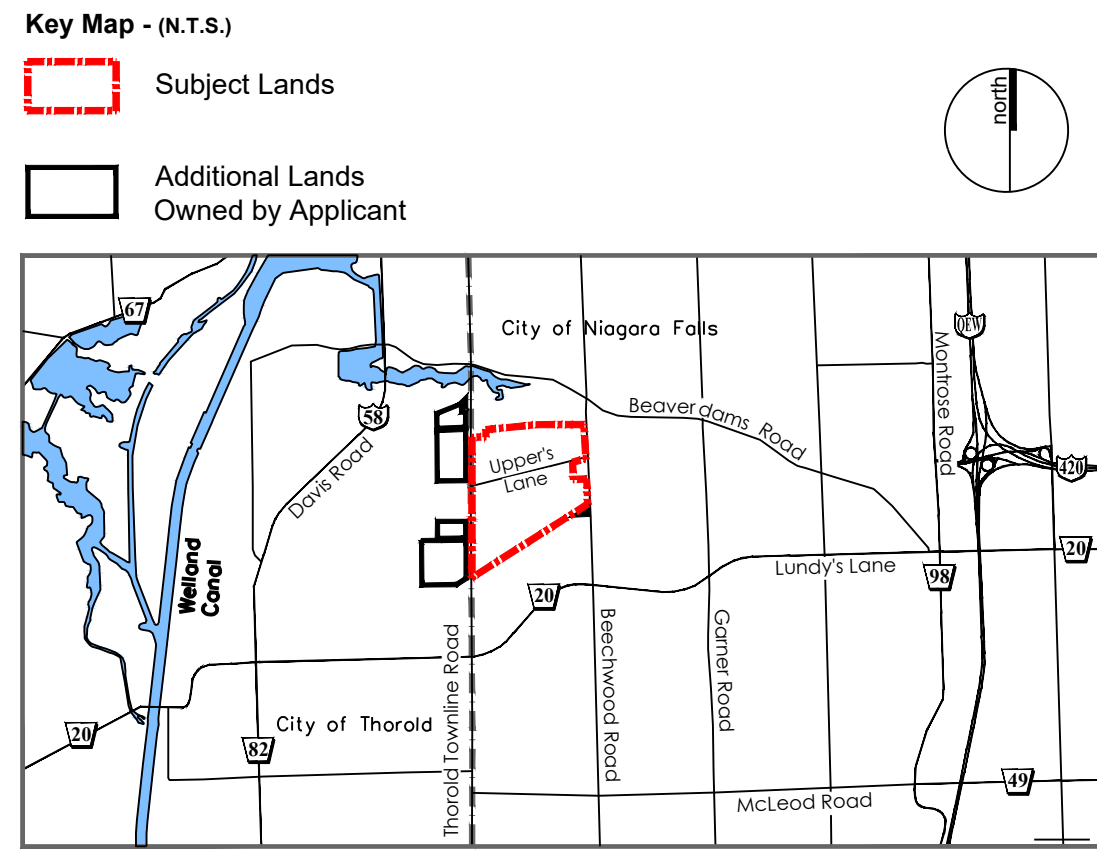




A. General

- This Site Plan is prepared under the Aggregate Resources Act for a Class A Licence for a quarry below the ground water table.
- Areas to be licenced:
 - 103.6 ha. (±256.0 ac.)
 - 89.1 ha. (±220.2 ac.)

B. References

- Contour information was obtained from a topographic survey prepared by TEG Engineering (formerly Renshaw (Canada) Limited) using October 2016 and February 2017 aerial photography and are displayed in one metre intervals. Elevations shown are in metres above sea level (masl).
- Topographic information was obtained from numerous sources including Ontario Geospatial Information (Ontario), Google Earth Pro aerial photography captured on July 18, 2018 and field investigations for technical reports.
- All topographic features and structures are shown to scale in Universal Transverse Mercator (UTM) with North American Datum 1983 (NAD83), Zone 17 (metre), Central Meridian 81 degrees west coordinate system.
- Property boundaries were obtained from a Plan of Survey prepared by Matthews, Cameron, Heywood-Kerry T. Howe Surveying Ltd. dated April 5, 2012. Other property boundaries were established using Municipal Property Assessment Corporation (MPAC) parcel fabric data.
- Zoning categories on or within 120 metres of the licence boundary are from the City of Niagara Falls Zoning Bylaw No. 79-200 (Schedules A3 and A4 - Consolidation April 2015) and the City of Thorold Zoning Bylaw No. 60-2019 (Schedules A8 and A13 - dated May 2019).
- Land use information on or within 120 metres of the licence boundary has been compiled from October 2016 orthophotography, site visits and water well survey data.

C. Groundwater

- The maximum predicted water table is 184.9 masl and the contact aquifer potentiometric contours ranges between 176.0 and 184.9 masl (as per WSP's "Proposed Upper's Quarry - Maximum Predicted Water Table Report", dated October 2021).

D. Drainage

- Existing surface water drainage on and within 120 metres of the licence boundary are by overland flow in the direction shown by arrows on the plan view.

E. Site Access and Fencing

- There are two (2) existing site accesses on Thorold Townline Road, six (6) existing site accesses on Upper's Lane, and three (3) existing site accesses on Beechwood Road.
- Post and wire fencing (unless otherwise noted) exists in the locations shown on the plan view.

F. Significant Features

- All significant natural features on and within 120 metres of the licence boundary are shown on the Key Natural Heritage Features Schematic on this drawing.
- All significant human-made features on and within 120 metres of the licence boundary are shown on the plan view.

G. Aggregate Related Site Features

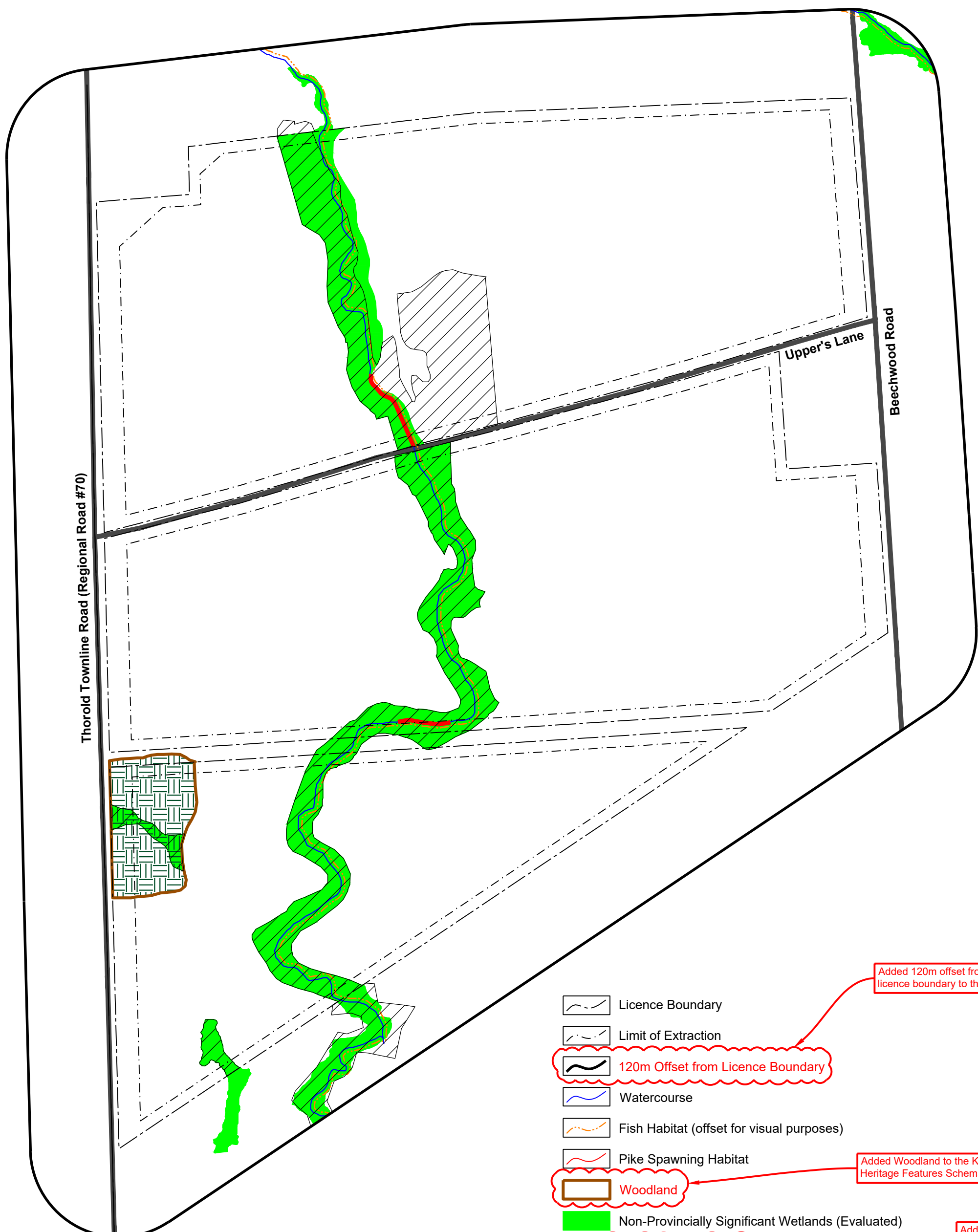
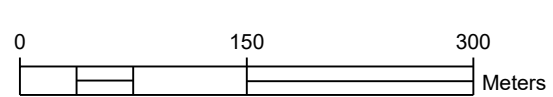
- There are no existing aggregate operations or features within the licence boundaries such as stationary or portable equipment, stockpiles, recyclable materials, scrap, fuel storage, haul roads, berms or excavation faces.

H. Technical Reports - References

- Upper's Quarry: Acoustic Assessment Report, RWDI, August 2, 2023 January 11, 2024.
- Agricultural Impact Assessment for Upper's Quarry, Colville Consulting Inc., October September 2021.
- Upper's Quarry: Air Quality Assessment, RWDI Air Inc., July 12, 2023.
- Archaeological Assessments:
 - Stage 1 Archaeological Resource Assessment of Walker Aggregates Proposed South Niagara Quarry, Part of Lots 102, 119, 120, 136 & 137, Archeological Services Inc., December 2008.
 - Stage 1-2 Archaeological Assessment of Part 0764 Upper's Lane, Part of Lots 119 & 120, Archeological Assessments Ltd., November 3, 2005.
 - Stage 2-3 Archaeological Assessment, Part of Lots 102, 119, 120, 136 & 137, Archeological Assessments Ltd., November 21, 2012.
 - Stage 1-2 Archaeological Assessments, Upper's Quarry Additional Lands, Part of Lots 119, 120, Archeological Research Associates Ltd., April 20, 2020.
 - Stage 3 Mitigation of Development Impacts, Final Excavation Report, Walker XI (AgT-411), Upper's Quarry, Archeological Research Associates Ltd., May 26, 2021.
 - Stage 4 Mitigation of Development Impacts, Final Excavation Report, Walker XI (AgT-178), Upper's Quarry, Archeological Research Associates Ltd., July 22, 2021.
- Blast Impact Analysis, Upper's Quarry, Explotech, August 2023 April 2024.
- Cultural Heritage Impact Assessment Report, Proposed Upper's Quarry, MHBC, October 2021.
- Economic Benefits Analysis, Prism, February 2023 April 2024.
- Level 2 Water Study Report and Response to JART Hydrogeological Comments, WSP, October 3, 2022.
- Maximum Predicted Water Table Report, WSP, October 2021.
- Upper's Quarry, Niagara: Level 1 and Level 2 Natural Environment Technical Report and Environmental Impact Study, Stantec, August 2023 April 2024.
- Planning Justification Report and Summary Statement, MHBC, August 2023 April 2024.
- Traffic Impact Study and TIS Addendum, Upper's Quarry, TYLin, March 23, 2023.
- Visual Impact Assessment, Proposed Upper's Quarry, MHBC, October 2021 April 2024.

Key Natural Heritage Features Schematic

Scale 1:5000

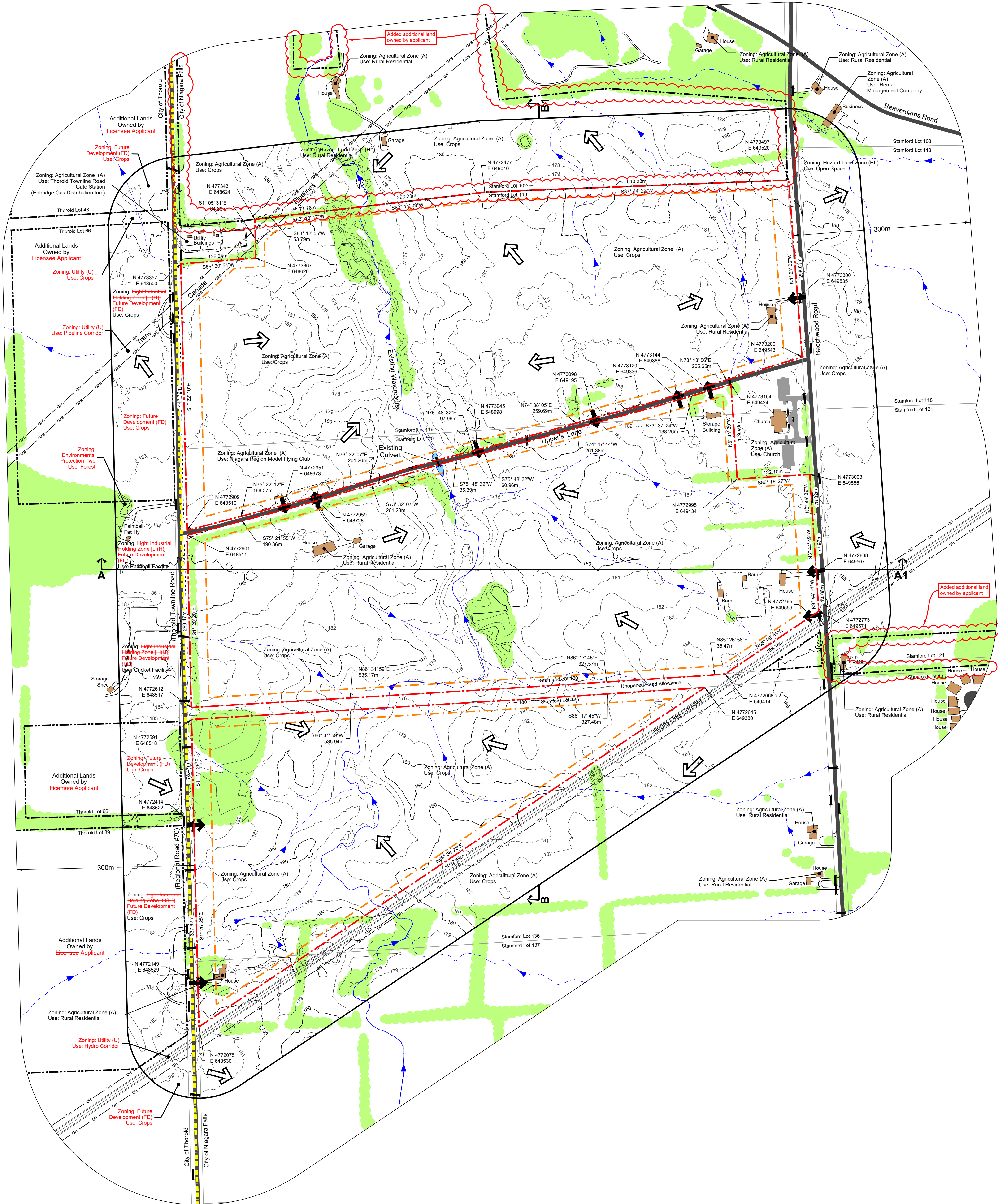


- Licence Boundary
- Limit of Extraction
- 120m Offset from Licence Boundary
- Watercourse
- Fish Habitat (offset for visual purposes)
- Pike Spawning Habitat
- Woodland
- Non-Provincially Significant Wetlands (Evaluated)
- Significant Wildlife Habitat - Mammal
- MNR-Mapped Deer-Wintering Congregation Area Significant Wildlife Habitat - Non S&R Bat Habitat Seasonal Concentration Area

Added 120m offset from the licence boundary to the legend

Added Woodland to the Key Natural Heritage Features Schematic

Added Significant Wildlife Habitat - Mammal to the Key Natural Heritage Features Schematic



Legal Description

Part of Lots 119, 120, 136 & 137
City of Niagara Falls (Geographic Township of Stamford)
Regional Municipality of Niagara

- Licence Boundary
- Limit of Extraction
- Additional Lands Owned by Licensee Applicant
- Municipal Boundary
- Contours with Elevation (Metres above sea level (MASL))
- Public Road
- Fence (1.2m post & wire farm fence unless otherwise noted)
- Watercourse (Direction of flow indicated by arrows)
- Surface Drainage Feature (Direction of flow indicated by arrows)
- Water Feature
- Wooded Area
- 120m Offset From Licence Boundary
- Parcel Fabric
- Trans Canada Pipeline Easement
- Hydro One Easement
- Existing Site Access
- Direction of Surface Drainage
- Existing Culvert
- Building/Structure
- Cross Sections

Site Plan Acronyms

- ARA - Aggregate Resources Act
- MNRF - Ministry of Natural Resources and Forestry
- MHSTCI - Ministry of Heritage, Sport, Tourism and Culture Industries
- MECP - Ministry of the Environment, Conservation and Parks
- MGCS - Ministry of Government and Consumer Services
- DFO - Department of Fisheries and Oceans Canada
- ECA - Environmental Compliance Approval
- BMP - Best Management Practices Plan
- PTTW - Permit to Take Water
- MASL - Metres above sea level
- TCPL - Trans Canada Pipeline
- ROW - Right of way
- HMA - Hot mix asphalt
- PWQO - Provincial Water Quality Objectives
- MISA - Municipal Industrial Strategy for Abatement
- TSS - Total Suspended Solids
- NCD - North Channel Design

Site Plan Amendments

No.	Date	Description	By

Site Plan Revisions (Pre-Licensing)

No.	Date	Description	By
1	January 2022	Added Key Natural Heritage Features Schematic and Section F to the site plan notes	C.P.
2	August 2023	Updated site plan to incorporate JART and MNRF comments	C.P.
3	April 4, 2024	Updated site plan to incorporate JART and MNRF comments	C.P.

No.	Date	Description	By
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MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
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MHBC Stamp

Debra Walker
Is authorized by the Ministry of Northern Development, Natural Resources and Forestry pursuant to Subsection 0.2(3)(i) of Ontario Regulation 244/97 to prepare and certify site plans.

MHBC Stamp

Christopher Poole
Is authorized by the Ministry of Northern Development, Natural Resources and Forestry pursuant to Subsection 0.2(3)(i) of Ontario Regulation 244/97 to prepare and certify site plans.

Applicant



Walker Aggregates Inc.
2800 Thorold Townline Road
P.O. Box 100
Thorold, Ontario
L2V 3Y8

Project

Upper's Quarry

MNRF Licence Reference No.	Applicant's Signature
Plan Scale: 1:3000 (Arch E)	Date: October 2021 April 4, 2024
0 90 180 Meters	Drawn By: C.P. File No.: 9811V
File Name	Checked By: D.W.
Drawing No.	Existing Features
1 of 6	
File Path	N:\9811V - Walker Upper's Quarry Drawings\Site Plan\CAD\9811V - Site Plan.dwg

A. General

- This plan depicts a schematic operations sequence for the property based on the best information available at the time of preparation.
- Phases do not represent any specific or equal time period.
- The direction of extraction will be in accordance with the General Direction of Excavation (shown on the plan view) unless otherwise authorized by MNRF. Notwithstanding the operational and rehabilitation notes, demand for certain products, blending of materials or Water Study Contingency measures may require minor deviations in the extraction and rehabilitation sequence. Any major deviations from the operations sequence shall require approval from the MNRF. The maximum combined disturbed area which includes the processing plant, berms, stockpiles, fill pond, active extraction area and area being stripped for the final area of extraction within the licence boundary identified on this Drawing but excludes the area of Phase 1A needed for the continued operation of the asphalt plant for the life of the quarry. Concurrent extraction of phases is permitted for blending purposes provided the overall maximum combined disturbed area does not exceed 40 hectares to ensure progressive rehabilitation of the site is being undertaken as required by the Site Plans.
- Progressive and final rehabilitation will be completed in direct correlation to the development of the quarry as the extraction limits are reached and enough area is available to ensure that rehabilitation activities will not interfere with the production, stockpiling and processing of aggregate materials.

B. Initial Site Preparation

- A Conservation Easement shall be placed on the lands identified as Woodland Mitigation Planting Areas (off-site) that are situated outside of the licence area and such Easement shall be registered on the lands prior to the commencement of Phase 1 (1A and 1B) to secure protection of the lands for conservation purposes in perpetuity.
- Generally, site preparation in Phases 1 and 2 to include but not limited to:
 - Constructing the main entrance and cross over(s) in accordance with entrance permit approvals
 - Establishing fencing around licensed boundary (see Section N Variations from Control and Operation Standards on drawing 2 of 6)
 - Removal of trees and existing buildings (in accordance with all site plan requirements and applicable regulations)
 - Proceed with stripping of overburden/topsoil from Phase 1 and, if necessary, Phase 2
 - Construction of berms/acoustic barriers within the perimeter setback of the licence boundary (as shown on the plan view)
- Initial plantings in Woodland Mitigation Planting Area (off-site) in accordance with the Rehabilitation Plan. Off-site plantings will be completed in the Woodland Mitigation Planting Areas (off-site) prior to the removal of the woodlot south of the unpaved road allowance in Phases 1A and 1B.
- Install water management and erosion and sediment control measures (all fencing) in accordance with note D.1 on this drawing and note E.1.4 on drawing 4 of 6.
- Commence portable crushing/screening plant set up. The plant shall operate in accordance with Section A on drawing 4 of 6 for all Phases.

C. Phase 1 (1A and 1B)

- Commence extraction in the 'Initial Sinking Cut Area' identified in the Mid and South Extraction Area (see plan view for location).
- Phase 1A shall be extracted in up to three (3) lifts to a depth ranging between 140 masl and 145 masl.
- Phase 1B shall be extracted in one (1) to two (2) lifts to a depth of 155 masl.
- A portable pump shall be utilized as necessary in the Mid Extraction Area and the South Extraction Area to discharge water to a man-made pond for aggregate washing or to a sediment forebay before being discharged to the existing watercourse. During heavy rainfall events (25 mm or more), the pump will be deactivated as necessary to prevent flooding along the watercourse downstream of the site. The discharge pond and forebay locations will move with the quarry face until the final quarry depth is reached in each extraction area. At this point, a permanent sump shall be established in each extraction area.
- During Phase 1, a new watercourse channel shall be constructed along the east side of Thorold Townline Road (within Phase 1B) for the eventual realignment of the existing watercourse. As resource extraction is completed in Phase 1B, this area will be filled with clay overburden material from on-site to an elevation ranging between 173 to 178 masl. The new watercourse and riparian wetland channel shall be constructed, designed and vegetated in accordance with DFO's authorization and this Rehabilitation Plan (drawing 5 of 6).
- As extraction reaches the final quarry floor, and there is sufficient separation from the quarry floor working areas in Phase 1A, a 2:1 adioslope along the easterly and northerly limit of Phase 1B shall be backfilled with either: (i) overburden stockpiled on-site; (ii) overburden in Phase 2; or (iii) material imported from Licence Numbers 11175 and 4437 (subject to drawing 5, note C.7) or with overburden in Phase 4.
- Commence site preparation of Phase 2.

D. Phase 2 (2A & 2B)

- Commence extraction in the 'Initial Sinking Cut Area' identified in the North Extraction Area (see plan view for location).
- Phase 2A shall be extracted in up to three (3) lifts to a depth ranging between 141 masl to 145 masl.

Extraction Sequence Schematic

Scale 1:7500



- Off-site plantings to be initiated as part of Site Preparation and completed prior to Phase 1
- Undisturbed
- Site Preparation
- Under Extraction
- Progressive and Final Rehabilitation

- Phase 2B shall be extracted in one (1) to two (2) lifts to a depth of 155 masl.

- A portable pump shall be utilized as necessary to discharge water to a man-made pond for aggregate washing or to a sediment forebay before being discharged to the existing watercourse. During heavy rainfall events (25 mm or more), the pump will be deactivated as necessary to prevent flooding along the watercourse downstream of the site. The discharge, pond and forebay locations will move with the quarry face until the final quarry depth is reached. At this point, a permanent sump will be established.
- Similar to Phase 1, the new watercourse channel shall be constructed within Phase 2 running along the east side of Thorold Townline Road (Phase 2B) for the eventual realignment of the existing watercourse. As resource extraction is completed in Phase 2B, this area will be filled with clay overburden material from on-site to an elevation ranging between 173 to 178 masl. The new watercourse and riparian wetland channel will be constructed, designed and vegetated in accordance with DFO authorization and Rehabilitation Plan (drawing 5 of 6).
- As extraction reaches the final quarry floor, and there is sufficient separation from the quarry floor working areas in Phase 2A, a 2:1 adioslope along the easterly and northerly limit of Phase 2B shall be backfilled with either: (i) overburden stockpiled on-site; (ii) overburden in Phase 3B; or (iii) either material imported from Licence Numbers 11175 and/or 4437 (subject to drawing 5, note C.7) or with overburden in Phase 4.
- Commence site preparation of Phase 3.

E. Phase 3 (3A & 3B)

- Proceed with stripping of overburden/topsoil.
- Prior to undertaking any works within Phase 3A that may result in any serious harm to fish, according to 35(1) of the Fisheries Act, the Licensee shall obtain a Fisheries Act Authorization from the Department of Fisheries and Oceans (DFO) and shall fulfill any other conditions required by the DFO as stated on its authorization. Once obtained, a copy of the Fisheries Act Authorization shall be provided to the MNRF. Once the watercourse has been realigned to the satisfaction of DFO, stripping of overburden and topsoil can proceed in Phase 3A.
- In the event that watercourse relocation has not been approved or completed, extraction in Phase 3B may proceed before extraction in Phase 3A.
- In the event that Phase 3B is extracted before Phase 3A, a portable pump shall be utilized as necessary to discharge water to a man-made pond for aggregate washing or to a sediment forebay before being discharged to the existing watercourse. During heavy rainfall events (25 mm or more), the pump will be deactivated as necessary to prevent flooding along the watercourse downstream of the site. The discharge, pond and forebay locations will move with the quarry face until the final quarry depth is reached. At this point, a permanent sump will be established.
- Phase 3A and 3B shall be extracted in up to three (3) lifts to a depth ranging between 145 masl to 149 masl. Extraction will proceed in an easterly direction, moving gradually from north to south.
- Once the existing watercourse has been realigned, stripping and extraction in Phase 3A may proceed.
- Complete progressive rehabilitation of new watercourse and riparian wetland channel in accordance with Rehabilitation Plan (drawing 5 of 6).
- Continue progressive rehabilitation of the quarry perimeter where limits of extraction have been reached and there is sufficient separation from the quarry floor working areas.
- Commence site preparation of Phase 4.

F. Phase 4

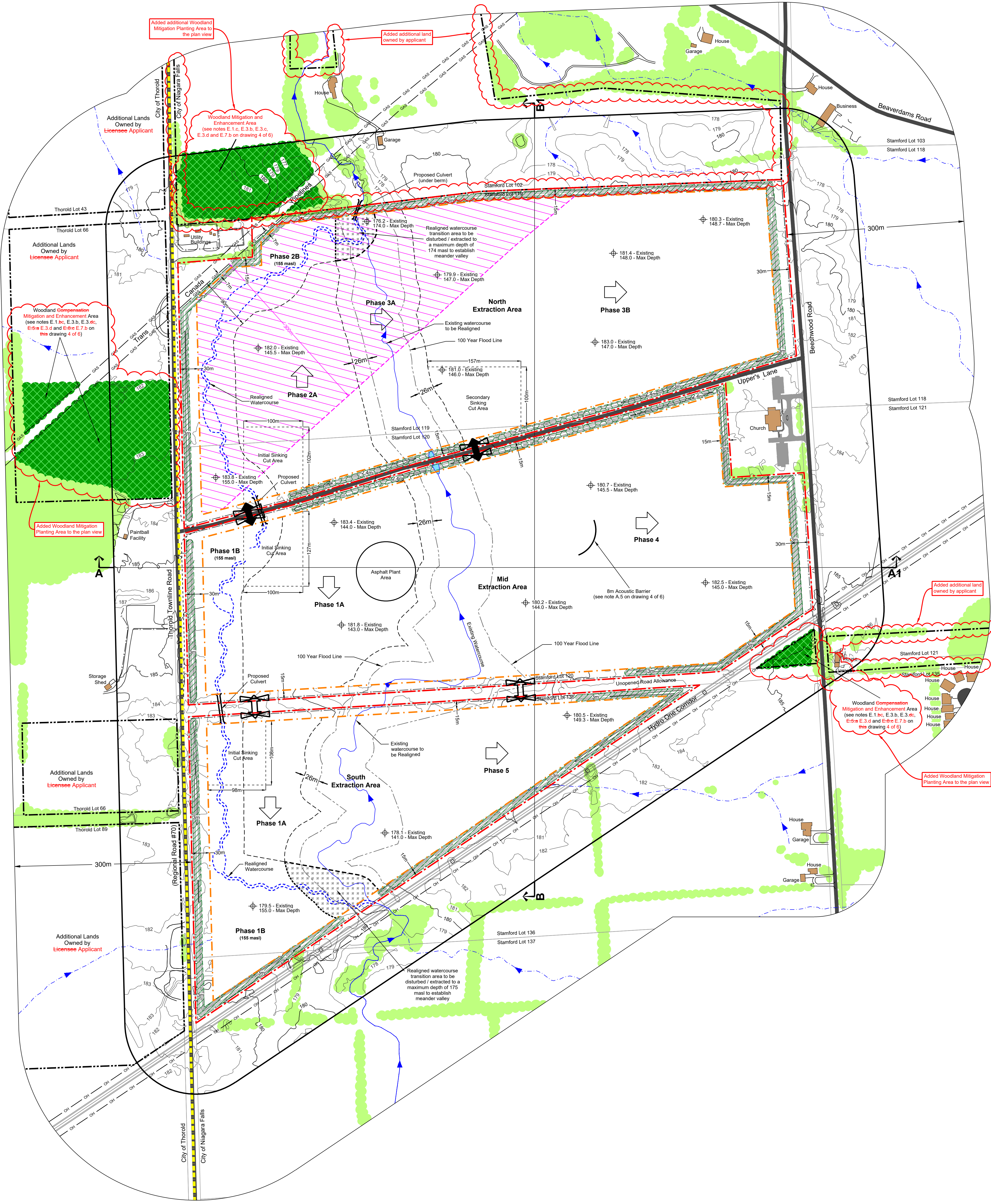
- Proceed with stripping of overburden/topsoil.
- Commence Phase 4 extraction in an easterly direction, moving gradually from north to south.
- Phase 4 shall be extracted in up to three (3) lifts to a depth ranging between 142 masl in and 147 masl.
- Continue progressive rehabilitation of the quarry perimeter where limits of extraction have been reached and there is sufficient separation from the quarry floor working areas.

G. Phase 5

- Proceed with stripping of overburden/topsoil.
- Commence Phase 5 extraction in an easterly direction, moving gradually from north to south.
- Phase 5 shall be extracted in up to three (3) lifts to a depth ranging between 140 masl and 143 masl.
- Continue progressive rehabilitation of the quarry perimeter where limits of extraction have been reached and there is sufficient separation from the quarry floor working areas.

H. Final Phase

- Complete extraction of any remaining resource in the extraction limit near the entrance in Phase 1A and 1B (e.g. ramp).
- As part of the final operations of the site, remove office/scale house and scales, asphalt plant, recycled asphalt material and any other equipment and scrap from the site.
- Continue and complete with final rehabilitation of the site. Complete quarry face backfilling on the remaining quarry faces as identified on drawing 5 of 6.



Legal Description

Part of Lots 119, 120, 136 & 137
City of Niagara Falls (Geographic Township of Stamford)
Regional Municipality of Niagara

Legend

- | | | | |
|--|---|--|---|
| | Licence Boundary | | 120m Offset From Licence Boundary |
| | Limit of Extraction | | Trans Canada Blasting Buffer Area - See Note D.5 on drawing 4 of 6 |
| | Additional Lands Owned by Licensee Applicant | | Parcel Fabric |
| | Municipal Boundary | | Trans Canada Pipeline Easement |
| | Contours with Elevation
Metres above sea level (MASL) | | Hydro One Easement |
| | Public Road | | Entrance / Exit |
| | Fence
1.2m post & wire farm fence unless otherwise noted | | Limited Service Access
For Phases 1A, 1B and 5 in South Extraction Area |
| | Watercourse
Direction of flow indicated by arrows | | Gate |
| | Surface Drainage Feature
Direction of flow indicated by arrows | | Culvert |
| | Watercourse - Realigned
(Stamford, 2020) | | General Direction of Excavation & Boundary |
| | 100 Year Floodline | | Berm
Top - Noise Attenuation Berm
Bottom - Visual Berm |
| | Water Feature | | Building/Structure |
| | Wooded Area | | Spot Elevation
Metres above sea level (MASL)
Top - Existing
Bottom - Maximum Depth of Extraction |
| | Woodland Mitigation and Enhancement Area (off-site) | | Cross Sections |
| | Watercourse Realignment Transition Area | | |

Site Plan Acronyms

- ARA - Aggregate Resources Act
- MNRF - Ministry of Natural Resources and Forestry
- MHSTCI - Ministry of Heritage, Sport, Tourism and Culture Industries
- MECP - Ministry of the Environment, Conservation and Parks
- MGCS - Ministry of Government and Consumer Services
- DFO - Department of Fisheries and Oceans Canada
- ECA - Environmental Compliance Approval
- BMPP - Best Management Practices Plan
- PTTW - Permit to Take Water
- MASL - Metres above sea level
- TCPL - Trans Canada Pipeline
- ROW - Right of way
- HMA - Hot mix asphalt
- PWGO - Provincial Water Quality Objectives
- MISA - Municipal Industrial Strategy for Abatement
- TSS - Total Suspended Solids
- NCD - North Channel Design

Site Plan Amendments

No.	Date	Description	By

Site Plan Revisions (Pre-Licensing)

No.	Date	Description	By
1	January 2022	Revised note C.1 and hatched watercourse realignment area.	C.P.
2	August 2023	Updated site plan to incorporate JART and MNRF comments	C.P.
3	April 4, 2024	Updated site plan to incorporate JART and MNRF comments	C.P.

Site Plan Revisions (Pre-Licensing)

No.	Date	Description	By

MHBC Stamp

MHBC
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Applicant

walker aggregates
Walker Aggregates Inc.
2800 Thorold Townline Road
P.O. Box 100
Thorold, Ontario
L2V 3Y8

Project

Upper's Quarry

MNRF Licence Reference No.	Applicant's Signature
Plan Scale: 1:3000 (Arch E)	Date: October 2021 April 4, 2024
0 90 180 Meters	Drawn By: C.P. File No.: 9811V
File Name	Checked By: D.W.

Extraction Sequence

Drawing No. **3 of 6**

File Path: N:\9811V - Walker Upper's Quarry Drawings\Site Plan\CAD\9811V - Site Plan.dwg

PROGRESSIVE REHABILITATION

A. General

1. Area calculations:
- a. Licenced area: 103.6 ha
 - b. To be extracted: 89.6 ha
 - c. Final rehabilitation within licence (total): 103.6 ha
 - c.a. Lake: 66 ± 70.0 ha
 - c.b. Shoreline wetland: 1.3 ha
 - c.c. Wetland/pond/stream: 22 ± 19.4 ha
 - c.d. Terrestrial and Vegetated Slopes: 29 ± 19.4 ha
 - c.e. Deciduous Woodland & Vegetated Screening: 4 ± 6.1 ha
 - c.f. **Treed Deciduous Swamp**: 2 ± 6 ha
 - c.g. **Swamp-Thicket & Marsh Meadow**: 0 ± 6 ha
 - c.h. Undisturbed: 3.9 ha
 - d. To be rehabilitated outside of licence: 47.6 ± 7 ha
 - d.a. Woodland Compensation Area: 47.6 ± 7 ha

2. The maximum predicted water table is 184.5 masl and the contact aquifer potentiometric contours range between 176.0 and 184.5 masl (see VSP's "Proposed Upper's Quarry" - Maximum Predicted Water Table Report", dated October 2021).

B. Phasing

1. As excavation reaches the limit of extraction or maximum depth, progressive rehabilitation shall commence.
2. Progressive rehabilitation shall follow the general direction and sequence of extraction identified on the plan view and described in the notes on drawing 3 of 6. Minor deviations in operational/rehabilitation sequence will be permitted in order to adjust for any variable resource and market conditions. Any major deviations from the operations sequence shall require approval from the MNRF.
3. Prior to extraction commencing in Phases 3A and 3B, side sloping adjacent to Phases 1B and 2B shall be completed to allow for the existing watercourse realignment to be finalized.
4. Dewatering of the quarry will ultimately discharge to the watercourse (pre and post realignment). The quarry will continue dewatering operations to maintain a dry quarry floor. When the rock is fully extracted, it is proposed that dewatering operations will cease and the quarry will be permitted to fill naturally with surplus precipitation, surface water and any contribution from groundwater seepage to form a lake. As shown on the plan view, shallow shoreline wetland areas shall be created to provide aquatic habitat.

5. Watercourse Realignment Channel Area - As portions of the watercourse realignment channel are constructed, the channel shall be planted according to the requirements of each respective planting zone (i) riparian planting zone; (ii) upland planting zone; (iii) shoreline planting seeding zone and (iv) life staking planting zone (v) riparian forest planting zone; (vi) upland forest planting zone; (vii) dense upland planting zone. Details relating to construction, planting and monitoring requirements for the watercourse realignment corridor are contained within the "Natural Channel Design Report" prepared by Stantec Consulting Ltd. (dated October 2021).

6. Rehabilitation Areas - There are two main rehabilitation areas:

- 6.1. The Woodland **Compensation Mitigation and Enhancement** Area (Off-site) to be no less than 4.9 ± 7 ha in area. Plantings in this area are set out in Table 1 on this drawing. Planting for this Area (Off-site) will commence in the appropriate planting season following license approval.
- 6.2. The on-site Woodland **Compensation Mitigation and Enhancement** Area includes the areas identified as the Deciduous Woodland on the plan view of this drawing - **Treed Deciduous Swamp and Swamp-Thicket & Marsh Meadow**. To these areas shall be no less than 4.9 ± 4.5 ha in total area. Plantings in these areas are set out in Tables 1 to 3 on this drawing and the Natural Channel Design Report planting plan drawings L-400 to L-463 and L-500 to L-503 respectively. In the Deciduous Woodland (on-site), additional conifer species will be added to the species mix to provide additional screening.

7. A woodland and wildlife habitat **compensation** rehabilitation plan shall be prepared in consultation with regulatory authorities in accordance with Note E-5 ± E-3.4 on drawing 4 of 6.

C. Slopes and Grading

1. Progressive rehabilitation will utilize a variety of rehabilitation techniques including:
- a. backfilling extraction faces and quarry floors; or
 - b. leveling extraction faces vertical
2. Excess soil, as defined in Ontario Regulation 244/97 may be imported to this site to facilitate the following rehabilitation:
- 2.1. To establish the final elevations, slopes and grades depicted on the plan view
 - 2.2. Top dressing to establish vegetation
3. Liquid soil, as defined in Ontario Regulation 406/19 under the Environmental Protection Act, is not authorized for importation to the site.
4. The quality of excess soil imported to the site for final placement must be equivalent to or more stringent than the applicable source soil quality standards as determined in accordance with Ontario Regulation 244/97, as amended from time to time, and must be consistent with the site conditions and the end use identified in the approved rehabilitation plan.
5. Where a qualified person is retained or required to be retained in accordance with Ontario Regulation 244/97, the quality, storage, and final placement of excess soils shall be done according to the advice of the qualified person.

6. Excess soil imported to facilitate rehabilitation as described on this site plan shall be undertaken in accordance with Ontario Regulation 244/97 under the Aggregate Resources Act, as amended from time to time.
7. The cumulative total amount of excess soil that may be imported to this site for rehabilitation purposes is 2,400,000 750,000 m³.
8. The final rehabilitated landforms established using the rehabilitation techniques will consist of a lake, shoreline wetlands, riparian corridor, woodlands, gradually sloping grades, 2:1 and 3:1 side slopes, and vertical faces as shown on the plan view.

D. Seeding and Planting

1. Side slopes steeper than 3:1 shall be seeded with a naturalizing mix of native, non-invasive wildflowers and grasses capable of rapid germination and growth to stabilize slopes and minimize mowing and maintenance.
2. The deciduous woodlands, **reed-deciduous swamp**, **swamp-thicket & marsh meadow**, shoreline wetland, and realigned watercourse channel (riparian corridor) shall be planted with species identified in Tables 1-6 on this drawing and the Natural Channel Design Report planting plan drawings L-400 to L-463 and L-500 to L-503 respectively.

E. Drainage

1. Final surface drainage will follow the rehabilitated contours and directional arrows shown on the plan view.
2. Once the quarry is depleted, pumping will cease and portions of the site below the ground water table will fill with water.
3. The quarry dewatering discharge will be directed to the watercourse (pre and post alignment) and ultimately flow to Beavertons Creek to support fish habitat and downstream wetlands.
4. The licensee shall operate in accordance with the conditions of the MECP, PTTW and ECA for the ongoing dewatering of the site.

F. Trigger Mechanism and Contingency Plan

1. During progressive rehabilitation, until surrendering the licence, the licensee is required to operate in accordance with the Trigger Mechanism and Contingency Plan outlined below.
2. The monitoring program will allow a comparison of observed conditions throughout the quarry development to baseline conditions. The predicted effects of the quarry have been reviewed and are based on the numerical groundwater model simulations and baseline water quality. Should the observed quarry effects differ from those predicted, a trigger mechanism has been developed to trigger the implementation of appropriate contingency measures to mitigate impacts before they occur. The quarry dewatering discharge will be directed to the Existing Watercourse, and ultimately flow to Beavertons Creek. The discharge water will consist of a mixture of direct precipitation and groundwater inflows from the contact aquifer, shallow bedrock aquifer, deep bedrock aquifer and likely a small contribution from the underlying lower aquifer. The ratio of groundwater contribution from each unit is related to the relative hydraulic conductivities. Based on the hydraulic testing completed as part of this study, it is interpreted that the majority of the groundwater inflow will originate from the shallow bedrock aquifer. Therefore, it is predicted that the quarry discharge will have similar water quality to the shallow bedrock aquifer baseline ranges. The observed 2019 pumping test discharge water quality, which is predicted to be similar to the future quarry discharge water quality, supports this interpretation.

Parameter	Proposed Trigger Mechanism	Applicable Standard
pH (pH units)	6.5 - 8.5	PWQO / MISA
TSS	25	MISA
Hydrogen Sulphide (Undissociated)	0.002	PWQO
Total Oil and Grease	No visible sheen or odour	PWQO
Note: Trigger concentrations in mg/L unless otherwise noted.		

4. The shallow bedrock aquifer groundwater is more mineralized / harder than the surface water in the vicinity of the Site; however, it satisfies the PWQO for most parameters. The two exceptions are undissociated hydrogen sulphide and total phosphorus. A trigger for hydrogen sulphide has been included in the trigger mechanism for quarry discharge. In the case of total phosphorus, the median total phosphorus concentration in the baseline surface water quality currently exceeds the PWQO, making the Existing Watercourse a Policy 2 receptor for this parameter. It is predicted that the total phosphorus concentration in the future quarry discharge will be below that of the upstream surface water in the Existing Watercourse. As such, total phosphorus has not been included in the trigger mechanism.
5. The Municipal Industrial Strategy for Abatement (MISA) was also considered, as such, pH, total suspended solids (TSS) and total oil and grease have also been included in the trigger mechanism.
6. The monthly sump discharge sample results shall be compared with the background conditions in the Existing Watercourse (station SW3) and Beavertons Creek (station SW1). If parameter concentrations in the sump discharge exceed the above trigger concentrations without a corresponding exceedance in the background surface water, then weekly sampling of the quarry sump shall be initiated. Weekly sampling will continue until less than two parameter concentrations in the sump discharge exceed the trigger concentrations.
7. If weekly sampling is required for a period of more than four (4) weeks, contingency measures shall be implemented to reduce concentrations in the quarry discharge. Trigger exceedances for pH, TSS and total oil and grease would initiate a review of the design and operation of the quarry discharge sump. Where required, improvements shall be made to reduce discharge concentrations.

8. At existing pits and quarries within southern Ontario, hydrogen sulphide is typically not routinely included in the trigger mechanism. In southwestern Ontario, where the bedrock geology can favour hydrogen sulphide in groundwater, an Effluent Objective for hydrogen sulphide has been included in site ECAs. A sump or holding pond with a large surface area normally allows enough off-gassing of the hydrogen sulphide to meet the Effluent Objective. For the quarry, the need for sufficient off-gassing of hydrogen sulphide shall be taken into consideration during the design and construction of the internal discharge and sump pond for the Site. It is anticipated that the hydrogen sulphide concentration in the water to the Existing Watercourse will be lower than the PWQO / trigger concentration as a result of the off-gassing. If the hydrogen sulphide concentration in the discharge are found to consistently exceed the trigger once the operational phase of the quarry begins, then a review of the design and operation of the internal discharge network and sump pond shall be completed with the objective of increasing the rate of off-gassing prior to discharge. Additional measures, such as aeration of the pond, may also be employed to enhance the off-gassing of hydrogen sulphide.

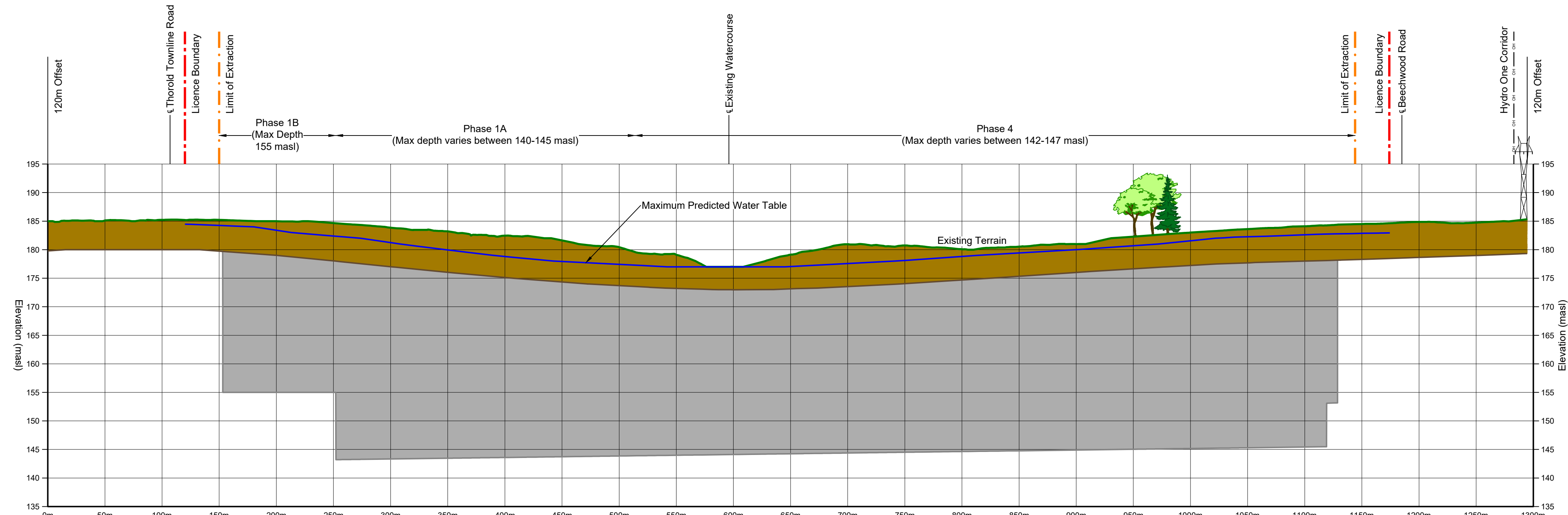
FINAL REHABILITATION

G. General

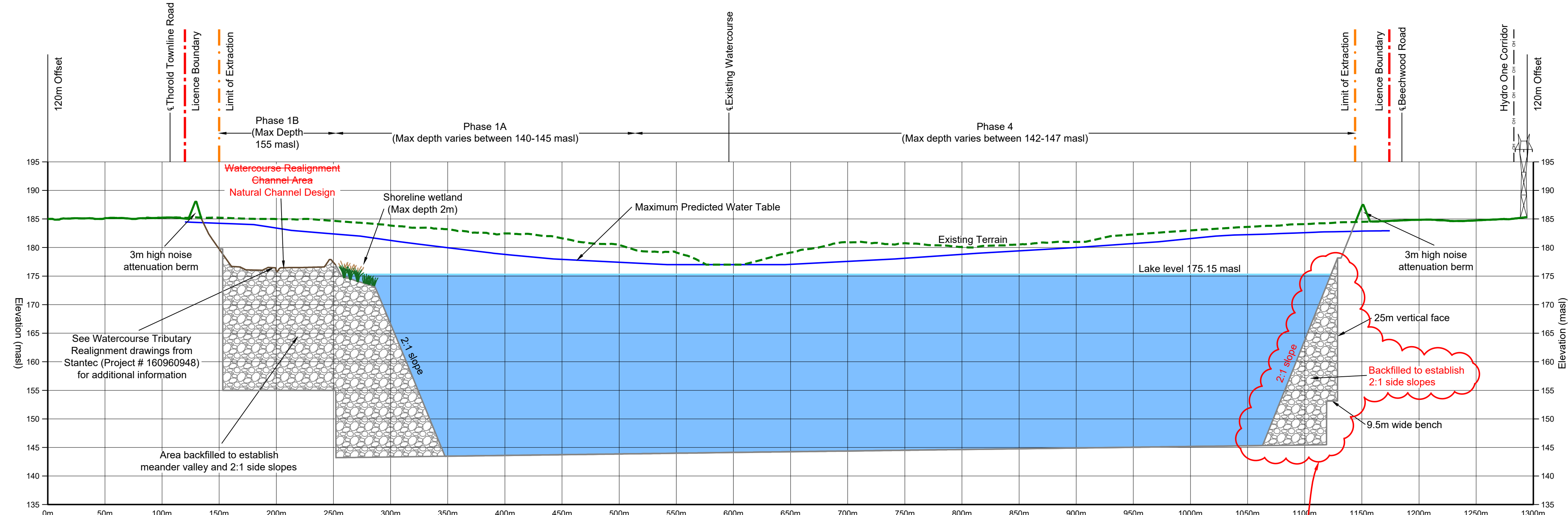
1. All equipment and buildings/structures shall be removed from the licenced areas.
2. Field/property access points may be established to access the site for maintenance and monitoring purposes. All operational access points shall be decommissioned and fenced as part of final rehabilitation.
3. The long term average surface water and lake level elevation is estimated to be approximately 175.15 masl.
4. At final rehabilitation, outflow from the realigned watercourse and the quarry lake will continue to discharge from the licence area at the present location where the existing watercourse channel crosses the northern licence boundary.

Table 1

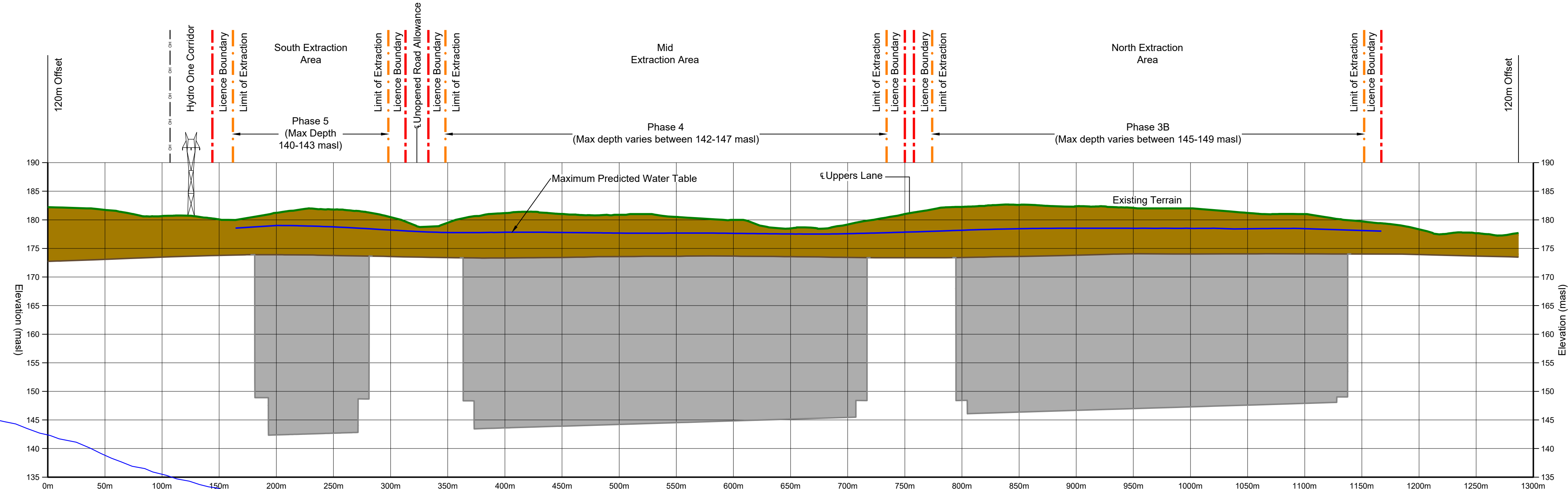
UPLAND PLANTING ZONE:								
TREES:								
Sym.	Percent	Quantity	Botanical Name	Common Name	HL (cm)	Root	O.C. Spacing	
BP	5%	105	Betula papyrifera	Paper Birch	125	2 Gal. Pot	3 m to 7 m	
CAD	5%	105	Carya ovata	Spagnum Hickory	100	2 Gal. Pot	3 m to 7 m	
GP	10%	210	Quercus glabra	Pignut Hickory	100	2 Gal. Pot	3 m to 7 m	
JN	15%	315	Juglans nigra	Black Walnut	250	15 Gal. Pot	3 m to 7 m	
PT	15%	315	Populus tremuloides	Trembling Aspen	150	2 Gal. Pot	3 m to 7 m	
POA	10%	210	Populus grandidentata	Largetooth Aspen	175	10 Gal. Pot	3 m to 7 m	
QA	15%	315	Quercus alba	White Oak	250	15 Gal. Pot	3 m to 7 m	
QU	10%	210	Quercus rubra	Red Oak	175	7 Gal. Pot	3 m to 7 m	
SAS	5%	105	Sassafras albidum	Sassafras	100	5 Gal. Pot	3 m to 7 m	
TA	10%	210	Tilia americana	Basswood	175	10 Gal. Pot	3 m to 7 m	
Totals: 100% 2107 Upland Zone Planting Density Target = 8 trees / 100 m ²								
SHRUBS:								
Sym.	Percent	Quantity	Botanical Name	Common Name	HL (cm)	Root	O.C. Spacing	
CPO	15%	315	Cornus sericea	Gray Dogwood	50	2 Gal. Pot	1 m to 1.5 m	
EA	10%	315	Euonymus alatus	Eastern Burning Bush	50	2 Gal. Pot	1 m to 1.5 m	
HV	15%	315	Hamelia virginiana	Common Witch-hazel	50	3 Gal. Pot	1 m to 1.5 m	
PIA	10%	315	Prunella americana	American Plum	100	2 Gal. Pot	1 m to 1.5 m	
RI	15%	315	Rhus typhina	Sagehen Sumac	80	3 Gal. Pot	1 m to 1.5 m	
RR	10%	315	Rubus idaeus	Red Raspberry	60	2 Gal. Pot	1 m to 1.5 m	
VT	15%	315	Viburnum lentago	Nannyberry	50	3 Gal. Pot	1 m to 1.5 m	
Totals: 100% 4215 Upland Zone Planting Density Target Goal = 10 shrubs / 100 m ²								
RIPARIAN PLANTING ZONE:								
Sym.	Percent	Quantity	Botanical Name	Common Name	HL (cm)	Root	O.C. Spacing	
ASN	15%	60	Acer saccharum subsp. nigrum	Black Maple	100	2 Gal. Pot	8 m to 11 m	
AF	20%	87	Acer x Freemanii	Freeman Maple	250	10 Gal. Pot	8 m to 11 m	
CO	10%	40	Cornus sericea	Gray Dogwood	50	2 Gal. Pot	8 m to 11 m	
OB	10%	40	Quercus bicolor	Swamp White-hazel	175	10 Gal. Pot	8 m to 11 m	
SAG	10%	40	Sax. angustifolia	Swampy Willow	175	10 Gal. Pot	8 m to 11 m	
QP	20%	87	Quercus palustris	Peachtree Willow	200	10 Gal. Pot	8 m to 11 m	
SAN	10%	40	Sax. nigra	Black Willow	200	3 Gal. Pot	8 m to 11 m	
Totals: 100% 438 Riparian Zone Planting Density Target Goal = 1 tree / 100 m ²								
SHRUBS:								
Sym.	Percent	Quantity	Botanical Name	Common Name	HL (cm)	Root	O.C. Spacing	
ARN	10%	64	Aronia melanocarpa	Black Chokeberry	60	2 Gal. Pot	1 m to 1.5 m	
CEO	10%	64	Ceanothus occidentalis	Butterbush	60	3 Gal. Pot	1 m to 1.5 m	
COB	10%	64	Cornus sericea	Red Osier Dogwood	60	3 Gal. Pot	1 m to 1.5 m	
PH	10%	64	Physocarpus opulifolius	Common Ninesbark	60	3 Gal. Pot	1 m to 1.5 m	
SAD	10%	64	Sax. discolor	Pussy Willow	60	2 Gal. Pot	1 m to 1.5 m	
SAL	15%	96	Sax. enticephala	Shining Willow	60	2 Gal. Pot	1 m to 1.5 m	
SAL	10%	64	Sax. nigra	Shady Willow	60	2 Gal. Pot	1 m to 1.5 m	
SCE	10%	64	Sambucus canadensis	American Elderberry	50	3 Gal. Pot	1 m to 1.5 m	
SPI	10%	64	Spirea alba	Massachusetts	60	2 Gal. Pot	1 m to 1.5 m	
Totals: 100% 650 Riparian Zone Planting Density Target Goal = 15 shrubs / 100 m ²								
UPLAND FOREST PLANTING ZONE:								
Sym.	Percent	Quantity	Botanical Name	Common Name	HL (cm)	Root	O.C. Spacing	
BP	5%	158	Betula papyrifera	Paper Birch	250	15 Gal. Pot	2 m to 4 m	
CA	5%	158	Carya ovata	Spagnum Hickory	125	2 Gal. Pot	2 m to 4 m	
GP	10%	315	Quercus glabra	Pignut Hickory	100	2 Gal. Pot	2 m to 4 m	
POA	10%	315	Populus grandidentata	Largetooth Aspen	175	10 Gal. Pot	2 m to 4 m	
POB	10%	315	Populus bicolor	Swampy Willow	175	10 Gal. Pot	2 m to 4 m	
QA	15%	315	Quercus alba	White Oak	250	15 Gal. Pot	2 m to 4 m	
QU	10%	315	Quercus rubra	Red Oak	175	7 Gal. Pot	2 m to 4 m	
SAS	5%	158	Sassafras albidum	Sassafras	100	5 Gal. Pot	2 m to 4 m	
TA	10%	315	Tilia americana	Basswood	175	10 Gal. Pot	2 m to 4 m	
Totals: 100% 3160 Upland Forest Zone Planting Density Target Goal = 10 trees / 100 m ²								
SHRUBS:								
Sym.	Percent	Quantity	Botanical Name	Common Name	HL (cm)	Root	O.C. Spacing	
CPO	15%	237	Cornus sericea	Gray Dogwood	50	2 Gal. Pot	1 m to 1.5 m	
EA	10%	158	Euonymus alatus	Eastern Burning Bush	50	2 Gal. Pot	1 m to 1.5 m	
HV	15%	237	Hamelia virginiana	Common Witch-hazel	50	3 Gal. Pot	1 m to 1.5 m	
PIA	10%	158	Prunella americana	American Plum	100	2 Gal. Pot	1 m to 1.5 m	
RI	15%	237	Rhus typhina	Sagehen Sumac	80	3 Gal. Pot	1 m to 1.5 m	
RR	10%	158	Rubus idaeus	Red Raspberry	60	2 Gal. Pot	1 m to 1.5 m	
VT	15%	237	Viburnum lentago	Nannyberry	50	3 Gal. Pot	1 m to 1.5 m	
Totals: 100% 1580 Upland Forest Zone Planting Density Target Goal = 5 shrubs / 100 m ²								
RIPARIAN FOREST PLANTING ZONE:								
Sym.	Percent	Quantity	Botanical Name	Common Name	HL (cm)	Root	O.C. Spacing	
ASN	10%	177	Acer saccharum subsp. nigrum	Black Maple	100	2 Gal. Pot	2 m to 4 m	
AF	15%	265	Acer x Freemanii	Freeman Maple	250	10 Gal. Pot	2 m to 4 m	
CO	15%	265	Cornus sericea	Gray Dogwood	50	2 Gal. Pot	2 m to 4 m	
OB	15%	265	Quercus bicolor	Swampy Willow	175	10 Gal. Pot	2 m to 4 m	
QP	15%	265	Quercus palustris	Pine Oak	200	10 Gal. Pot	2 m to 4 m	
SAG	10%	265	Sax. angustifolia	Peachtree Willow	200	10 Gal. Pot	2 m to 4 m	
SAN	10%	177	Sax. nigra	Black Willow	200	3 Gal. Pot	2 m to 4 m	
TO	10%	177	Thuja occidentalis	Eastern White Cedar	50	2 Gal. Pot	2 m to 4 m	
Totals: 100% 1768 Riparian Forest Zone Planting Density Target Goal= 10 trees / 100 m ²								
SHRUBS:								
Sym.	Percent	Quantity	Botanical Name	Common Name	HL (cm)	Root	O.C. Spacing	
ARN	10%	64	Aronia melanocarpa	Black Chokeberry	60	2 Gal. Pot	1 m to 1.5 m	
CEO	10%	64	Ceanothus occidentalis	Butterbush	60	3 Gal. Pot	1 m to 1.5 m	
COB	10%	64	Cornus sericea	Red Osier Dogwood	60	3 Gal. Pot	1 m to 1.5 m	
PH	10%	64	Physocarpus opulifolius	Common Ninesbark	60	3 Gal. Pot	1 m to 1.5 m	
SAD	15%	133	Sax. discolor	Pussy Willow	60	2 Gal. Pot	1 m to 1.5 m	
SAL	15%	133	Sax. enticephala	Shining Willow	60	2 Gal. Pot	1 m to 1.5 m	
SAL	10%	88	Sax. nigra	Shady Willow	60	2 Gal. Pot	1 m to 1.5 m	
SCE	10%	64	Sambucus canadensis	American Elderberry	50	3 Gal. Pot	1 m to 1.5 m	
SPI	10%	64	Spirea alba	Massachusetts	60	2 Gal. Pot	1 m to 1.5 m	
Totals: 100% 882 Riparian Forest Zone Planting Density Target Goal = 5 shrubs / 100 m ²								
UPLAND PLANTING ZONE:								
TREES:								
Sym.	Percent	Quantity	Botanical Name	Common Name	HL (cm)	Root	O.C. Spacing	
PT	20%	41	Populus tremuloides	Trembling Aspen	150	15 Gal. Pot	3 m to 7 m	
POA	20%	41	Populus grandidentata	Largetooth Aspen	175	10 Gal. Pot	3 m to 7 m	
QA	20%	41	Quercus alba	White Oak	250	15 Gal. Pot	3 m to 7 m	
QU	20%	41	Quercus rubra	Red Oak	175	7 Gal. Pot	3 m to 7 m	
TA	20%	41	Tilia americana	Basswood	175	10 Gal. Pot	3 m to 7 m	
Totals: 100% 204 Upland Zone Planting Density Target Goal= 5 trees / 100 m ²								
SHRUBS:								
Sym.	Percent	Quantity	Botanical Name	Common Name	HL (cm)	Root	O.C. Spacing	
CPO	20%	82	Cornus sericea	Gray Dogwood	50	2 Gal. Pot	1 m to 1.5 m	
HV	20%	122	Hamelia virginiana	Common Witch-hazel	50	3 Gal. Pot	1 m to 1.5 m	
PIA	20%	82	Prunella americana	American Plum	100	2 Gal. Pot	1 m to 1.5 m	
RR	20%	122	Rubus idaeus	Red Raspberry	60	2 Gal. Pot	1 m to 1.5 m	
Totals: 100% 304 Upland Zone Planting Density Target Goal = 15 shrubs / 100 m ²								
LIVESTOCK PLANTING ZONE:								
Sym.	Percent	Quantity	Botanical Name	Common Name	HL (cm)	Root	O.C. Spacing	
CO	10%	2736	Cornus sericea	Red Osier Dogwood	mm 75	Livestock	50 cm	
PIA	30%	8208	Prunella americana	American Plum	mm 75	Livestock	50 cm	
SAS	30%	8208	Sax. discolor	Sandbar Willow	mm 75	Livestock	50 cm	
TA	30%	8208	Tilia americana	Basswood	mm 75	Livestock	50 cm	
Totals: 100% 27360 Livestock Zone Planting Density Target Goal = 3 + 3+livestock f / m ²								



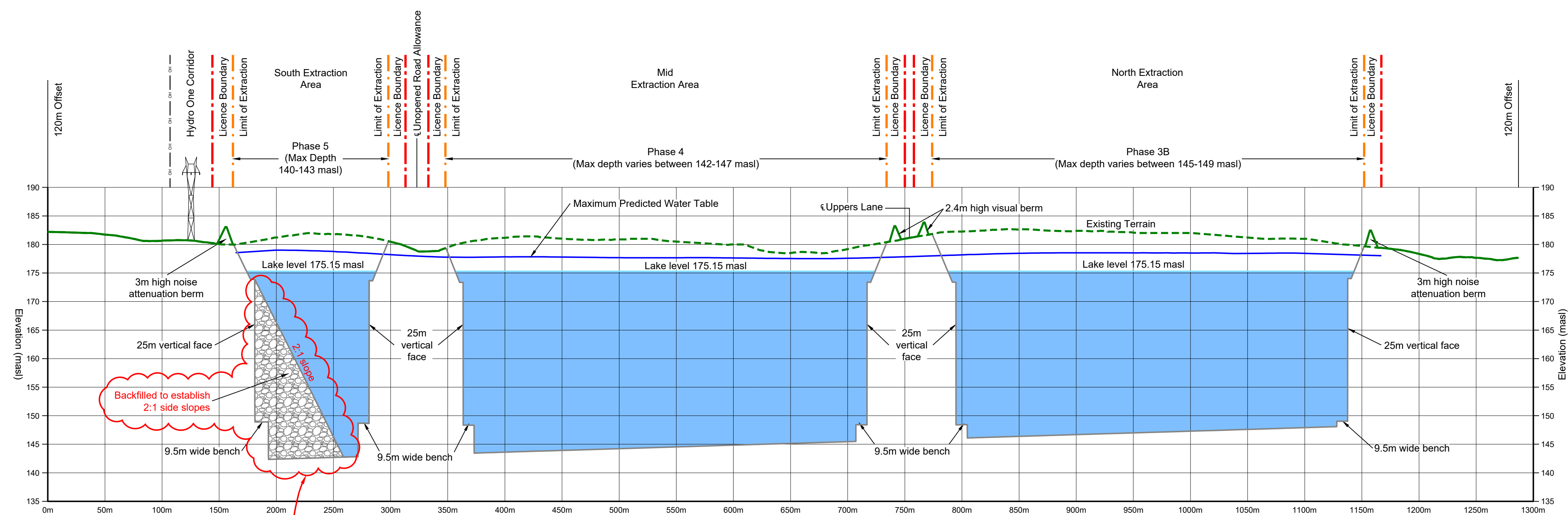
Section A-A' - Existing
Horizontal - 1:2500
Vertical - 1:500



Section A-A' - Rehabilitation
Horizontal - 1:2500
Vertical - 1:500

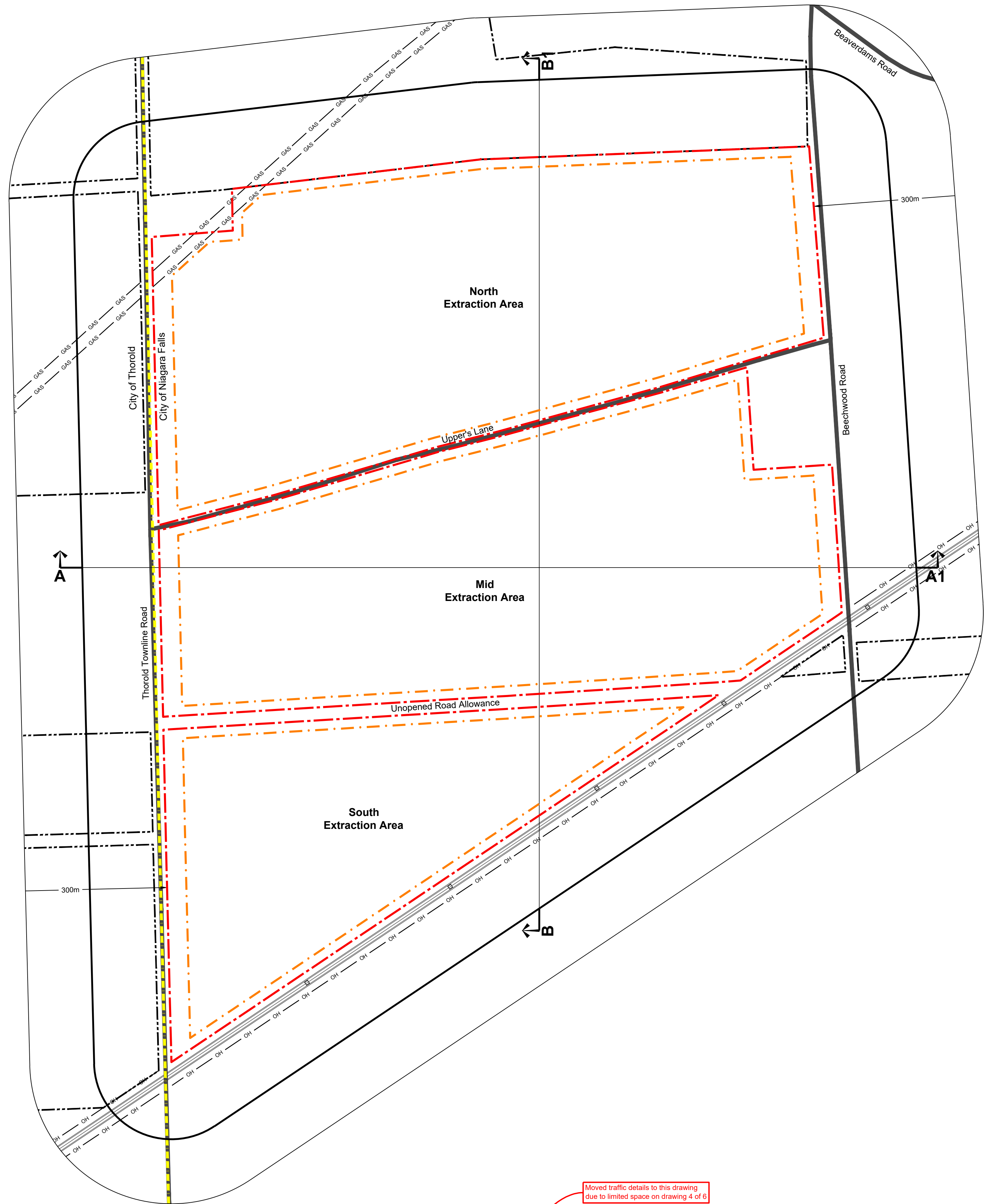


Section B-B' - Existing
Horizontal - 1:2500
Vertical - 1:500



Section B-B' - Rehabilitation
Horizontal - 1:2500
Vertical - 1:500

Cross Section Key Map
Scale 1:4000



Legal Description

Part of Lots 119, 120, 136 & 137
City of Niagara Falls (Geographic Township of Stamford)
Regional Municipality of Niagara

Legend

- Licence Boundary
- Limit of Extraction
- Additional Lands Owned by Licensee Applicant
- Municipal Boundary
- 120m Offset From Licence Boundary
- Public Road
- Trans Canada Pipeline Easement
- Hydro One Easement
- Cross Sections

Legend - Cross Sections

- Licence Boundary
- Limit of Extraction
- Existing Grade - Undisturbed
- Existing Grade - Removed / Altered
- Berm
- Maximum Predicted Water Table (See note A.2 on drawing 5 of 6)
- Quarry Floor / Face
- Topsoil and/or Overburden
- Aggregate Available for Extraction
- Backfilled
- Lake or Pond
- Hydro Corridor

Site Plan Amendments

No.	Date	Description	By

Site Plan Revisions (Pre-Licensing)

No.	Date	Description	By
1	January 2022	Updated site plan per feedback from MNRF and completed minor housekeeping	C.P.
2	August 2023	Updated site plan to incorporate JART and MNRF comments	C.P.
3	April 4, 2024	Updated site plan to incorporate JART and MNRF comments	C.P.

No.	Date	Description	By

MHBC
PLANNING
URBAN DESIGN
& LANDSCAPE
ARCHITECTURE
113 COLLIER STREET, BARRE, ON, L4M 1H2 | P. 705.728.0045 F. 705.728.3010 | WWW.MHBCPLAN.COM

MHBC Stamp

Debra Walker
Is authorized by the Ministry of Northern Development, Natural Resources and Forestry pursuant to Subsection 0.2(3)(f) of Ontario Regulation 244/97 to prepare and certify site plans.

MHBC Stamp

Christopher Poole
Is authorized by the Ministry of Northern Development, Natural Resources and Forestry pursuant to Subsection 0.2(3)(f) of Ontario Regulation 244/97 to prepare and certify site plans.

Applicant



Walker Aggregates Inc.
2800 Thorold Townline Road
P.O. Box 100
Thorold, Ontario
L2V 3Y8

Project

Upper's Quarry

MNRF Licence Reference No.

Applicant's Signature

Plan Scale: (Arch E)

Date: **October 2021 April 4, 2024**

Drawn By: **C.P.** File No.: **9811V**

Checked By: **D.W.**

File Name

Cross Sections

Drawing No.

6 of 6

File Path: N:\9811V - Walker Upper's Quarry Drawings\Site Plan\CAD\9811V - Site Plan.dwg