



AGNICO EAGLE

Design Report

Fresh Water Intake – Whale Tail Project

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1 Introduction

1.1 Site Location and Access

Agnico Eagle is developing the Project in the Kivalliq Region of Nunavut (65°24'25"N, 96°41'50"W). The 99,878-hectare Amaruq property is located on Inuit-owned and Federal Crown Land, approximately 55 km north of the Meadowbank mine. The Meadowbank mine is accessible from Baker Lake, located 70 kilometers to the south.

1.2 Site Facilities

Agnico Eagle Mines Limited – Meadowbank Division (Agnico Eagle) is developing Whale Tail Pit and Haul Road Project, a satellite deposit located on the Amaruq property, to extend mine operations and milling at Meadowbank Mine. The open-pit mine, mined by truck-and-shovel operation, will produce 19 M tons of ore grading at 3.68 g/t for a total of 2.1 M ounces from 2019 to 2025.

The Amaruq Mineral Deposit is considered to be an extension of the currently operating Meadowbank mine and most positions will be filled by Meadowbank employees. A conventional open pit mining operation is forecast on the Whale Tail deposit. Access to the site is via a 64-kilometers road from Meadowbank mine. On-site facilities will include a power plant, maintenance facilities, tank farm for fuel storage, water treatment plant, sewage treatment plant, drinking water treatment plant, as well as accommodation and kitchen facilities for approximately 319 people.

To supply site installation, a fresh water station (FWS) will be constructed. Figures 1 and 2 show the location of the future FWS including the pipeline from the Lake Nemo and the pumping station.

1.3 Purpose of Document

This report includes the final design and construction drawings for the FWS. The fresh water will be sourced from Nemo Lake and pumped through a pipeline.

The following infrastructure will also be covered into this document:

- FWS design,
- Pipeline.

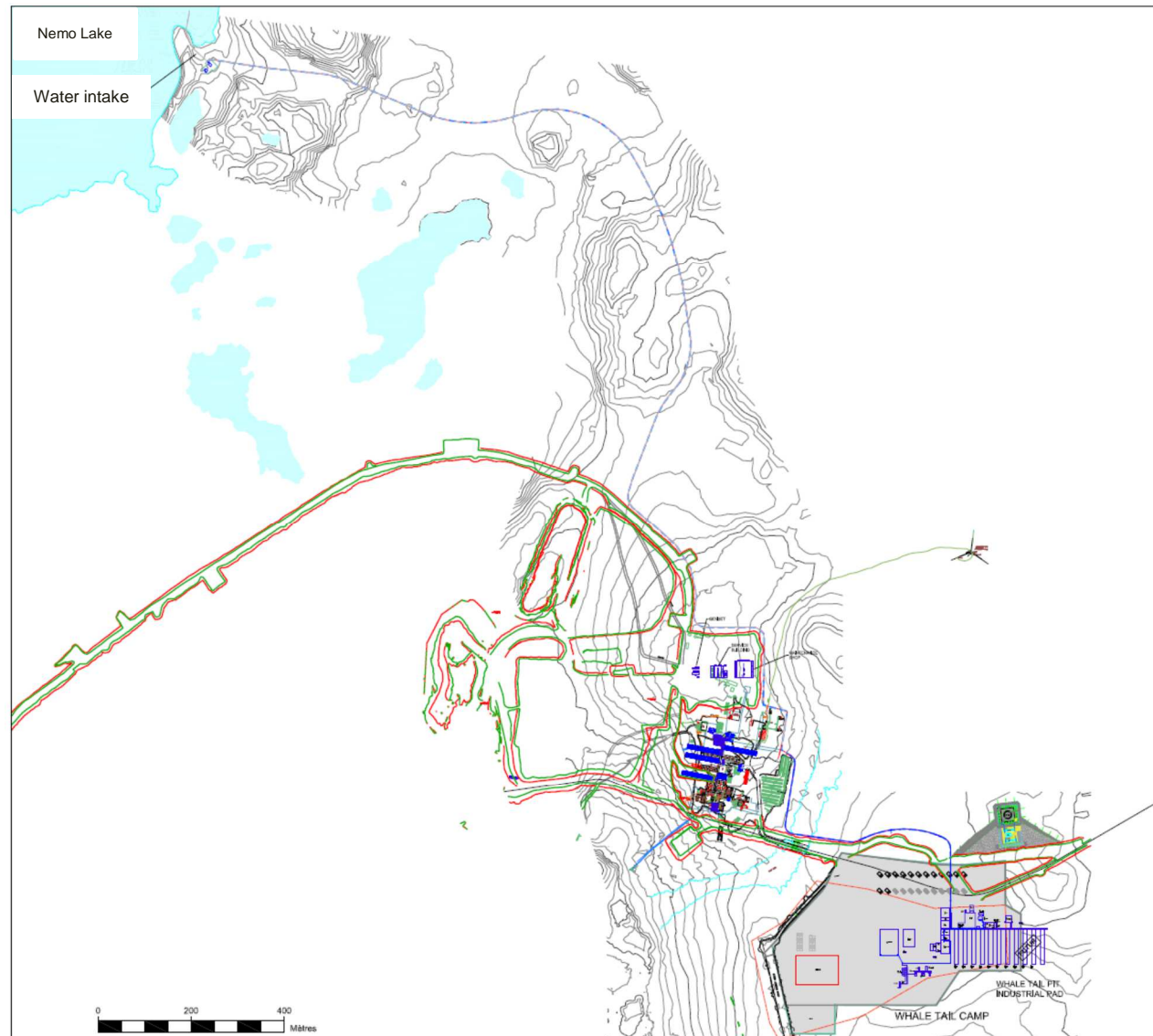


Figure 1 : Location of the FW

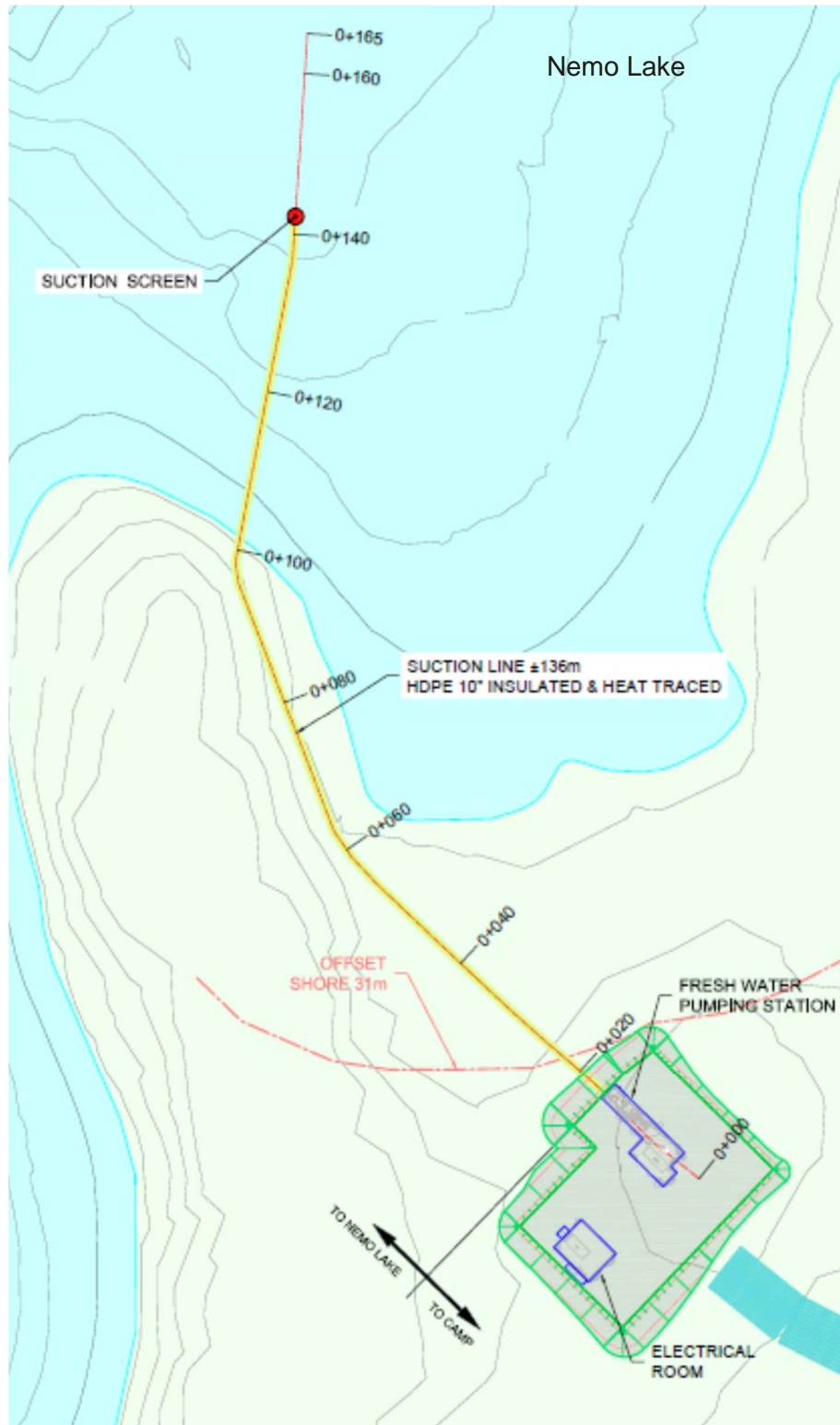


Figure 2 : Location of the FWS and the Feed Pipeline

1.4 Scope of Work

SNC-Lavalin Stavibel Inc. and Technosub were retained by Agnico Eagle to design the pumping stations and pipelines. AEM was in charge of writing the design report in collaboration with the consultant and suppliers. This report describes the pumping stations and pipelines. Construction drawings of the listed infrastructures are presented in Appendix of this report.

2 General Site Conditions and Other Data for Design

2.1 Environment Data

The Amaruq Mineral Deposit is located in the tundra region of the central sub-Arctic (the Barrenlands) at the lower end of the Northern Arctic Ecozone, and within the Wager Bay Plateau Ecoregion. The physical features of the region have largely been determined by glaciation. The terrain consists predominantly of broadly rolling uplands and lowlands with little topographical relief (very few hills). Strung out across the landscape is long, sinuous eskers. This undulating landscape is studded with innumerable lakes, ponds, and wetlands. Cryosols are the dominant soils, and are underlain by continuous permafrost with active layers that are usually moist or wet throughout the summer. Large boulder field areas are encountered.

The topography in the immediate area of the project is generally flat, with relief in the order of 10 to 12 m near the main deposit areas, and as high as 50 m locally. Elevations vary from about 150 meters above sea level (masl) along the shoreline of Whale Lake to about 200 masl. Much of the limited topographic relief in the area can be attributed to land features typical of glaciated and permafrost terrain.

Arctic winter conditions occur from October through May, with temperatures ranging from +5 to -40°C. Light to moderate snowfall is accompanied by variable winds up to 70 km/h, creating large, deep drifts and occasional whiteout conditions. Summer temperatures can range from -5 to +25°C, with isolated rainfall increasing through September. In the area of the Amaruq Mineral Deposit, ice is present on lakes from mid-September to mid-July.

2.2 Pumping requirement

The water will be used for feeding the potable water plant, the fire protection tank, the wash bay and for dust suppression.

3 Design of the Fresh Water Intake

Fresh water for site use will be pumped from Nemo Lake. The fresh water intake will consist of a 136 m long HDPE pipe of 10 inches of diameter, laying on the bottom of the lake. It will be held in place by weights. The submerged end of the intake pipeline is designed to limit entrained sediments. The facility

will include screens to avoid the entrainment of fish in the intake and the pumping rate will prevent impingement of the fish on any screens. The pipe feeding the camp is 3367 m long HDPE pipe of 6 inches DR17.

4 Pumping Station

4.1 General

Fresh water will be pumped from Nemo Lake to the camp (Fire protection tank and potable water plant) and for dust suppression. Part of the fresh water pumped will be directed to the Potable Treatment Plant, to be treated and then used as potable water for the whole site. The pumping station will be installed on the shore of Nemo Lake. A unique suction line will be installed in Nemo Lake, completed with a fish strainer.

4.2 Pump Narrative

Two pumps will be installed in the pumping station for the duration of the project. One will be operating while the second one will be standby in case of a failure of the operation pump. The maximum pump capacity is approximately 440 gpm.

4.3 Pumping Station

All mechanical and electrical pumping station equipment will be housed in a heated and insulated enclosure. Electrical equipment (e.g. control panel, junction boxes, VFD/soft starters, etc.) will be separated from the mechanical equipment (e.g. pumps, isolation valves, piping, piping accessories, etc.) by a wall and each room will have its own access door.

The enclosure has been designed following the site information and design coefficients (temperature, wind load, snow load, etc.) from the Agnico Eagle general guidelines to resist to the Nunavut climatic conditions. The enclosure will be installed on a levelled coarse compacted gravel surface. All surfaces will be painted in accordance with Agnico Eagle requirements to ensure corrosion resistance over the years of operation.

4.4 Suction Line

The suction line is made of HDPE piping of 10" diameter. The suction line will be 136 m in length. The section of the suction line from the pumping station to the water in Nemo Lake will be insulated and heat traced to prevent freezing. The section of the suction line going through the ice during winter will be insulated and heat traced. The suction line will be held in place by ballasts. The suction line ends with a fish strainer. The strainer consists of a ½ inch opening hole.

4.5 Piping

Piping manifold inside the pumping station will be made of steel with Victaulic connections for easy dismantlement during maintenance operations. All piping was hydrostatically tested at the manufacturing facility to insure tightness.

5 Design of the Pipelines

The pumping station for the fresh water intake transfer water through a total of approximately 3503 m of pipes (suction: 136 m and pipeline: 3367 m). The fresh water from the Nemo Lake will be pumped to the camp. A pipeline of 3367 m will connect the pumping station with the facilities, at the Camp Complex. Sections of the pipelines are insulated and/or heat traced when required.

5.1 Ground Pipelines

The above-ground pipeline will lie directly on the tundra along the access road to the Pumping Station. The sharp stones will be removed before the pipeline installation to reduce the risks of tears and premature wear. Since the pipeline will be water tight, no hazards or disturbances are expected after installation. After the complete installation and prior to the pumping station commissioning, a hydrostatic test will be performed to confirm the water tightness of the pipeline.

5.2 Submarine Pipeline

The suction line sections will be assembled on the shore, with the fish strainer and the ballasts. It will be deployed on the water, where it will float since it will be full of air. Once the suction line will be located correctly, the suction line will be flooded, to sink into its place.

5.3 Equipment

One magnetic flowmeter is installed on the line at the output of the pump in order to measure the fresh water consumption. The flowmeter is connected to a programmable logic controller (PLC) where data is logged.

6 Construction

6.1 Pad Construction

The FWS will be located close to the Nemo Lake, on a pad at 31 m from the shore.

6.2 Material used for construction

The rockfill required for earth work construction can be sourced from available material on site classified Non-Acid Generating / Non-metal leaching waste rock.

6.3 Quantities of material

The quantity of material required for the pad is 811 m³.

6.4 Quality Control and Survey

A quality control/assurance program will be required during construction of each of the infrastructure components to ensure that construction-sensitive features of the design are achieved.

Surveying will be carried out by Agnico Eagle to document the as-built conditions of excavations and fills including different material boundaries and facilitate the preparation of the as-built report.

6.5 Testing and Inspection

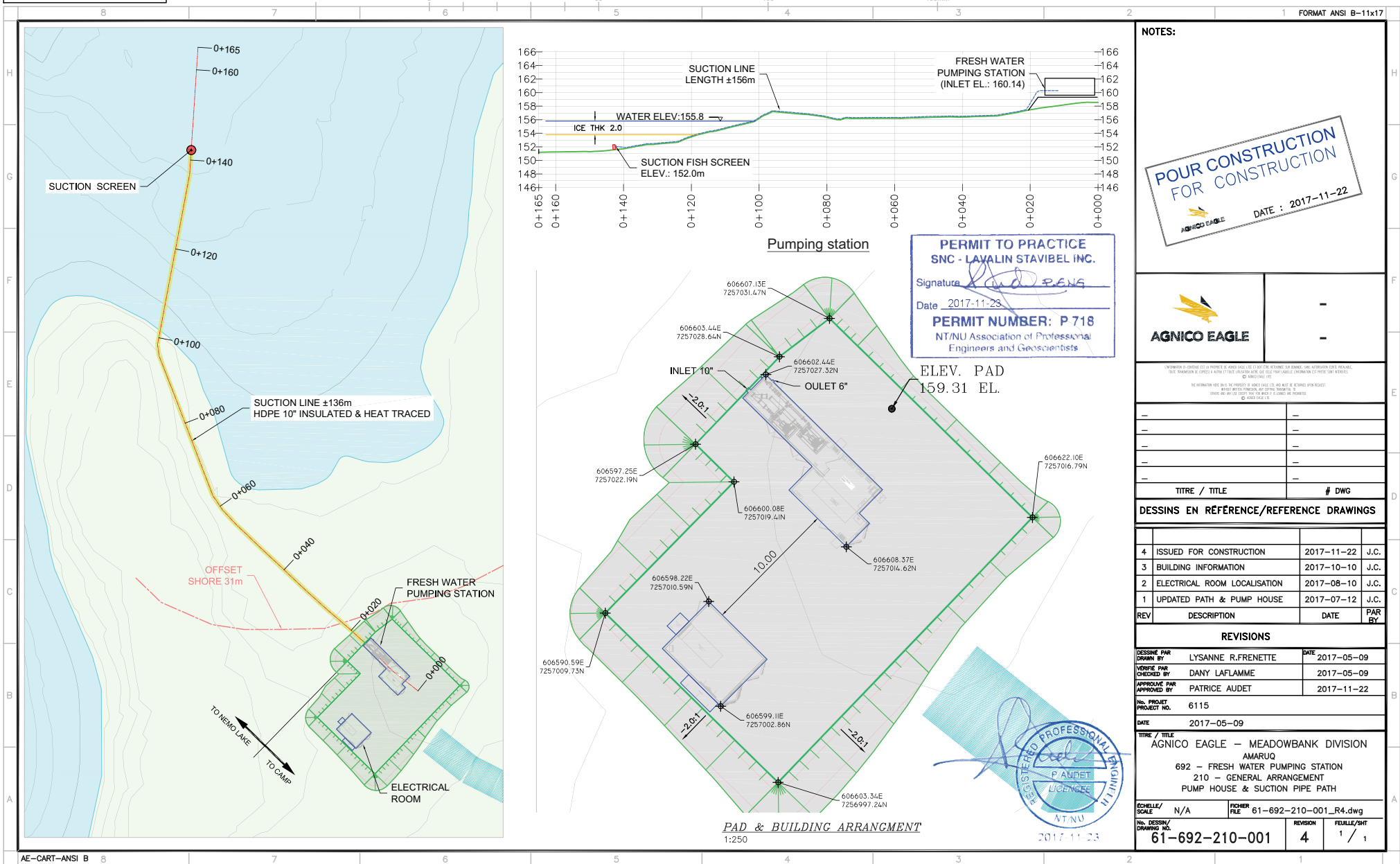
Prior to start up, the full length of pipelines will be tested for leaks at fusion weld and flange joints. If leaks are found, the joint will be re-welded or re-torqued and the hydrostatic test must be redone from the beginning.

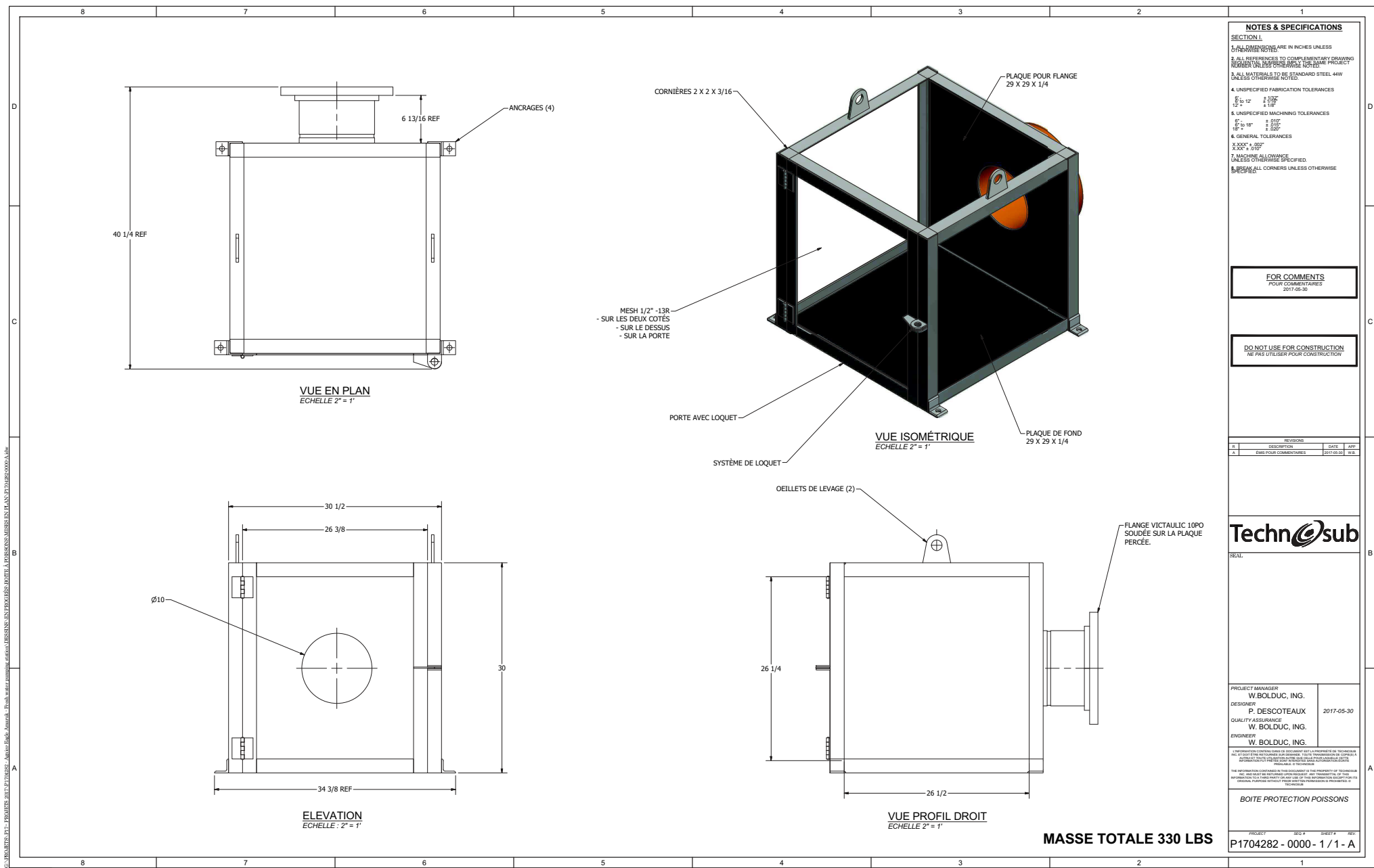
After start up, an annual inspection, performed by Agnico Eagle personal, will be done to ensure pipeline integrity.



Appendix

Appendix 1 – Construction Drawings





13-MOONSH-PTL-PROJETS-REV. 2017-05-30 - Auteur: Jack-Armand, Dessin: Jack-Armand, Revue: Jack-Armand, 13-MOONSH-PTL-PROJETS-REV. 2017-05-30 - Auteur: Jack-Armand, Dessin: Jack-Armand, Revue: Jack-Armand

