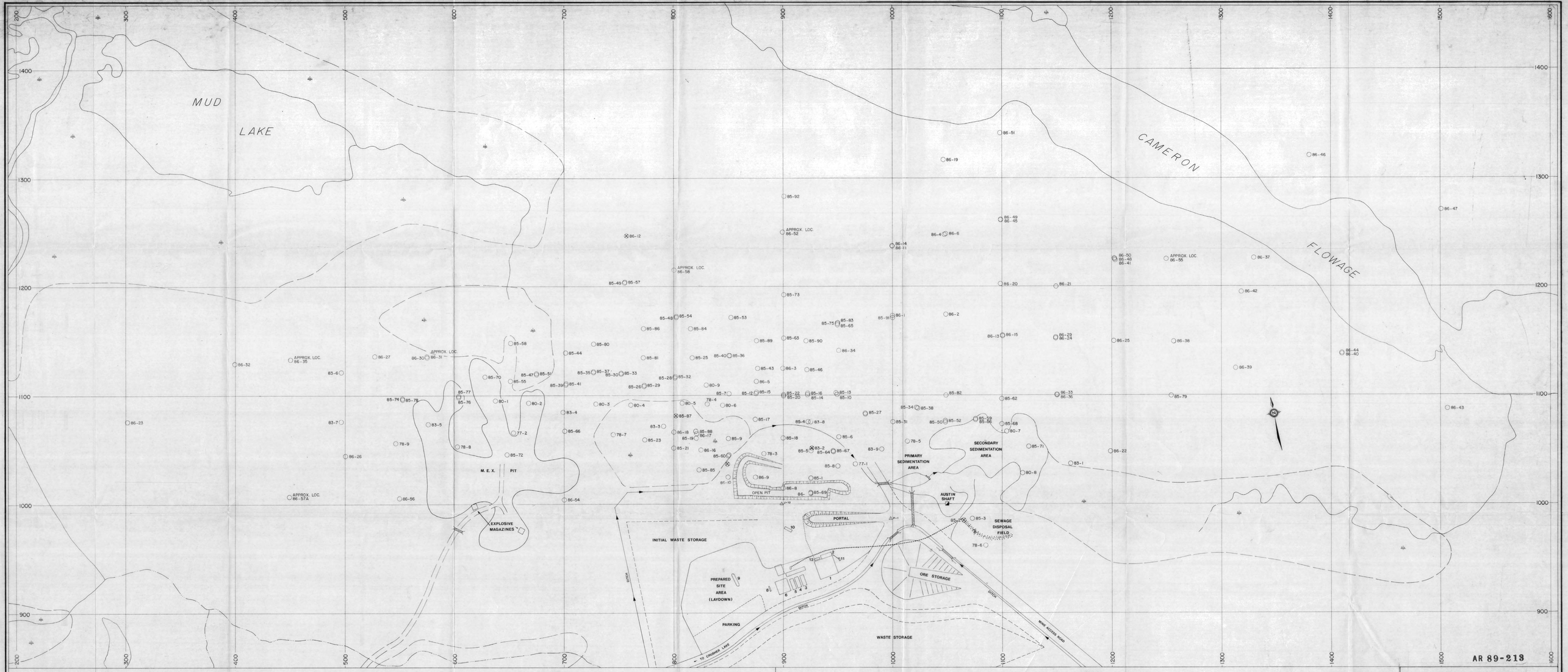
1:11,000 Scale when printed @ 11" x 17"

Drawn By: LP

Date: 6/27/2019

McCallum Environmental Ltd.

Document Name: 190627 INFRASTRUCTURE UPDATE



LEGEND

1 MAINTENANCE SHOP	7 SEWAGE TANKS	SEDIMENT RETRACTION WEIR	APPROXIMATE HOLE LOCATION	CEMENTED AND SURVEYED
2 GENERATOR AND COMPRESSOR	8 PROPANE TANK FOR DRY	CULVERT	86-30 HOLE IDENTIFICATION NUMBER	SURVEYED ONLY
3 FIRST AID	9 MOBILE STORAGE TANK (DIESEL)	DRAINAGE DITCH	STREAM	CEMENTED ONLY
4 OFFICE	10 WATER STORAGE TANK	MINE WATER DISCHARGE LINE	SWAMP	PARTIALLY CEMENTED
5 OFFICE	11 GENERATOR FUEL TANK	COMPRESSED AIR INTAKE LINE	SURVEYED CONTROL STATIONS	DESTROYED, NOT CEMENTED
6 DRY	12 COMPRESSED AIR TANK	SEWAGE LINE	WASTE STORAGE BOUNDARY	NOT LOCATED

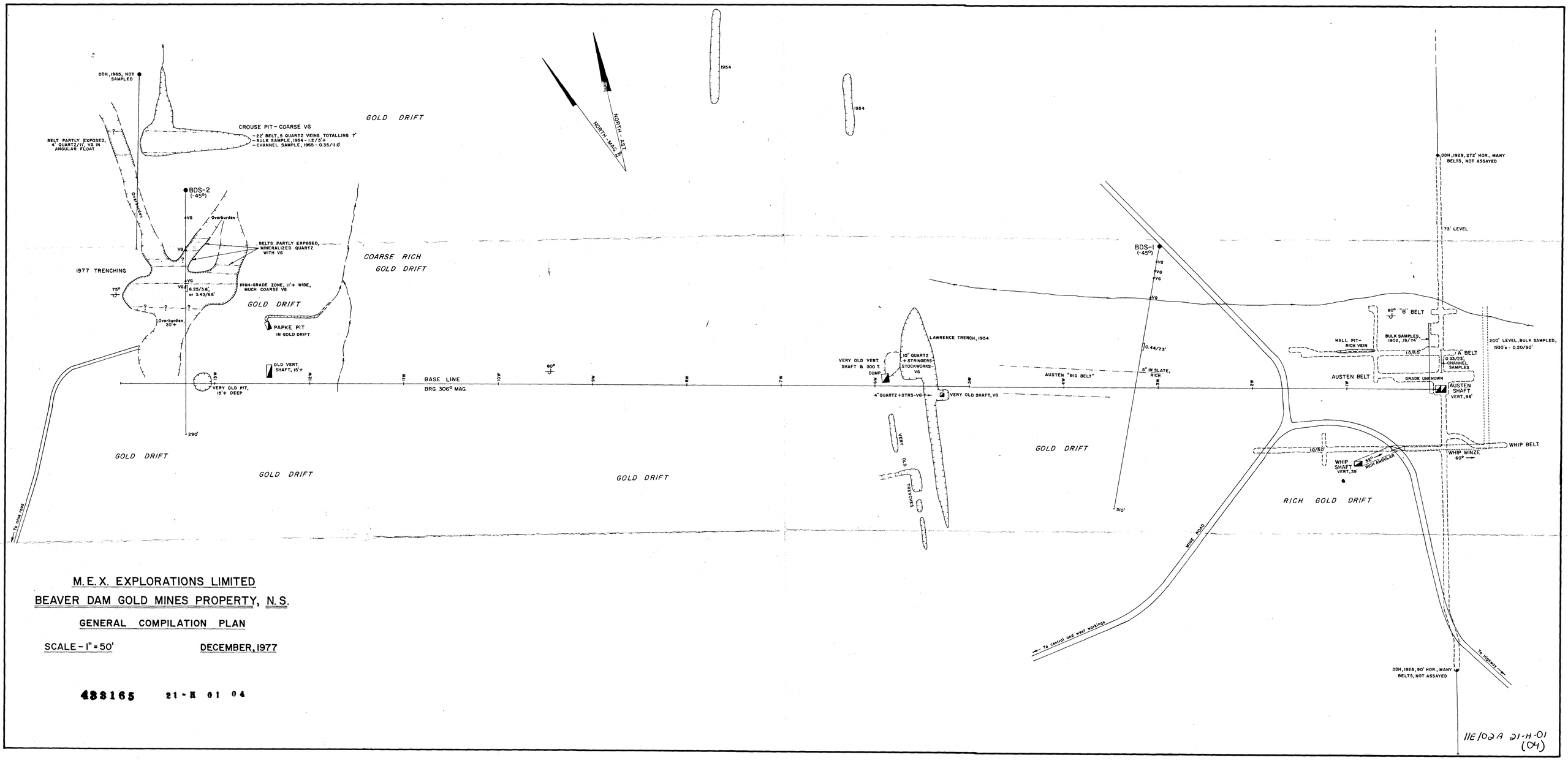
SEABRIGHT RESOURCES INC.

BEAVER DAM PROJECT

PLAN VIEW SHOWING DRILL HOLE LOCATIONS AND SITE PLAN

WORK BY	DATE REVISED	SCALE 1:1000
DRAWN BY D.M.C	PROJECT NO.	REPORT NO.
DATE	N.T.S.	FIGURE 3

AR 89-213



M.E.X. EXPLORATIONS LIMITED

BEAVER DAM GOLD MINES PROPERTY, N.S.

GENERAL COMPILATION PLAN

SCALE – 1" = 50' DECEMBER, 1977

BEAVER DAM GOLD DISTRICT

SCALE 1 INCH = 200 FEET

Surveyed in 1902 by E R Fairbault Geological survey

" " 1928

No 7