AGNICO EAGLE

MEADOWBANK DIVISION

Conceptual Whale Tail Lake (North Basin) Fishout Work Plan

FEBRUARY 2017

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DOCUMENT CONTROL

Version	Date	Section	Page	Revision
V1	Feb 2017	All	All	Version 1 was developed in response to DFO-2 information request during the technical review of Whale Tail Pit.

Plan prepared by:

Meadowbank Environment

Agnico-Eagle Mines Limited – Meadowbank Division

ACRONYMS

AEM	Agnico Eagle Mines Limited
CCME	Canadian Council of Ministers of the Environment
CEPA	*Canadian Environmental Protection Act*
CPUE	Catch per Unit Effort
CREMP	Core Receiving Environmental Monitoring Program
DFO	Department of Fisheries and Oceans
EC	Environment Canada
HADD	Habitat Alteration Disruption and Destruction
HEP	Habitat Evaluation Procedure
NNL	No Net Loss
NT/NWT	Northwest Territories
NWB	Nunavut Water Board

SECTION 1 • INTRODUCTION

1.1 Background

Since 2009, Agnico-Eagle Mines (Agnico Eagle) has operated the Meadowbank Gold Mine, which is located 75 km north of the Hamlet of Baker Lake, Nunavut. The mine site is connected to the hamlet by a 110 km all-weather road, and an airstrip onsite allows direct access for personnel and freight. The Meadowbank mine consists of several gold-bearing deposits that are currently extracted using three open pits (Goose Pit, Portage Pit, Vault Pit), two of which are currently operational (Portage Pit and Vault Pit). Much of the pit development is located in close proximity to the mill, office and lodging infrastructure, with the exception of the Vault Pit which is approximately 10 km northeast of the main minesite (Figure 1-1).

Under the current design plans and DFO authorizations, a portion of each of the pits occurs in lacustrine environment. As a result, construction was completed on a series of dikes to separate the pit areas from the remainder of the adjacent lakes. Under DFO authorizations, four lakes (Second Portage Lake, Third Portage Lake, Vault Lake and Phaser Lake) are to undergo partial or complete dewatering following dike construction, to provide access to the pit areas. To date, dewatering has been completed in the northwest arm of Second Portage Lake, the Bay-Goose Basin of Third Portage Lake, and Vault Lake. Following the submission of a revised Meadowbank No Net Loss Plan on October 15, 2012, Agnico Eagle received the *DFO authorization NU-03-019.4*, dated April 2, 2013, for Vault Lake which permitted harmful alteration, disruption or destruction of fish habitat under Section 32 (2)(c) and 35(2)(b) and the isolation, dewatering and operations in Vault Lake. Phaser Lake was isolated and dewatered in 2016 and mining has started under Authorization 14-HCAA-01046.

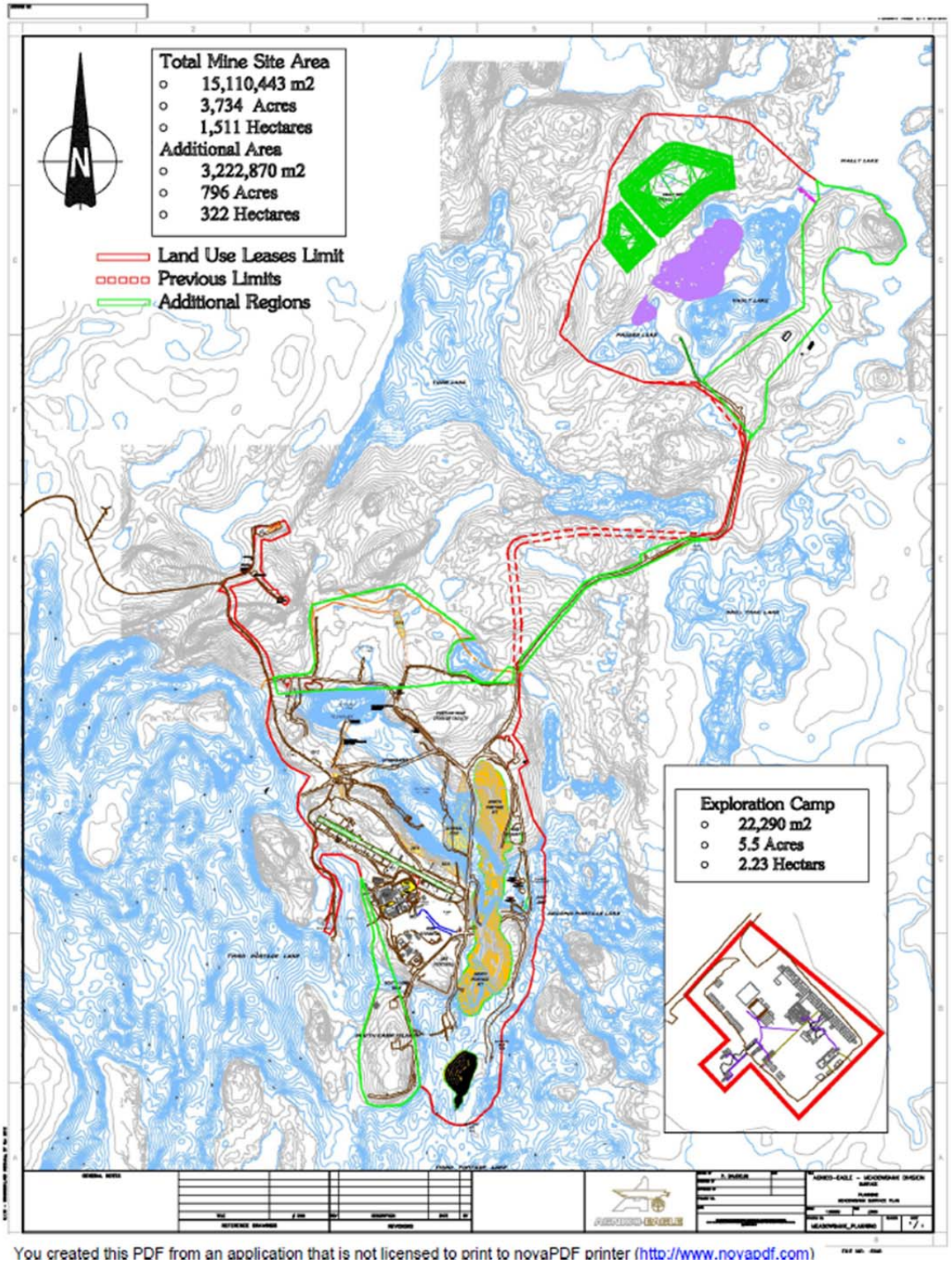
The fish-out programs conducted for the Meadowbank mine have been guided by the Tyson et al. (2011) *General fish-out protocol for lakes and impoundments in the Northwest Territories and Nunavut* and have been modified based on previous fishouts and local input between 2008 and 2016. The first fish-out program took place during the summer of 2008 in the northwest arm of Second Portage Lake (Azimuth, 2009); the second took place during the summer of 2010 in the Bay-Goose basin in the eastern portion of the Third Portage Lake (North-South, 2011); and the third was completed in the summer of 2013 in Vault Lake and a forth fishout was completed of Phaser Lake in 2016. The fish-out programs have incorporated inputs from the local community including: public presentations in Baker Lake, consultation during the preparation of the 2012 NNL Plan, hiring of local employees and reviews of the 2008, 2010, 2013 and 2016 fishout programs with the HTO and DFO during and following the completion of the respective programs.

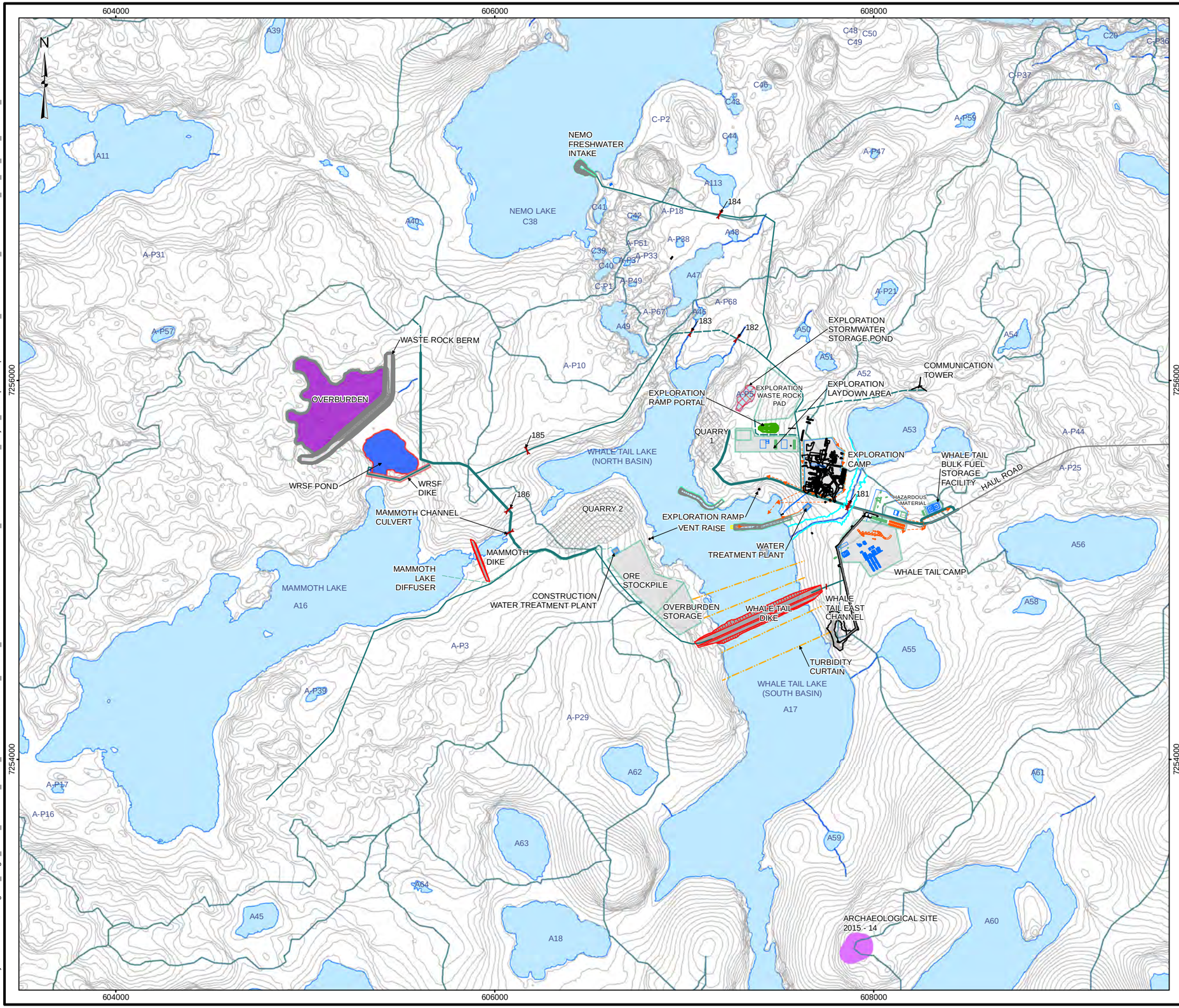
Agnico Eagle is proposing to develop Whale Tail Pit, a satellite deposit on the Amaruq property, in continuation of mine operations and milling of the Meadowbank Mine. The Amaruq Exploration property is a 408 square kilometre (km^2) site located on Inuit Owned Land approximately 150

kilometres (km) north of the hamlet of Baker Lake and approximately 50 km northwest of the Meadowbank Mine in the Kivalliq region of Nunavut. Agnico Eagle is proposing to mine the Whale Tail Pit which requires the isolation and fishout of the Whale Tail Lake (North Basin) prior to mining (Figure 1- 2, adapted from Agnico Eagle, 2017).

Consistent with the previous fishout work plans submitted to DFO, the following document outlines the objectives, timeline, methods and procedures that are proposed for the 2018 Whale Tail Lake (North Basin) fishout. As in the past, the conceptual fishout workplan has incorporated experience from the preceding fishout programs that included fish collection methods and data analysis provided by DFO representatives. Following the initial review of the plan by DFO and KIA, meetings with the Baker Lake Hunters and Trappers Organization (HTO) will be held prior to the fishout commencing to discuss the final fishout workplan.

Figure 1-1- Meadowbank Mine Site





LEGEND

- ROAD
- TEMPORARY ROAD
- COLLECTION CHANNEL
- CULVERT
- CONTACT WATER PUPE
- FRESHWATER PIPE
- TURBIDITY CURTAIN
- DIKE
- OVERBURDEN
- QUARRY
- STORM WATER STORAGE POND
- NATURAL WATERSHED
- POND/SUMP
- ARCHAEOLOGICAL SITE
- WATERBODY
- WATERCOURSE

REFERENCE

1. INFRASTRUCTURE OBTAINED FROM AGNICO EAGLE MINES LIMITED FROM 6108-600-210-001_R2(2018)s.dwg.
2. WATERCOURSE AND WATERBODY DATA OBTAINED FROM PHOTOSAT
DATUM: NAD 83 CSRS PROJECTION: UTM ZONE 14

400 0 400
METRES

PROJECT
AGNICO EAGLE

AGNICO EAGLE MINES LIMITED:
MEADOWBANK DIVISION
WHALE TAIL PIT PROJECT

TITLE

YEARLY SITE LAYOUT PLAN (YEAR -1: 2018)

Golder Associates

PROJECT		1541520	FILE No.	
DESIGN	JR	24 Mar. 2016	SCALE AS SHOWN	REV. 0
GIS	MH	11 May 2016	FIGURE 1-2	
CHECK	SO	06 Jun. 2016		
REVIEW	LY	06 Jun. 2016		

Y:\Burnaby\CAD-GIS\Client\Agnico_Eagle_Mines_Ltd\Whale_Tail\99_PROJECTS\1541520_FEIS\02_PRODUCTION\FEIS\MXD\1300_Documentation\1340_Project_Description\Report\WATER_MANAGEMENT_PLAN\1541520_FIG_A.1_SITE_LAYOUT_2018.mxd

1.2 Objectives and Scope

According to Tyson et al. (2011), the guiding principle of the Whale Tail Lake fish-out program is to ensure that both ecological data and fish specimens are collected in a manner that does not cause "fish wasting". In consideration of these principles and in consultation with the DFO, the objective of the fishout will be to rescue as many fish in Whale Tail Lake, recover and distributing fish to local communities and properly collect and record data that will meet the general requirements of Tyson et al. (2011). The fish-out program will have 3 core components: fish recovery and rescue from Whale Tail Lake (North Basin) and transfer the fish into Whale Tail Lake (North Basin) (Refer to Figure 1-3), CPUE phase, final removal phase, collection of biological data, and distribution of fish to Baker Lake.

1.3 Timeline

The schedule for implementing key elements of the fishout program in Whale Tail Lake (North Basin) will follow a similar timeline as was completed and approved by DFO for the fishout of Bay-goose Basin in 2010, which was completed concurrent with dike construction. The proposed schedule of the fishout program in Whale Tail Lake (North Basin) is shown in Table 1-1.

Figure 1-3- Illustration of fish transfer from Whale Tail Lake (North Basin) to Whale Tail Lake (South Basin).

Table 1-1 Proposed Timeline for 2018 Whale Tail Lake Fishout

Proposed Time	Activity	Description
July 1, 2018	Dike Construction	Begin dike construction of the Whale Tail Dike. Within approximately 10 days, completely isolate Whale Tail Lake (North Basin).
~July 10, 2018	Fishout	Fishout begins with the CPUE and rescue phase- fish community data collection, transfer of fish to Whale Tail Lake (south basin) and distribution of fish to Baker Lake. Complete CPUE and rescue phase and transition to final removal phase
End of August 2018	Fishout	Final removal phase and fish rescue.
September 2018	Fishout	Complete the Whale Tail Lake (North Basin) fishout
Sept 2018 to 2019	Dewatering	Dewatering or pumping water from the Whale Tail Lake (North basin) to the south basin or Mammoth Lake will continue until approximately Q2 2019.

SECTION 2 • COMMUNITY CONSULTATION AND FISH DISTRIBUTION

Prior to the fishout of the northwest arm of Second Portage Lake, on April 16, 2008, a presentation was given to the community of Baker Lake by Agnico Eagle and Azimuth Consulting Group Inc. (Azimuth) representatives. This presentation welcomed all community members and familiarized the community with the three proposed fishout programs, with a focus on the largest fishout of Second Portage Lake. It described in detail the meristics data that would be collected and a proposed method of fish distribution to the community. General questions regarding the program were raised by the community. In addition, one person expressed concerns regarding consuming fin-clipped fish. Informal discussions with other attendees suggested that this was not a general concern, so the program was not modified. No other concerns were raised.

Distribution of fish from the northwest arm of Second Portage Lake to the community of Baker Lake took place from mid-August to mid-October 2008. Meristics data from all fish were collected and categorized to size and species, and grouped into two categories: “people food” or “dog food”.

People Food: All lake trout and Arctic char greater than about 300 mm were processed on site (i.e., gutted and gilled) and shipped either fresh or frozen to Baker Lake. A small number of round whitefish, in excess of 250 mm, were shipped to town because some elders indicated they liked to eat whitefish. All fish destined for human consumption were placed within individual bags, heat sealed and identified whether fish were sacrificed (by pithing) or died in the nets. Some people preferred to eat fish that were sacrificed and not those that died in nets. Labelling individual bags allowed locals to choose what they preferred.

Dog Food: All small fish of all species and all burbot were frozen in small groups, bagged and frozen for use as dog food. Fish smaller than 100 mm were not processed; they were frozen whole for use as dog food.

The fish were transported in boxes to Baker Lake and placed inside of the community freezer and were made accessible to community members. Initially, during the first 2 – 3 weeks of fishing, fish were delivered fresh or frozen daily or every second day. As numbers of fish declined during the course of the fishing effort, shipments to town were reduced to every few days. Residents came down to the freezer and selected fish as desired. On occasion, boxes of ‘people food’ fish were taken to the local hospice and community center for special events which were coordinated by Agnico Eagle’s community liaison officer. Overall, the fish distribution in 2008 from Second Portage Lake was successful. Agnico Eagle received good feedback from the community on the program and all of the fish at the end of the season had been consumed by residents.

In consultation with the DFO and the HTO, in 2010, Agnico transferred many of the fish from the Bay-Goose basin directly into Third Portage Lake. The fish that were used for data collection were distributed to the community of Baker Lake in a similar manner as previously described for the 2008

fishout. The results of the 2010 fishout (North-South, 2011) were shared with the HTO during a Meadowbank mine site visit on June 13, 2011, following the completion of the 2010 annual report.

The Vault Lake fishout in 2013 and Phase Lake Fishout in 2016 was also done in similar fashion to previous dewatering and fishouts. Site tours were hosted with the HTO during the fishout and fish distributions to the community freezer were made regularly throughout the program. During discussions with the HTO in 2016 prior to and during the fishout, representatives did not have a problem with the previous fishouts and expressed an interest that the fish be packaged and distributed to the community as per 2008, 2010 and 2013 fishout programs. Furthermore, they understood that community members would be hired by Agnico Eagle or their consultant to assist in the fishout and that fewer fish will likely be delivered to the community because the fishout will focus on a fish transfer. Prior to the Whale Tail Lake (North Basin) fishout commencing, Agnico Eagle will host a meeting with the HTO to review the work plan and approach and answer any questions or concerns at that time.

SECTION 3 • REGULATORY SETTING AND PERMITTING

Agnico Eagle submitted to the Nunavut Impact Review Board (NIRB) a Conceptual Offsetting Plan for the Whale Tail Pit project. During the technical review process, DFO requested a fishout workplan for the Whale Tail Pit Project. During the technical review, authorization phase of the project and as final dike construction, dewatering plans and timelines are finalized, Agnico will work with the DFO and KIA to ensure the fishout work plan and proposed fishout methods meet the:

- objectives and goals of the DFO guidance *General fish-out protocol for lakes and impoundments in the Northwest Territories and Nunavut* (Tyson et al, 2011),
- consider KIA and HTO input,
- while meeting mine operations timelines for Whale Tail Pit Dike construction and subsequent operations.

Furthermore, prior to commencement of the fishout, Agnico will ensure the contracted fisheries consultant has applied for a license from DFO to Fish for Scientific Purposes and apply for a letter of approval of the Animal Use Protocol. All staff handling fish will be trained in proper fish handling as directed by the animal care department.

SECTION 4 • PROJECT MANAGEMENT AND FISHOUT PERSONNEL

As in past fish-out programs, a project team will be created to develop and implement the work plan. The project team will include a DFO habitat biologist, a project manager, a project field biologist, field technicians and field assistants. Field assistants will be staffed primarily from local communities (i.e., Baker Lake). The DFO habitat biologist will be the principal contact for Agnico during development of the work plan and will assist in providing advice to Agnico Eagle as required throughout the fishout. The project manager (i.e. Meadowbank Environment Coordinators) will represent Agnico Eagle and will be responsible for managing the fishout program including developing the work plan, communicating with DFO and providing deliverables to the regulatory agencies.

Agnico Eagle will contract experienced personnel, and will leverage the experience of the past fishouts by selecting personnel that have participated in the fish-out of Second Portage Lake in 2008, Bay-Goose Basin in 2010, Vault Lake in 2013 and Phaser Lake in 2016, on behalf of Agnico Eagle. The project biologist will work together with the project managers and will be responsible for the technical requirements and implementation of the fish-out program including aiding in the development of the work plan, training field staff, supervising field activities and data collection, QA/QC, data analysis and preparing deliverables. The field technicians will conduct the fish-out and data collection under the supervision and guidance of the project biologist.

SECTION 5 • ISOLATION OF WHALE TAIL LAKE (NORTH BASIN), TSS MONITORING AND TSS MITIGATION

5.1 Isolation of Whale Tail Lake (North Basin)

The Whale Tail Dike is planned to be constructed beginning immediately following the reception of authorizations and permits, which are anticipated no later than July 1, 2018. The isolation of the Whale Tail Lake (North Basin) from the Whale Tail Lake (South Basin) is expected to take approximately 10 days. As a result, no fish cut-off- net will be installed and the requirement of an isolated lake prior to the fishout beginning will be met (Tyson et al. 2011) prior to the start of the fishout which is anticipated to start in mid July.

5.2 TSS Monitoring and Mitigation

The Whale Tail Dike construction will occur during the open water period and in accordance with conditions of the Type A NWB License – 2AM-WTP ---. Dike construction monitoring and mitigation, including installation of turbidity curtains, will follow the *Water Quality Monitoring and Management Plan for Dike Construction and Dewatering* (Agnico Eagle, 2017). Monthly water quality monitoring in the Whale Tail Lake (North and South Basin) will take place during the Core Receiving Environmental Monitoring Program (CREMP) and as outlined in Agnico Eagle (2017).

SECTION 6 • FISH COMMUNITY ASSESSMENT AND FISH RESCUE

In accordance with Tyson et al. (2011), a mark recapture study was completed in 2008 during the fishout of the northwest arm of Second Portage Lake. The purpose of the study was to estimate the total fish population for the impoundment area. This phase of the fishout program began on August 3, 2008, once the cut-off net was in place and all necessary permits were acquired. Initially, two types of fish capture methods for this phase were used:

- Trap nets - two trap nets were set perpendicular to shore targeting fairly shallow areas where smaller fish would be expected.
- Gill nets – only 38-mm index gill nets were used for this phase. Each boat crew were able to fish with 4 to 8 net panels, set only for a short time (1 to 4 hours).

All nets and traps were moved regularly (every day or two) to cover all available habitats, with an emphasis towards shallow water habitats. Partial fin clips and/or floy tags were used to mark lake trout (the most abundant species) and Arctic char. Biological assessments in this phase were limited to fish mortalities. Species; weight; fork length (total length for burbot) were recorded for every fish. Fish were also palpitated where possible to identify sexually active males or females. Details of each set were recorded using the field forms.

The mark-recapture phase continued to the maximum duration of 14 days. A 10% recapture rate was achieved by the end of this period using a total of 275 sets of 6 x 45.4 m length gill nets. Following the Chapman adjustment to Schnabel's method, the index of abundance was calculated; 1497 lake trout were estimated and 58 Arctic char. These estimates underestimated the true population size; at the end of the fish out a total of 2018 lake trout and 485 arctic char had been captured. The Catch-Per-Unit-Effort (CPUE) study (described in Section 6) proved to be a more accurate predictor of population size; the CPUE estimated a total of 2690-2710 fish (using the DeLury and Leslie regression models) while the true total number of fish captured at the end of the fish out was 3079.

At the end of the 2008 fishout of the northwest arm of Second Portage Lake, Agnico Eagle made the following observations/conclusions:

- The mark recapture phase of the fish out program took a total of 17 days to complete (14 days of fishing and 3 days of waiting to begin the CPUE phase). Given the short ice-off period at the site, this took valuable time away from the goal of fishing out the impoundment area.
- The results from the mark recapture study were limited in usefulness. The CPUE phase gave a far more accurate estimation of initial abundance.
- The fish out program concluded on October 16, 2008. Due to high winds and icy conditions from mid- September until early October (when ice-over conditions started), weather conditions posed a serious safety risk for the fishout field personnel.

Consequently, in collaboration with DFO, Agnico omitted this phase of the fishout program for the Bay Goose basin in 2010, Vault Lake in 2013 and Phaser Lake in 2016, which permitted the fishout crews to concentrate their efforts on the CPUE phase and final removal phase. As the CPUE phase of the program has the same purpose as the mark recapture phase, Agnico Eagle concluded that the intent of the draft DFO fish out protocol was met.

Similar to the 2013 and 2016 fishout and in accordance with Tyson et al. (2011), Agnico Eagle proposes to omit the mark and recapture phase for the Whale Tail Lake (North Basin) fishout.

6.1 CPUE phase

The objective for the Catch Per Unit Effort (CPUE) phase is to collect fish community CPUE data for the entire fish population in Whale Tail Lake (North Basin). This involves collecting fish using a standard unit of effort for the duration of the phase. The equipment type, fishing methods, unit effort and fishing periods will remain the same as in the 2013 fishout for the duration of the CPUE phase.

The CPUE phase of the fishout program will begin as soon as possible after ice-out (with an anticipated start date of July 15, 2016, see Table 1-1). Fish will be captured using the same gear that was employed in 2008, 2010 and 2013. Six panel gill nets of stretched mesh sizes 126, 102, 76, 51, 38, and 25 mm will be used, with an increasing total number of nets/panels deployed as CPUE declines over time. Panels will be 1.8 m deep by 22.7 m. Nets will be moved every day or two to ensure full coverage of Whale Tail Lake (North Basin); duration of sets may vary as this phase of the program proceeds (i.e., similar to the 2008, 2010 and 2013 programs, in the later season when catches are low and water is cold, set durations may be longer). Angling may also be used to minimize fish capture times and volunteers from the mine site may participate in the fishout.

As in 2008, 2010, 2013 and 2016, CPUE data will be analyzed daily using both the Leslie and DeLury methods. As updated and available, data and graphs will be sent to DFO every 2 days by email. Unit of effort for the Whale Tail Lake Fishout will remain comparable to previous fishouts, despite a greater effort to rescue and transfer fish (Tyson et al, 2011). All data from net sets will be recorded on field forms. Similar forms will be used as in the 2016 fishout program (see Appendix A). All captured fish will be identified to species, weighed and measured for fork length (total length in the case of burbot). Fish will also be gently palpitated to identify reproducing males or females prior to their release. A detailed biological assessment will be conducted on all fish that do not survive the transfer (ie. on incidental mortalities). More specifically, a detailed biological assessment will be conducted for a representative number of fish (we will aim to collect 30 from the dominant species lake trout and round whitefish (as they are often the least likely to successfully survive transfer), that may not survive the fish rescue and transfer). Similar to what was conducted in the past, this assessment on incidental mortalities will include:

- Detailed internal and external examinations will be conducted on each of the fish to determine sex, reproductive status, parasite presence, and overall apparent health (e.g., DELT - deformities, erosions, lesions or tumors). A subset of these fish will be subject to more invasive measurements/sampling.
- Aging structures (otoliths and/or fins) will be taken (if possible) from all species across a range of expected size classes.
- Stomach contents will be collected from the same fish and either be analyzed in the field (e.g., whole fish can easily be counted) or preserved if more detailed analysis is needed. In the latter case, samples will be uniquely labelled (and associated with a uniquely identified fish), and placed in a 10% buffered formalin solution in whirl-pac bags. Stomach contents will be processed on site by the Project Biologist or sent to North/South in Winnipeg.
- Gonad weights and fecundity (female only) will also be measured for the same fish. Ovaries will be preserved in buffered formalin (or modified Gilson's solution) and analyzed for fecundity (on site or at North/South in Winnipeg), where a subsample of at least 100 eggs will be weighed to allow the estimation of the total number of eggs.
- Liver weights and metals samples will also be taken. Livers will be weighed in their entirety and frozen for shipment to the laboratory for analysis.
- Fish guts not retained for analytical sampling will be incinerated on site, as requested by DFO during the 2008 fishout.

Agnico Eagle will begin discussing the completion of the CPUE phase with DFO when:

- there has been a consistent, statistically significant (e.g., $p<0.10$) decline over a 10-day or greater period (for at least one of the two CPUE population estimate methods); and/or
- overnight sets are catching very few fish regardless of the location of deployment.

When one or both of these criteria are met, in consultation with the DFO, the nets will be removed for 24 hours. Following the no-fishing period, nets will be re-deployed to confirm that the CPUE phase has met DFO expectations. The decision of determining when the CPUE phase is complete and the final removal will begin will be made in consultation with DFO.

6.2 Fish Transfer (Rescue) and CPUE phase

With DFO approval, during the CPUE phase fish that appear healthy and capable of recovery will be transferred to Whale Tail Lake (South Basin). The decision to transfer individual fish will be a made in the field by fish technicians under the direction of the project biologist and local staff. Although considerable effort will be made to salvage and transfer as many fish as possible, the effectiveness of the salvage efforts will be evaluated in consultation with DFO. Based on 2013 fishout results, it is expected that the greatest number of fish will be salvaged during the first weeks during the CPUE phase, while catch rates remain high. However, fish are expected to be rescued through all phases as successful rescue and transfer of fish will be the main priority. All healthy fish that appear

unaffected by capture and handling (i.e., especially VECs such as lake trout) will be transferred primarily into Wally Lake.

As in the past, fish will be transferred in aerated cold water tubs. The water temperature and number of healthy fish transferred will be recorded. Ideally, both length and weight measurements, and a physical inspection will be taken for all fish. However, to reduce handling time, only length may be taken for the transferred fish. All fish >250mm in length will be floy tagged (to identify each individual) and transferred into Whale Tail Lake. Fish <250mm, found to be healthy will be fin clipped or left unmarked and released. Detailed records will document mortalities due to capture, handling or transfer. Fish recovery rates were 50% for lake trout and arctic char at other northern projects (Ekati and Diavik) with very poor recovery rates for whitefish. However, based on the success in 2013 and 2016 fish transfer, where approximately 60 to 72% of the fish were successfully transferred within the first few weeks of the fishout, Agnico is anticipating a similar success rate for the Whale Tail Lake fish rescue.

Overall, the goal of the fishout rescue is to preserve the net productivity of the system. Due to the flooding of Whale Tail Lake (South Basin) between 2019 and 2023, Agnico Eagle believes the transfer of fish is a viable option that is expected to assist in maintaining the fisheries productivity of the lake (i.e. a no net loss of productivity) in the enlarged Whale Tail Lake (south basin) and assist in a rapid recovery of Whale Tail Lake (North Basin) during reclamation or reflooding of the end pit lake. Although there is some uncertainty given the exact timing of the fishout and sequence of flooding, it is expected that Whale Tail Lake will provide a temporary “reservoir” or holding area for transferred fish that will ultimately be relocated back into Whale Tail Lake (North Basin) in post closure.

Based on our experience and observational data, Agnico Eagle will work with the DFO to develop the workplan to control factors that may contribute to mortalities of fish during the fish transfer and CPUE stage of the fishout. This will include managing:

- The CPUE phase and avoid as much as possible cold and windy weather conditions that make it unsafe to be on the water which ultimately lengthens the duration of the net sets;
- The timing of fish transfer (transfer of fish in July and early August when the water is cold appears to improve fish transfer rates);
- Net set depths and location to protect more sensitive species type (despite efforts to protect all fish species, round white fish have higher rates of mortality during the fish out and transfer); and
- Discuss with DFO the requires of collecting meristics data according to Tyson et al. (2011) requirements.

SECTION 7 • FINAL REMOVAL PHASE

In consultation with DFO, the final removal will take place immediately after the CPUE phase is completed. The objective of the final removal phase is to remove all of the remaining fish. Over the course of the final removal phase, the fish will be concentrated into smaller basins of water (see Table 1-1). The final fish removal phase may include: using all available fish capture techniques and methods not used in the CPUE phase (including smaller nets, angling, bating nets to capture fish, etc.). Every effort will be made to remove all of the fish from the waterbody. The removal phase will be completed when final benchmarks are met that may include:

- no fish are caught for 48 hours, and then after a 24 hour break, no fish are caught for an additional 48 hours; and/or
- catch has declined to near zero and the total abundance and/or biomass has reached at least 95% of the estimated initial abundance from the CPUE data.

Similar to the 2008, 2010, 2013 and 2016 fishouts, gill nets will be used as the principal gear to capture the fish. However, the number of gangs will be increased, and Agnico Eagle may consider using larger mesh sizes; in addition, some fine mesh "Swedish" gill nets (8mm, 10mm and/or 12.5mm nets) will be incorporated into the program. As in the past, effort will continue to be recorded approximately so that depletion estimators can be evaluated. All captured fish during the final removal will continue to be processed for biological information, but details regarding which net or mesh size caught each fish may not be recorded.

The final removal in the 2018 open water season will be based on the fishout data, drawdown timing, weather, and personnel safety.

SECTION 8 • AQUATIC BIOLOGY AND LIMNOLOGY DATA COLLECTION

Prior to disturbance caused by mine activity, data was collected for limnology, water chemistry, sediment chemistry, periphyton biomass, zooplankton and benthic invertebrate data in Whale Tail Lake (Azimuth, 2016). Fish community surveys were complete in Whale Tail Lake and determined the presence of four large bodied species: lake trout, round whitefish, burbot and Arctic char; and two small bodied species: Slimy Sculpin and Ninespine Stickleback (Portt, 2015). These data provide a complete account of background limnology, aquatic biology and fish community assemblages in Whale Tail Lake prior to mining activities.

SECTION 9 • HABITAT MAPPING

Thorough physical habitat inventories were conducted prior to mine activity to evaluate habitat in Whale Tail Lake and are presented in Portt (2015) and the Conceptual Offsetting Plan (Agnico Eagle, 2016). The results of the habitat evaluation procedure submitted provides a thorough evaluation of fish habitat loss due to proposed Whale Tail Pit operations.

Habitat mapping of the northwest arm of Second Portage Lake was completed from July to August 2009, after dewatering removed a sufficient volume of water to expose the habitat. Low level photogrammetric aerial photographs were taken of the whole impoundment area; these photos will be used to confirm earlier estimates of habitat quality and will allow derivation of a relationship between habitat area and fish biomass. Similarly, in 2012, a physical habitat mapping comparison using aerial photography, high resolution ground surveying and GIS of a portion of the Bay-Goose basin was completed and was submitted as part of the 2012 annual reporting. These data allowed for an analysis of the habitat evaluation procedure (HEP) used for Bay-Goose basin predevelopment and compare the methods and results to after dewatering. Given the level of detail, GIS capabilities and statistical approaches available for these analyses, Agnico Eagle will consult with the DFO to determine the necessity in collecting additional follow-up habitat mapping in Whale Tail Lake.

SECTION 10 • REPORTING

DFO has developed data input forms to match the data collected during all fish-out activities. Agnico will use the DFO approved forms to enter the field data into an Excel database or to suit DFO requirements. Data entry will not be finalized until all results are available (example field sheets are presented in Appendix A); at that time it will be provided to the DFO.

Data analysis and reporting will include an interpretative report as well as raw data tables and summary statistics of data. Specifics will include, but not limited to, the following:

- Introduction and objectives,
- Review of methodology, including maps showing where gear was placed,
- Analysis of CPUE data according to the Leslie and DeLury methods, including best estimates of population sizes and consideration of uncertainty. Depending on findings, the analysis may also extend to biomass rather than only abundance (i.e., similar to the 2008, 2010, 2013 and 2016 analysis)
- Copies of field data sheets and photographs; and
- Discussion of results in comparison to the 2008, 2010, 2013 and 2016 fishouts.

SECTION 11 • REFERENCES

AEM. 2012. Agnico-Eagle Mines: Meadowbank Division No Net Loss Plan. Submitted to DFO on October 15, 2012.

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APPENDIX A • FIELD DATA COLLECTION FORMS

We propose to use the same field sheet as was used during the 2016 Phaser Lake Fishout.

Meadowbank Project. Fish-Out CPUE Phase Field Data Sheet

A. Gear set data

Location / ID:			Number of panels by mesh size (for GNs):		Net Length (m):
	Start location	End of Net (in NAD 83)	25:___ 38:___ 51:___ 76:___ 102:___ 126:___		Net Height (m): All are 2m
Easting:			Set date:		Net depth at each end (m): /
Northing:			Set time:		Surface temp:
Recorder:			Lift date:		Wind direction / speed:
Field Staff:			Lift time:	General comments:	

B. Fish sample data

These fields for every fish						Field fish data [3]			Fish Transfer				Lab Analysis: Biological Assessment							Comments (including results of internal / external examinations including DELT)		
Species Code	Sample ID or Number	Floy Tag #	Mesh Size[1]	Length [2]	Weight (g)	Sex	Repro Status	Maturity	Mortality	Cause of Death: (Net/ handling/ transfer)	Successfully transferred to TPL?		Aging Structure [4]	Stomach weight (or % full) & contents - indicate if preserved for taxonomy	Ovary weight (g)	Weight of 100 eggs	Liver Weight (g)	Liver metals sample?[5]	Tissue metals sample?[6]			
			(mm)	(mm)	(g)	M/F	Code	Code	Y/N		Y/N	Tag #	Code(s)					Y/N	Y/N			

Notes: 1. See mesh size options in section A. 2. Fork length for trout, char and whitefish; total for all others. 3. Fill out fields for sex, repro status and maturity based on "milking" for most fish. 4. otoliths and fins for LT and AC, otoliths only for burbot and whitefish, none for sculpins or sticklebacks. 5. Some stomachs to be processed in field; some to be sent to lab - see plan. 6/7. Liver sample should be coded as "fish sample ID" + "L". Tissue samples should be coded as "fish sample ID" + "T"