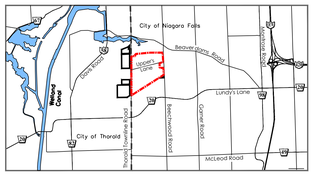
Key Map - (N.T.S.)

Subject Lands

Additional Lands Owned by Applicant



A. General

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

B. References

1. Contour information was obtained from a topographic survey prepared by TEC Engineering (formerly Renishaw (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).
2. Topographic information was obtained from numerous sources including Ontario GeoHub (Land Information Ontario), Google Earth Pro aerial photography captured on July 18, 2018 and field investigations for technical reports.
3. 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.
4. 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.
5. Zoning categories on or within 120 metres of the licence boundary are from the City of Niagara Falls Zoning By-law No. 79-200 (Schedules A3 and A4 - Consolidation April 2015) and the City of Thorold Zoning By-law No. 60-2019 (Schedules A8 and A13 - dated May 2019) .
6. 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

1. 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

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

E. Site Access and Fencing

1. 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.
2. Post and wire fencing (unless otherwise noted) exists in the locations shown on the plan view.

F. Significant Features

1. 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.
2. 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

1. 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.

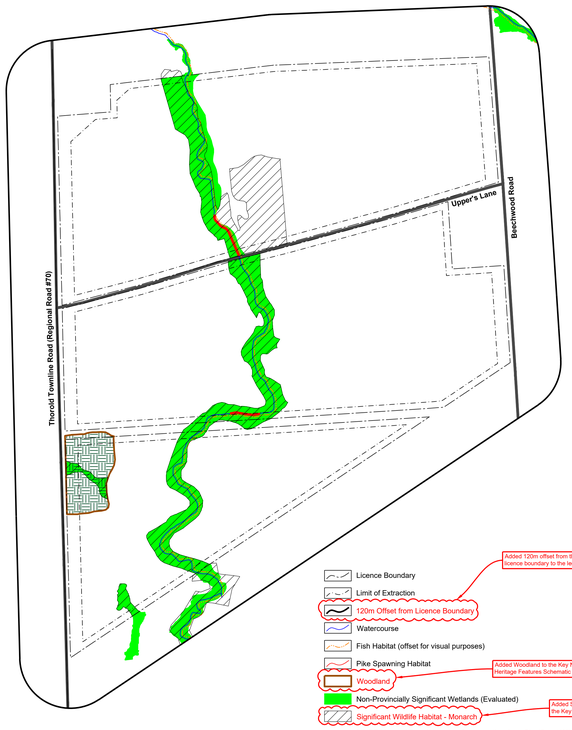
H. Technical Reports - References

1. Upper's Quarry: Acoustic Assessment Report, RWDI, ~~August 2, 2023~~ January 11, 2024.
2. Agricultural Impact Assessment for Upper's Quarry, Colville Consulting Inc., ~~October~~ September 2021.
3. Upper's Quarry: Air Quality Assessment, RWDI Air Inc., July 12, 2023.
4. Archaeological Assessments:
   a. Stage 1 Archeological Resource Assessment of Walker Aggregates Proposed South Niagara Quarry, Part of Lots 102, 119, 120, 136 & 137, Archeological Services Inc., December 2008.
   b. Stage 1-2 Archeological Assessment of Part 9764 Uppers Lane, Part of Lots 119 & 120, Archeological Assessments Ltd., November 3, 2005.
   c. Stage 2-3 Archeological Assessment, Part of Lots 102, 119, 120, 136 & 137, Archeological Assessments Ltd., November 21, 2012.
   d. Stage 1-2 Archeological Assessments, Upper's Quarry Additional Lands, Part of Lots 119& 120, Archaeological Research Associates Ltd., April 20, 2020.
   e. Stage 3 Mitigation of Development Impacts, Final Excavation Report, Walker XI (AgGT-411), Upper's Quarry, Archaeological Research Associates Ltd., May 26, 2021.
   f. Stage 4 Mitigation of Development Impacts, Final Excavation Report, Walker XI (AgGT-178), Upper's Quarry, Archeological Research Associates Ltd., July 22, 2021.
5. Blast Impact Analysis, Upper's Quarry, Explotech, ~~August 2023~~ April 2024.
6. Cultural Heritage Impact Assessment Report, Proposed Upper's Quarry, MHBC, October 2021.
7. Economic Benefits Analysis, Prism, ~~February 2023~~ April 2024.
8. Level 2 Water Study Report and Response to JART Hydrogeological Comments, WSP, October 3, 2022.
9. Maximum Predicted Water Table Report, WSP, October 2021.
10. Upper's Quarry, Niagara: Level 1 and Level 2 Natural Environment Technical Report and Environmental Impact Study, Stantec, ~~August 2023~~ April 2024.
11. Planning Justification Report and Summary Statement, MHBC, ~~August 2023~~ April 2024.
12. Traffic Impact Study and TIS Addendum, Upper's Quarry, TYLin, March 23, 2023.
13. Visual Impact Assessment, Proposed Upper's Quarry, MHBC, ~~October 2021~~ April 2024.

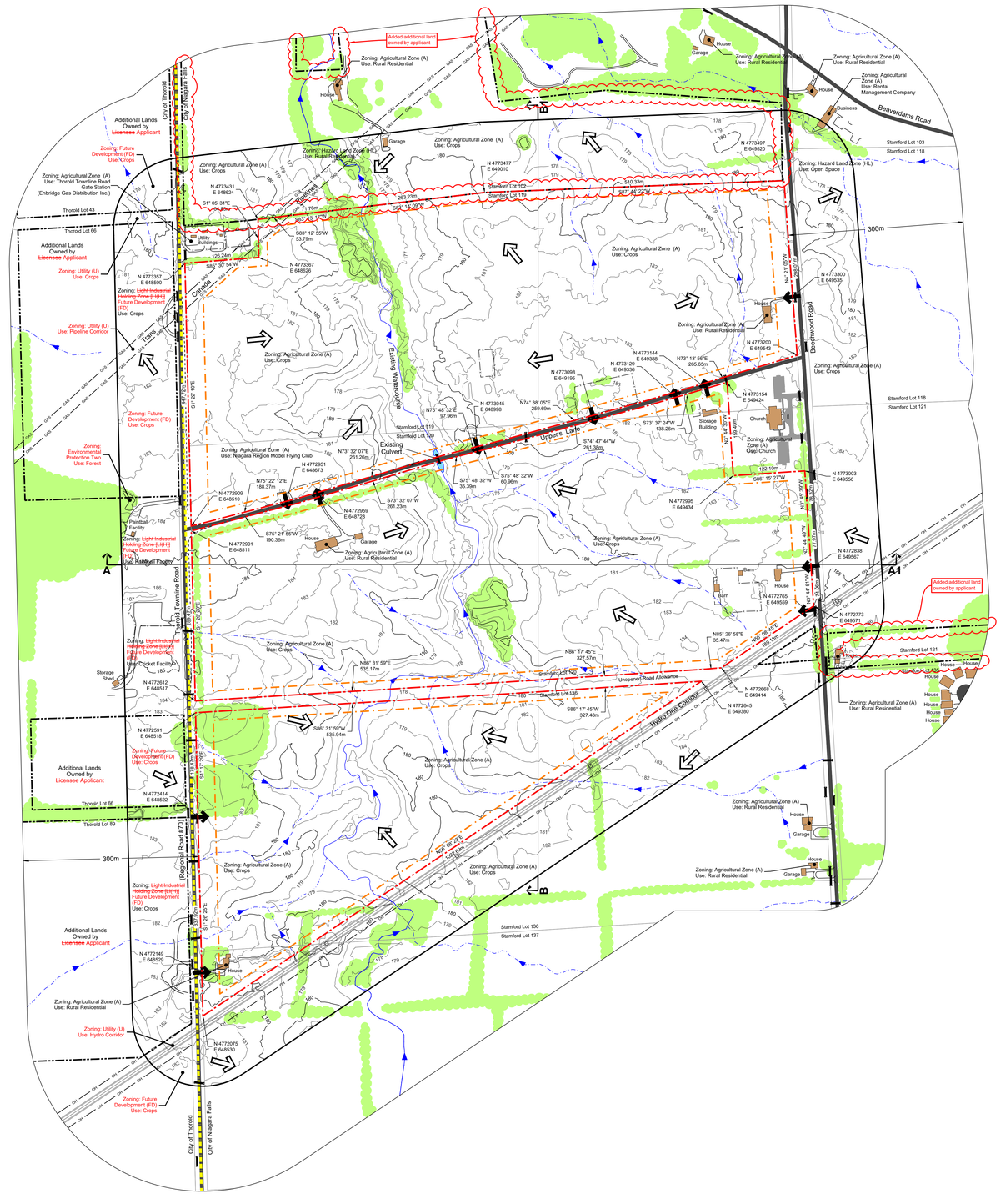
Key Natural Heritage Features Schematic

Scale 1:5000

0 150 300 Meters



- Licence Boundary
- Limit of Extraction
- 120m Offset from Licence Boundary (Added 120m offset from the licence boundary to the legend)
- Watercourse
- Fish Habitat (offset for visual purposes)
- Pike Spawning Habitat
- Woodland (Added Woodland to the Key Natural Heritage Features Schematic)
- Non-Provincially Significant Wetlands (Evaluated)
- Significant Wildlife Habitat - Monarch (Added Significant Wildlife Habitat - Monarch to the Key Natural Heritage Features Schematic)
- ~~MNRF Mapped Deer Wintering Congregation Area~~ Significant Wildlife Habitat - Non SAR Bat Habitat Seasonal Concentration Area



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 (A1)

Site Plan Acronyms

1. ARA - Aggregate Resources Act
2. MNRF - Ministry of Natural Resources and Forestry
3. MHSTCI - Ministry of Heritage, Sport, Tourism and Culture Industries
4. MECP - Ministry of the Environment, Conservation and Parks
5. MGCS - Ministry of Government and Consumer Services
6. DFO - Department of Fisheries and Oceans Canada
7. ECA - Environmental Compliance Approval
8. BMPP - Best Management Practices Plan
9. PTTW - Permit to Take Water
10. MASL - Metres above sea level
11. TCPL - Trans Canada Pipeline
12. ROW - Right of way
13. HMA - Hot mix asphalt
14. PWQO - Provincial Water Quality Objectives
15. MISA - Municipal Industrial Strategy for Abatement
16. TSS - Total Suspended Solids
17. NCD - North Channel Design

Site Plan Amendments

No.	Date	Description	By

Site Plan Revisions (Pre-Licencing)

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

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
113 COLLIER STREET, BARRIE, ON. L4M 1H2 | P: 705.728.0045 F: 705.728.2010 | WWW.MHBCPLAN.COM

MHBC Stamp

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

Draft

N W E S

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)

0 90 180 Meters

Date ~~October 2021~~ April 4, 2024

Drawn By C.P.

Checked By D.W.

File No. 9811V

File Name

Existing Features

Drawing No.

1 of 6

File Path N:\Brian\9811V - Walker Uppers Quarry\Drawings\Site Plan\CAD\9811V - Site Plan.dwg

A. General

1. Area to be licenced 103.6 ha. (±256.0 ac.)
   Area to be extracted 89.1 ha. (±220.2 ac.)
2. Prior to the commencement of extraction operations, the licence holder shall enter into an agreement with the appropriate road authority to ensure that the following is completed and/or secured to the satisfaction of the appropriate road authority:
   - 2.1. City of Niagara Falls:
     - 2.1.1. Road widening with a width of 2.94 metres along the entire length of frontage of the subject lands along Beechwood Road is to be dedicated to the City of Niagara Falls. In addition, daylight triangles with 7 metre by 7 metre legs at the intersection of Beechwood Road and Uppers Lane is to be dedicated to the City of Niagara Falls. In addition, A road widening of 6 metres on either side of Uppers Lane is to be dedicated to the City of Niagara Falls.
     - 2.1.2. Road widenings are to be dedicated prior to the commencement of quarry operations.
     - 2.1.3. Notwithstanding the above, only the road widening along Beechwood Road is required to be dedicated to the City of Niagara Falls should the Uppers Lane Right of Way be acquired by the licensee.
   - 2.2. Niagara Region and City of Niagara Falls:
     - 2.2.1. The required entrance improvements, road improvements, and dedication of road widenings (to Thorold Townline Road, Beechwood Road and Uppers Lane) shall be completed to the satisfaction of the applicable road authorities the Regional Municipality of Niagara and the City of Niagara Falls and in part in general accordance with the figures titled "Uppers Lane Conceptual Intersection Design" and "Uppers Lane Vehicle Movement Diagram" provided on Drawing 4 of 6
3. The maximum amount of aggregate to be removed from this site in any calendar year is 1,800,000 tonnes.
4. In the event that Walker obtains permission from the City of Niagara Falls to extract the road allowance(s), the licensee may apply to the MNRF to amend the licence and site plan to expand the licence boundary to include the road allowance directly adjacent to the licence boundary (i.e. Upper's Lane and/or the road allowance between Lots 120 and 136). An expansion to the licence boundary for this purpose will not require a new licence under Section 7 of the Aggregate Resources Act (ARA).
5. All technical reports have taken into consideration the potential removal of the road allowance(s).
6. Table 1 on this drawing identifies the number of sensitive receptors within 500 metres of the licence boundary and the distance from the licence boundary to each receptor.

B. Hours of Operation

1. The proposed quarry will have the following hours of operation:

Activity	Monday to Friday	Saturday	Sunday
Drilling, extraction (at working face)	7:00 am to 7:00 pm	7:00 am to 7:00 pm	N/A
Blasting	8:00 am to 6:00 pm	N/A	N/A
Aggregate processing at mobile crusher plant	7:00 am to 7:00 pm	7:00 am to 7:00 pm	N/A
Asphalt plant operations	24 hours per day	24 hours per day	24 hours per day
Internal hauling of aggregate and/or recycled material: - From working face (shot rock) to mobile crusher plant - From mobile crusher plant/stockpiles to asphalt plant	7:00am to 7:00pm 24 hours per day	7:00am to 7:00pm 24 hours per day	N/A 24 hours per day
Aggregate and recycling shipping to and/or from the quarry (including hot mix asphalt shipping from quarry and receiving recycled asphalt to quarry)	24 hours per day	24 hours per day	24 hours per day
Maintenance	24 hours per day	24 hours per day	24 hours per day
Conveyor to the mobile crusher plants	7:00 am to 7:00 pm	7:00 am to 7:00 pm	N/A

No operations shall occur on Statutory Holidays except as noted below.
A response to emergencies is not limited by the hours of operations shown on this plan.

C. Proposed Entrances/Exits and Fencing

1. For the Mid Extraction Area:
   - a. All traffic for operations will enter and exit the Mid Extraction Area from Upper's Lane using a main entrance/exit in the location generally shown on the plan view.
2. For the South Extraction Area:
   - a. Material will be transported to the Mid Extraction Area for processing via a conveyor over the unopened road allowance between Lots 120 and 136. Limited traffic required for operations will enter and exit the South Extraction Area via a crossing over the unopened road allowance between Lots 120 and 136, subject to approval from the City, in the location generally shown on the plan view.
3. For the North Extraction Area:
   - a. All traffic for operations will enter and exit the North Extraction Area from Upper's Lane using a main entrance/exit in the locations generally shown on the plan view.
4. Once established, each operational entrance/exit shall be gated. All gates shall be kept closed during hours of non-operation and shall be maintained throughout the life of the licence.
5. The licence boundaries shall be fenced in the locations shown on the plan view (prior to the commencement of operations) and shall be maintained for the life of the licence with upkeep during periodic inspections (see Section N Variations from Control and Operation Standards on this drawing).

D. Drainage and Siltation Control

1. Silt fencing/sediment control measures will be installed within the Watercourse Realignment Transition Area prior to extraction in each extraction area and along the easterly and northerly limits of Phase 1B after the watercourse realignment is completed.

E. Site Preparation

1. All existing structures within the licence boundary shall be demolished or removed (and any associated residential entrances closed off) prior to extraction in each extraction area. Prior to erecting or demolishing a building, all necessary Permits shall be obtained by the City in accordance with the Ontario Building Code Act, to the satisfaction of the Building Services Division and the Fire Prevention Division.
2. Timber resources (if any) will be salvaged for use as saw logs, fence posts and fuel wood where appropriate. Stumps and brush cleared will be burned (with applicable permits), used for shoreline habitat enhancement or mulched for use in progressive rehabilitation.
3. Areas of the site will be stripped of topsoil/overburden in stages in accordance with the phases. Topsoil and overburden will be stripped and stored in berms and/or stockpiles wherever feasible.
4. Topsoil and overburden shall be placed in perimeter acoustic/visual berms, pond construction, watercourse realignment or used immediately for progressive rehabilitation in this licence or existing Licence Numbers 11175 and 4437 (see Section N Variations from Control and Operation Standards on this drawing).
5. Excess topsoil and overburden not required for immediate use in berms or rehabilitation may be temporarily stockpiled on the quarry floor. Topsoil and overburden stockpiles shall be located within the limit of extraction and remain a minimum of 30 metres from the licence boundary and 90 metres from a property with a residential use.
6. Temporary topsoil and overburden stockpiles which remain for more than one year shall have their slopes vegetated to control erosion. Seeding shall not be required if these stockpiles have vegetated naturally in the first year.

F. Setbacks, Berms and Screening

1. Setbacks are as shown on the plan view. Excavation will occur within the extraction setback area along the west and northwest area of the licensed boundary to accommodate grading required for the realignment of the existing watercourse. Furthermore, areas within the setbacks will be accessed as necessary to perform general site servicing, maintenance (berming, fencing etc.) and progressive rehabilitation. See Section N Variations from Control and Operation Standards on drawing 2 of 6.
2. Locations and heights for all acoustic/visual berms are provided on the plan view. All proposed berms shall be constructed in accordance with the "Typical Acoustic Berm Detail" (on this drawing), "Typical Visual Berm Detail" (on drawing 4 of 6) and, more specifically, berms adjacent to Beechwood Road will be constructed in accordance with "Typical Berm - Adjacent to Beechwood Berm Detail" (on this drawing). Where the proposed berm transects the existing watercourse along the north perimeter, a culvert shall be installed in accordance with DFO requirements. Culverts will also be installed under berms, where necessary, to maintain existing drainage to and from off-site and to the existing watercourse. All proposed berms will be vegetated with non-invasive plant species and maintained to control erosion. Temporary erosion control will be implemented as required.
3. Perimeter acoustic berms may be removed for final rehabilitation in the final Phase when they are no longer required for noise attenuation.
4. Any natural treed buffer areas in the setbacks will be maintained where feasible subject to berm requirements.

G. Site Dewatering

1. Surface water will be discharged from the sump areas to the existing watercourse until the watercourse is realigned to the location of Phases 1B and 2B. Once the watercourse realignment has been completed, surface water will be discharged from the sumps to the realigned watercourse in Phase 1B.
2. Sump: During quarry development, a portable submersible pumps will be installed in each Initial Sinking Cut Area for the purpose of dewatering to maintain a dry working area and/or aggregate washing. Water will be pumped from the sumps to a pond where it is either used for aggregate washing or discharged to the existing watercourse. The sumps shall be relocated (as required) within each extraction area during the operational life of the quarry.

H. Extraction Details

1. The extraction sequence is outlined on drawing 3 of 6.
2. The proposed maximum depth of extraction is indicated by the spot elevations shown on the plan view. Extraction shall proceed to a maximum depth of approximately 42 m below ground surface (ranging in elevation from 141 masl in the southwest to 149 masl in the northeast portions of the site), corresponding to the geologic base of the Gasport dolostone of the Lockport Group.
3. For the "Watercourse Realignment Transition Area", the maximum depth of extraction is approximately 1 metre (down to an elevation of 174 masl) and any extraction in the "Watercourse Realignment Transition Area" shall be completed as part of site preparation (construction of compensatory ponds). No drilling or blasting shall be permitted in the "Watercourse Realignment Transition Area".
4. Internal haul road locations shall vary as extraction progresses and will be located on the quarry floor with the exception of at grade crossings.
5. Blasted aggregate will be transported back to the mobile crusher plant and processing area on the quarry floor for processing and shipping.
6. An office/scale house and weigh scale will be established on site. A maintenance shop and shed(s) may be constructed on site. Portable office/storage trailers and structures associated with fuel storage may be brought onto the site for temporary periods for uses associated with quarry activity. All structures shall remain 30 metres from the licence boundary / Trans Canada Pipelines easement or 90 metres from the licence boundary if the boundary abuts land that is used for residential purposes or is restricted to residential use by the Zoning By-law at the time the licence is issued.
7. Aggregate stockpiles (including recyclable material) shall be located within the limits of extraction and remain a minimum of 30 metres from the licence boundaries (except where the licence boundaries abut Upper's Lane and the unopened road allowance - See Section N Variations from Control and Operation Standards on this drawing) and 90 metres from a property with a residential use.
8. All highway trucks shall be directed to the haul route utilizing Thorold Townline Road from Upper's Lane and not directed to Beechwood Road from Upper's Lane.

I. Equipment and Processing

1. A portable processing plant (including primary, secondary and tertiary crushing and screening units) will be permitted within the North and Mid Extraction Areas inclusive.
2. Processing shall be located within the limit of extraction and remain a minimum of 30 metres from the licence boundary and 90 metres from a property with a residential use.
3. During the sinking cuts and early phases of operation, the primary crusher will be integrated into a single processing plant located near the working face. In later phases, the primary crusher will split from the single integrated plant and start to follow the working face. The processing plant, which contains the secondary and tertiary crushers, shall be placed in the location identified on the Extraction Sequence Schematic on drawing 3 of 6 during each stage of extraction. The processing plant will be located at varying elevations, beginning at the top of rock during the sinking cut portion of operations, and moving to the first bench and then the final quarry floor as space becomes available. See note A.3. on drawing 4 of 6 for additional information.
4. Once processing has progressed to Phase 2A, a hot mix asphalt (HMA) batch plant facility shall be established on the quarry floor (in the location shown on the plan view) in Phase 1A. The HMA batch plant shall remain in the location shown on the plan view for the life of the quarry until extraction is complete and shall be removed during progressive rehabilitation.
5. In Phase 4, the portable processing plant shall require additional shielding in accordance with note A.5 on drawing 4 of 6.
6. A wash plant and temporary wash ponds may be established and located to move together with the portable processing plant, subject to permit approval from MECP.
7. Equipment to be used onsite may include, but shall not be limited to:
   - a. Working Face - 1 silenced rock drill; 1 loader;
   - b. Processing - 1 portable processing plant including crushers, screeners, and stackers; 2 loaders (at stockpiles);
   - c. Asphalt - 1 asphalt plant; 2 loaders, 1 compressor vent, 1 dust controller blower (motor and stack); elevator motor, conveyor motor, oven motor, pug mill (door and motor);
   - d. Conveyor(s);
   - e. Generator(s) (diesel-fueled); and
   - f. Rock trucks, haul trucks, shipment trucks and fuel trucks.
8. Wash pond(s) and sump(s) may be permitted in accordance with Environmental Compliance Approval or Permit to Take Water Requirements. The pond(s) and sump(s) will move throughout operations and as extraction progresses horizontally and vertically.
9. Equipment used for construction of the perimeter berms/barriers, overburden stripping, rehabilitation, the new watercourse corridor, as well as other quarry related construction projects will be utilized on site.

J. Frequency / Timing of Blasts

1. Prior to blasting being permitted within the 300 metre setback of the TransCanada Pipeline, identified as 'TransCanada Blasting Buffer Area' on this Plan, the licensee shall address the requirements of notes D.5 on drawing 4 of 6.
2. All blast monitoring reports shall be retained by the licensee for a period of seven years after each blast and made available upon request for audit purposes. See Section D on drawing 4 of 6 for detailed blasting requirements.

K. Fuel Storage

1. Fuel storage tanks will be located in close proximity to the main processing plant (or in an alternative location subject to approval by the MNRF). Fuel storage tanks shall be installed and maintained in accordance with Technical Standards and Safety Act, 2000. Liquid Fuels Handling Code, 2000 and Liquid Fuels Regulation Reg. 217/01.
2. All fuel tanks shall be doubled sided or placed in containment facilities large enough to hold the tanks maximum volume.
3. Fuel trucks shall be used to transfer fuel to on-site equipment in accordance with the Liquid Fuels Handling Code, 2000.
4. A Spills Contingency Plan shall be prepared and implemented prior to site preparation. The Spills Contingency Plan shall be available on site, submitted to the City of Niagara Falls Fire Services Department and all employees and contractors shall be informed and required to comply with this plan. The location of on site fire routes, as well as any other emergency operation plans for the quarry, will be included in this plan.

L. Spills Plan

1. In case of an accidental spill of petroleum products, the following contingency plan will be activated:
   - a. The Ministry of Environment, Conservation and Parks (MECP) (see address and phone number below) and surrounding landowners will be notified.
   - b. For a leakage or spill, immediate action will be taken to stop it. At the same, measures will be taken to prevent spreading. These measures may include building a berm or construction of a ditch, for instance.
   - c. The quarry operator shall commence recovery procedures by collecting the spilled substance into containers.
   - d. The soil in the area affected by the spill or leak shall be removed and disposed of at a location prescribed by the MECP.

   Ministry of Environment, Conservation and Parks
   Niagara District Office
   Garden City Tower 9th Floor Suite 15
   301 St. Paul Street
   St. Catharines, Ontario
   L2R 7R4

   Spills Action Centre: 1-800-268-6060

M. Scrap and Recycling

1. Scrap may be stored on-site and shall be removed on an on-going basis.
2. Scrap shall only include material generated directly as a result of the aggregate operation such as refuse, debris, scrap metal, lumber, discarded machinery, equipment and motor vehicles.
3. All fluids shall be drained from any discarded equipment, machinery or motor vehicle prior to storage and disposed of in accordance with the Environmental Protection Act.
4. Scrap shall not be stored within 30 metres of any body of water or the licence boundary and shall be kept in close proximity to the main processing plant.
5. Recycling of asphalt, concrete, porcelain and glass shall be permitted on-site.
6. Recyclable asphalt materials shall not be stockpiled within:
   - 6.1. 30 metres of any waterbody or man-made pond; or
   - 6.2. 2 metres of the ground water table.
7. Recyclable material shall be kept in close proximity to the main processing plant and shall be stored separately on the quarry floor and within the extraction area limit.
8. Rebar or other structural metal shall be separated from recyclable aggregate material during processing and placed in a designated scrap pile on-site which shall be removed on an on-going basis.
9. Recycled aggregate shall be removed on an on-going basis.
10. Recycling activities shall not interfere with the operational phases of the site or with rehabilitation.
11. Once the site is depleted, no further importation of recyclable material shall be permitted.
12. Once final rehabilitation has been completed and approved in accordance with the site plan, all recycling operations shall cease.
13. The site shall be kept in an orderly condition.

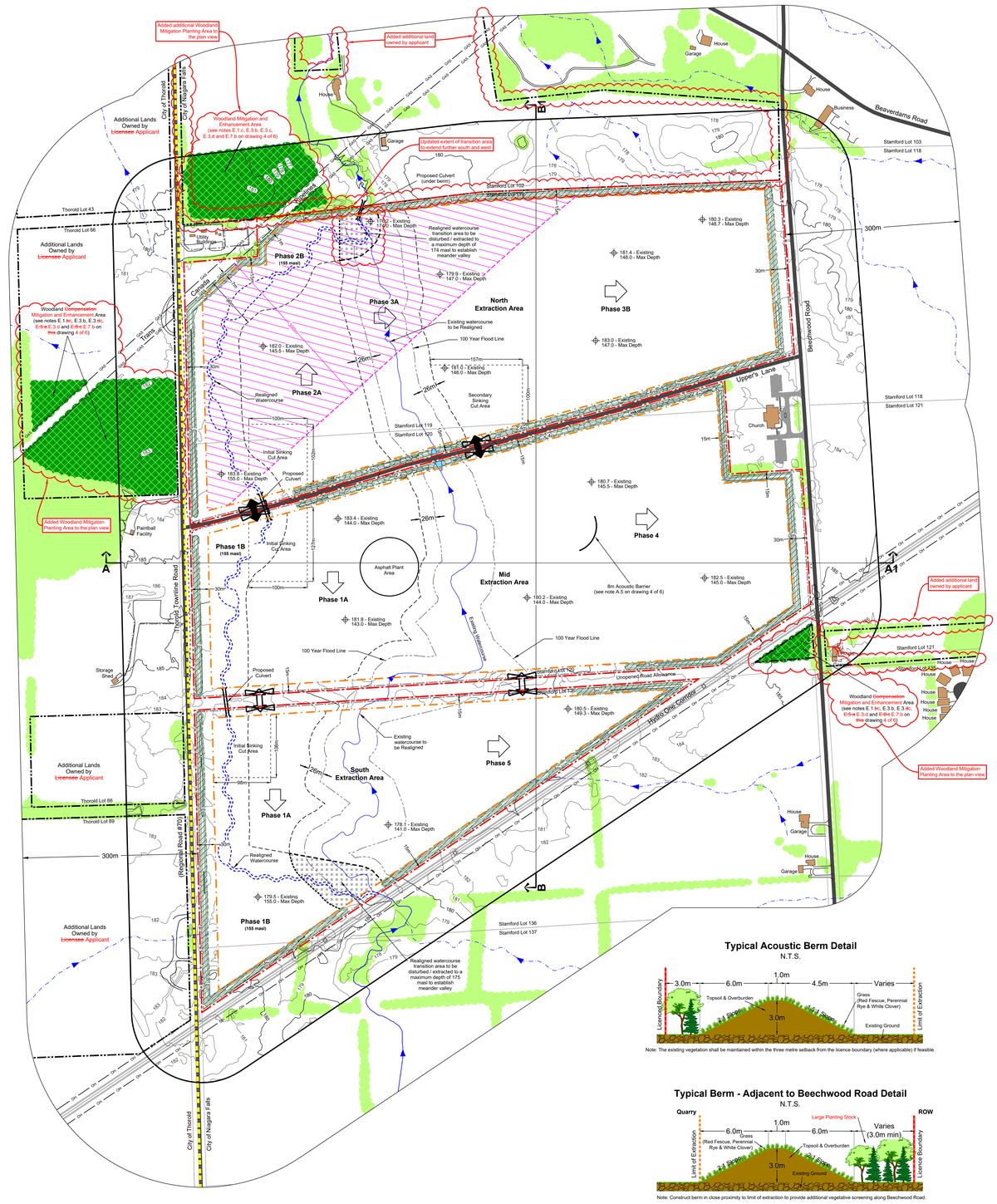
N. Variations from Control and Operation Standards

Variations from Control and Operation Standards

No.	Variation	Rationale	Standard (0.13)
1	Extraction shall occur within 30 metres but no closer than 15 metres from the Upper's Lane road allowance and the unopened road allowance between Lots 120 and 136. In addition, extraction may occur: - Within the 15 metre setback from the Upper's Lane road allowance and the unopened road allowance between Lots 120 and 136, - Within the 15 metre setback from the north and south boundaries of the site and - Within the 30 metre setback from Thorold Townline Road.	Upper's Lane and the unopened road allowance are isolated since no road allowance exists for either to the west of Thorold Townline Road or east of Beechwood Road. Setbacks will be disturbed in order to facilitate construction associated with the site access points and watercourse realignment.	(1) 9 and 10
2	Overburden may be removed from the extraction setback area to permit: - Extraction within 30 metres but no closer than 15 metres from Upper's Lane road allowance and the unopened road allowance between Lots 120 and 136 Overburden and aggregate may be removed from the excavation setback areas as follows: - Within the 15 metre setback from the Upper's Lane road allowance and the unopened road allowance between Lots 120 and 136, - Within the 15 metre setback from the north and south boundaries of the site and - Within the 30 metre setback from Thorold Townline.	Upper's Lane and the unopened road allowance are isolated since no road allowance exists for either to the west of Thorold Townline Road or east of Beechwood Road. Setbacks will be disturbed in order to facilitate construction associated with the site access points and watercourse realignment.	(1) 11
3	Topsoil and overburden may be moved between this Licence and Licence Numbers 11175 & 4437 (subject to drawing 5 of 6, Section C).	This will provide for effective rehabilitation of these licences.	(1) 18
4	A portion of the quarry face shall remain vertical. See Rehabilitation Plan, drawing 5 of 6.	Vertical faces above and below the lake level will create a more diverse habitat and visually appealing rehabilitated landform.	(1) 19
5	The licence boundary for the North Extraction Area shall not be fenced on or west of the Trans Canada Pipeline easement. Fencing shall be erected on the eastern extent of the easement.	This will allow Trans Canada to have unobstructed access to the easement for maintenance purposes.	(3)(a)

O. Trans Canada Pipeline (TCPL)

1. The licencee shall notify TCPL if it intends to blast within 300 metres of their right-of-way (easement). No blasting shall occur until written consent is obtained from TCPL.
2. Any other work (other than blasting) within 30 metres of TCPL's right-of-way requires written consent from TCPL.
3. Crossing of the TCPL right-of-way with vehicles is not permitted without written consent from TCPL.
4. No material extraction shall be permitted within 40 30 metres of TCPL's right-of-way without written consent from the Canada Energy Regulator (CER) formerly NEB or National Energy Board.
5. No buildings or structures shall be constructed anywhere on TCPL's right-of-way. Permanent buildings and structures shall be located a minimum of 7 metres from the edge of the TCPL right-of-way. Temporary or accessory buildings shall be located a minimum of 3 metres from the edge of the right-of-way.
6. A minimum setback of 7 metres from the nearest portion of a TCPL pipeline right-of-way shall also apply to any parking area or loading area, including any parking spaces, loading spaces, stacking spaces, bicycle parking spaces, and any associated drive aisle or driveway.



Typical Acoustic Berm Detail

N.T.S.

Note: The existing vegetation shall be maintained within the three metre setback from the licence boundary (where applicable) if feasible.

Typical Berm - Adjacent to Beechwood Road Detail

N.T.S.

Note: Construct berm in close proximity to limit of extraction to provide additional vegetative screening along Beechwood Road.

Table 1: Sensitive Receptors Within 500m of the Licence Boundary

Receptor	Address	Distance	Receptor	Address	Distance	Receptor	Address	Distance	Receptor	Address	Distance	Receptor	Address	Distance	Receptor	Address	Distance
101	10148 Beavervdams Road	184 m	121	5695 Osprey Avenue	374 m	141	9349 Madison Crescent	415 m	161	9245 Shoveller Drive - Unit 24	489 m	181	9414 Shoveller Drive	416 m	201	9461 Eagle Ridge Drive	427 m
102	10138 Beavervdams Road	442 m	122	5687 Osprey Avenue	362 m	142	9337 Madison Crescent	423 m	162	9245 Shoveller Drive - Unit 25	495 m	182	9404 Shoveller Drive	423 m	202	9500 Eagle Ridge Drive	474 m
103	9722 Beavervdams Road	234 m	123	5679 Osprey Avenue	350 m	143	9325 Madison Crescent	434 m	163	9312 Madison Crescent	417 m	183	9394 Shoveller Drive	428 m	203	9494 Eagle Ridge Drive	477 m
104	9582 Beavervdams Road	151 m	124	5671 Osprey Avenue	339 m	144	9315 Madison Crescent	445 m	164	9324 Madison Crescent	404 m	184	9374 Shoveller Drive	443 m	204	9490 Eagle Ridge Drive	478 m
105	9417 Beavervdams Road	447 m	125	5663 Osprey Avenue	333 m	145	9245 Shoveller Drive - Unit 21	469 m	165	9336 Madison Crescent	390 m	185	9364 Shoveller Drive	450 m	205	9484 Eagle Ridge Drive	480 m
106	9337 Beavervdams Road	475 m	126	5655 Osprey Avenue	321 m	146	9245 Shoveller Drive - Unit 20	461 m	166	9352 Madison Crescent	370 m	186	9354 Shoveller Drive	460 m	206	9440 Eagle Ridge Drive - Unit 1	484 m
107	5584 Beavervdams Beechwood Road	81 m	127	5647 Osprey Avenue	311 m	147	9245 Shoveller Drive - Unit 19	453 m	167	9366 Madison Crescent	354 m	187	9344 Shoveller Drive	467 m	207	9440 Eagle Ridge Drive - Unit 2	495 m
108	5769 Beavervdams Beechwood Road	287 m	128	5639 Osprey Avenue	299 m	148	9245 Shoveller Drive - Unit 18	447 m	168	9380 Madison Crescent	338 m	188	9334 Shoveller Drive	478 m	208	5772 Osprey Avenue	499 m
109	5821 Beavervdams Beechwood Road	360 m	129	5631 Osprey Avenue	290 m	149	9245 Shoveller Drive - Unit 17	440 m	169	5610 Osprey Avenue	311 m	189	9324 Shoveller Drive	488 m	209	9440 Eagle Ridge Drive - Unit 40	494 m
110	5783 Osprey Avenue	490 m	130	5623 Osprey Avenue	284 m	150	9245 Shoveller Drive - Unit 1	410 m	170	5622 Osprey Avenue	323 m	190	9314 Shoveller Drive	494 m	210	5599 Osprey Avenue	251 m
111	5775 Osprey Avenue	480 m	131	5615 Osprey Avenue	271 m	151	9245 Shoveller Drive - Unit 2	425 m	171	5632 Osprey Avenue	331 m	191	9355 Eagle Ridge Drive	494 m	211	9457 Madison Crescent	260 m
112	5767 Osprey Avenue	470 m	132	5607 Osprey Avenue	259 m	152	9245 Shoveller Drive - Unit 3	435 m	172	5642 Osprey Avenue	341 m	192	9365 Eagle Ridge Drive	481 m	212	5329 Beechwood Road	63 m
113	5759 Osprey Avenue	459 m	133	9445 Madison Crescent	280 m	153	9245 Shoveller Drive - Unit 4	443 m	173	5652 Osprey Avenue	350 m	193	9375 Eagle Ridge Drive	469 m	213	9384 Shoveller Drive	435 m
114	5751 Osprey Avenue	448 m	134	9433 Madison Crescent	299 m	154	9245 Shoveller Drive - Unit 5	457 m	174	5668 Osprey Avenue	362 m	194	9385 Eagle Ridge Drive	471 m			
115	5743 Osprey Avenue	438 m	135	9421 Madison Crescent	316 m	155	9245 Shoveller Drive - Unit 6	467 m	175	9405 Shoveller Drive	374 m	195	9395 Eagle Ridge Drive	464 m			
116	5735 Osprey Avenue	424 m	136	9409 Madison Crescent	334 m	156	9245 Shoveller Drive - Unit 7	476 m	176	9395 Shoveller Drive	383 m	196	9045 Eagle Ridge Drive	457 m			
117	5727 Osprey Avenue	415 m	137	9397 Madison Crescent	351 m	157	9245 Shoveller Drive - Unit 8	485 m	177	9385 Shoveller Drive	392 m	197	9415 Eagle Ridge Drive	448 m			
118	5719 Osprey Avenue	404 m	138	9385 Madison Crescent	371 m	158	9245 Shoveller Drive - Unit 9	498 m	178	9446 Shoveller Drive	400 m	198	9425 Eagle Ridge Drive	445 m			
119	5711 Osprey Avenue	393 m	139	9373 Madison Crescent	391 m	159	9245 Shoveller Drive - Unit 22	474 m	179	9434 Shoveller Drive	405 m	199	9435 Eagle Ridge Drive	443 m			
120	5703 Osprey Avenue	383 m	140	9361 Madison Crescent	407 m	160	9245 Shoveller Drive - Unit 23	482 m	180	9424 Shoveller Drive	412 m	200	9445 Eagle Ridge Drive	436 m			

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
- 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)
- Watercourse - Realigned (Stantec, 2020)
- 100 Year Floodline
- Water Feature
- Wooded Area
- Woodland Mitigation and Enhancement Area (Off-site)
- Watercourse Realignment Transition Area
- 120m Offset From Licence Boundary
- Trans Canada Blasting Buffer Area - See Note D.5 on drawing 4 of 6
- Parcel Fabric
- Trans Canada Pipeline Easement
- Hydro One Easement
- Entrance / Exit
- Limited Service Access (For Phases 1A, 1B and 5 in South Extraction Area)
- Gate
- Culvert
- General Direction of Excavation & Boundary
- Berm (Top - Noise Attenuation Berm; Bottom - Visual Berm)
- Building/Structure
- Spot Elevation (Metres above sea level (MASL); Top - Existing; Bottom - Maximum Depth of Extraction)
- Cross Sections (A1)

Site Plan Acronyms

1. ARA - Aggregate Resources Act
2. MNRF - Ministry of Natural Resources and Forestry
3. MHSTCI - Ministry of Heritage, Sport, Tourism and Culture Industries
4. MECP - Ministry of the Environment, Conservation and Parks
5. MGCS - Ministry of Government and Consumer Services
6. DFO - Department of Fisheries and Oceans Canada
7. ECA - Environmental Compliance Approval
8. BMPP - Best Management Practices Plan
9. PTTW - Permit to Take Water
10. MASL - Metres above sea level
11. TCPL - Trans Canada Pipeline
12. ROW - Right of way
13. HMA - Hot mix asphalt
14. PWQO - Provincial Water Quality Objectives
15. MISA - Municipal Industrial Strategy for Abatement
16. TSS - Total Suspended Solids
17. NCD - North Channel Design

Site Plan Amendments

No.	Date	Description	By

Site Plan Revisions (Pre-Licencing)

No.	Date	Description	By
1	January 2022	Removed note H.3, revised note I.8, added note I.9. 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.

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
113 COLLIER STREET, BARRIE, ON. L4M 1H2 | P: 705.728.0045 F: 705.728.2010 | WWW.MHBCPLAN.COM

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

Draft

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)

0 90 180 Meters

Date	~~October 2021~~ April 4, 2024
Drawn By	C.P.
Checked By	D.W.
File No.	9811V

File Name

Operational Plan

Drawing No.

2 of 6

File Path N:\Brian\9811V - Walker Uppers Quarry\Drawings\Site Plan\CAD\9811V - Site Plan.dwg

A. General

1. This plan depicts a schematic operations sequence for the property based on the best information available at the time of preparation.
2. Phases do not represent any specific or equal time period.
3. 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, silt pond, active extraction area and area being stripped for the next 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.
4. 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

1. 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.
2. Generally, site preparation in Phases 1 and 2 to include but not limited to:
   a. Constructing the main entrance and cross over(s) in accordance with entrance permit approvals
   b. Establishing fencing around licenced boundary (see Section N Variations from Control and Operation Standards on drawing 2 of 6)
   c. Removal of trees and existing buildings (in accordance with all site plan requirements and applicable regulations)
   d. Proceed with stripping of overburden/topsoil from Phase 1 and, if necessary, Phase 2
   e. Construction of berms/acoustic barriers within the perimeter setback of the licence boundary (as shown on the plan view).
3. Initiate 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 unopened road allowance in Phases 1A and 1B.
4. Install water management and erosion and sediment control measures (silt fencing) in accordance with note D.1 on this drawing and note E.1.cd on drawing 4 of 6.
5. 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)

1. Commence extraction in the 'Initial Sinking Cut Area' identified in the Mid and South Extraction Area (see plan view for location).
2. Phase 1A shall be extracted in up to three (3) lifts to a depth ranging between 140 masl and 145 masl.
3. Phase 1B shall be extracted in one (1) to two (2) lifts to a depth of 155 masl.
4. 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. At this point, a permanent sump will be established in each extraction area.
5. 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 will be constructed, designed and vegetated in accordance with DFO's authorization and this Rehabilitation Plan (drawing 5 of 6).
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 sideslope 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.
7. Commence site preparation of Phase 2.

D. Phase 2 (2A & 2B)

1. Commence extraction in the 'Initial Sinking Cut Area' identified in the North Extraction Area (see plan view for location).
2. Phase 2A shall be extracted in up to three (3) lifts to a depth ranging between 141 masl to 145 masl.
3. Phase 2B shall be extracted in one (1) to two (2) lifts to a depth of 155 masl.
4. 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.
5. 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 DFO authorization and Rehabilitation Plan (drawing 5 of 6).
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 sideslope 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.
7. Commence site preparation of Phase 3.

E. Phase 3 (3A & 3B)

1. Proceed with stripping of overburden/topsoil.
2. 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.
3. In the event that watercourse relocation has not been approved or completed, extraction in Phase 3B may proceed before extraction in Phase 3A.
4. 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.
5. 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.
6. Once the existing watercourse has been realigned, stripping and extraction in Phase 3A may proceed.
7. Complete progressive rehabilitation of new watercourse and riparian wetland channel in accordance with Rehabilitation Plan (drawing 5 of 6).
8. 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.
9. Commence site preparation of Phase 4.

F. Phase 4

1. Proceed with stripping of overburden/topsoil.
2. Commence Phase 4 extraction in an easterly direction, moving gradually from north to south.
3. Phase 4 shall be extracted in up to three (3) lifts to a depth ranging between 142 masl in and 147 masl.
4. 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

1. Proceed with stripping of overburden/topsoil.
2. Commence Phase 5 extraction in an easterly direction, moving gradually from north to south.
3. Phase 5 shall be extracted in up to three (3) lifts to a depth ranging between 140 masl and 143 masl.
4. 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.

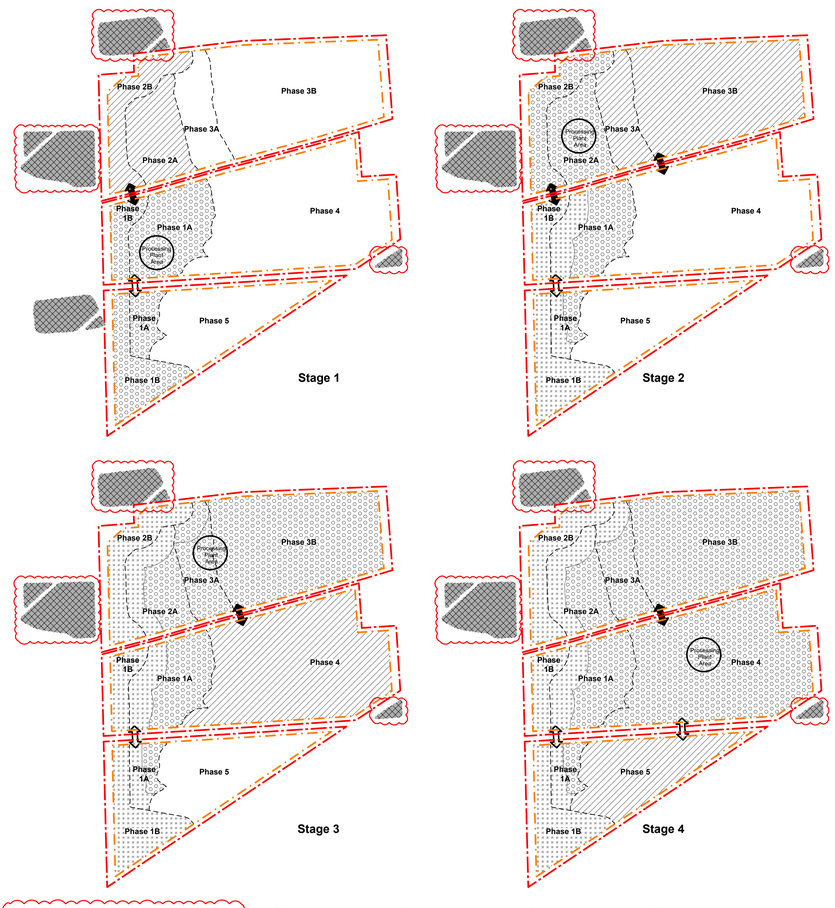
H. Final Phase

1. Complete extraction of any remaining resource in the extraction limit near the entrance in Phase 1A and 1B (e.g. ramp).
2. 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.
3. 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.

Extraction Sequence Schematic

Scale 1:7500

0 200 400 Meters



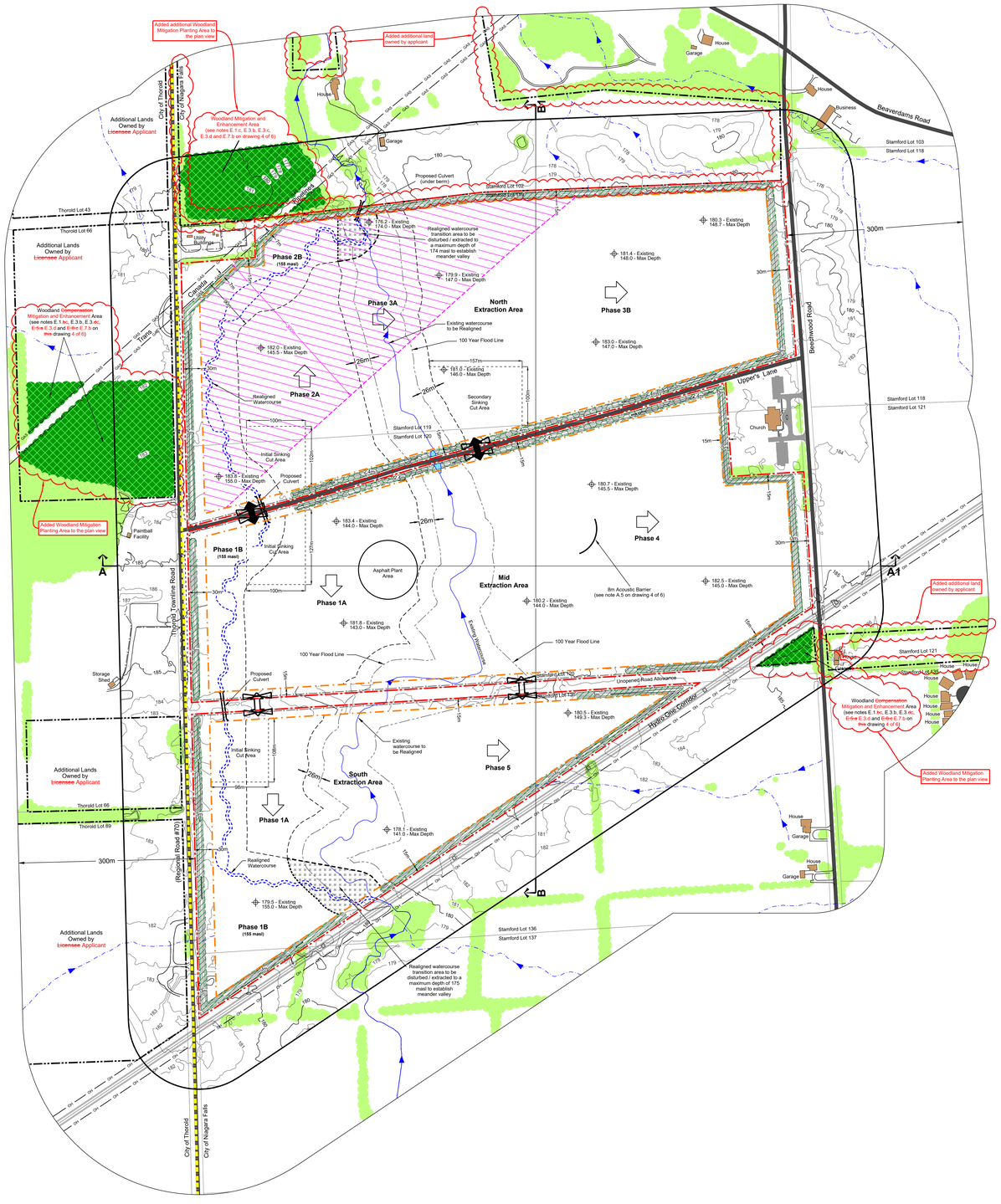
Off-site plantings to be initiated as part of Site Preparation and completed prior to Phase 1

Undisturbed

Site Preparation

Under Extraction

Progressive and Final Rehabilitation



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
- 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)
- Watercourse - Realigned (Stantec, 2020)
- 100 Year Floodline
- Water Feature
- Wooded Area
- Woodland Mitigation and Enhancement Area (Off-site)
- Watercourse Realignment Transition Area
- 120m Offset From Licence Boundary
- Trans Canada Blasting Buffer Area - See Note D.5 on drawing 4 of 6
- Parcel Fabric
- Trans Canada Pipeline Easement
- Hydro One Easement
- Entrance / Exit
- Limited Service Access (For Phases 1A, 1B and 5 in South Extraction Area)
- Gate
- Culvert
- General Direction of Excavation & Boundary
- Berm (Top - Noise Attenuation Berm; Bottom - Visual Berm)
- Building/Structure
- Spot Elevation (Metres above sea level (MASL); Top - Existing; Bottom - Maximum Depth of Extraction)
- Cross Sections

Site Plan Acronyms

1. ARA - Aggregate Resources Act
2. MNRF - Ministry of Natural Resources and Forestry
3. MHSTCI - Ministry of Heritage, Sport, Tourism and Culture Industries
4. MECP - Ministry of the Environment, Conservation and Parks
5. MGCS - Ministry of Government and Consumer Services
6. DFO - Department of Fisheries and Oceans Canada
7. ECA - Environmental Compliance Approval
8. BMPP - Best Management Practices Plan
9. PTTW - Permit to Take Water
10. MASL - Metres above sea level
11. TCPL - Trans Canada Pipeline
12. ROW - Right of way
13. HMA - Hot mix asphalt
14. PWQO - Provincial Water Quality Objectives
15. MISA - Municipal Industrial Strategy for Abatement
16. TSS - Total Suspended Solids
17. NCD - North Channel Design

Site Plan Amendments

No.	Date	Description	By

Site Plan Revisions (Pre-Licencing)

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.

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
113 COLLIER STREET, BARRIE, ON. L4M 1H2 | P: 705.728.0045 F: 705.728.2010 | WWW.MHBCPLAN.COM

MHBC Stamp

Debra Walker

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

Draft

N W E S

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.
	Checked By D.W.
	File No. 9811V

File Name

Extraction Sequence

Drawing No.

3 of 6

File Path N:\Brian\9811V - Walker Uppers Quarry\Drawings\Site Plan\CAD\9811V - Site Plan.dwg

A. Acoustic Assessment

1. Minimum 3 metre tall acoustic berms shall be constructed in the locations shown on the plan view.
2. The acoustic berms shall be constructed during site preparation and prior to extraction.
3. The primary crusher shall stay within 30 metres of the working face to maximize shielding effect of the quarry terrain, except when extraction is in the South Extraction Area as per note A.4 below.
4. Material extracted from the South Extraction Area shall be processed in the Mid Extraction Area.
5. While processing in Phase 4, the licensee shall maintain an 8 metre tall barrier at a radius of 40 metres to the southeast of the processing plant's secondary crushers (see plan view for location). The barrier can be material stockpiles, noise walls, or a combination of both. The barrier shall extend long enough to shield receptors R4 and R5 (see plan view) from the secondary crushers. If crushers need to be removed for operational reasons, the barrier must be extended to block the additional line-of-sight to both R4 and R5. The 40 metre radius from the barrier to the processing plant's secondary crushers must also be maintained.
6. All construction equipment shall meet the sound emission standards defined in MECP Publication NPC-115.
7. The following best practice measures shall be undertaken to minimize the potential for construction noise impacts related to site preparation, berm creation and rehabilitation but not related to extraction and processing activities:
   a. Construction will be limited to time periods allowed by the City's applicable by-laws. If construction activities are required outside of these hours, the licensee will seek permits / exemptions directly from the City in advance.
   b. All internal combustion engines will be fitted with appropriate muffler systems.
   c. The licensee's operating procedures will contain a provision that any initial complaint will trigger verification that the general noise control measures agreed to on this Plan are in effect.
   d. In the presence of persistent noise complaints, all construction equipment will be verified to comply with MECP's NPC-115 guidelines.
   e. In the event of verified presence of persistent noise complaints and subject to the results of a field investigation, alternative noise control measures may be required, where reasonably available. In selecting appropriate noise control and mitigation measures, consideration will be given to the technical, administrative and economic feasibility of the various alternatives.

B. Air Quality

1. The licensee shall apply water or another provincially approved dust suppressant to internal haul roads and processing areas, as necessary, to mitigate dust.
2. Processing equipment shall be equipped with dust suppressing or collection devices, where the equipment creates dust and is operating within 300 metres of an air quality sensitive receptor (as set out in the Air Quality Impact Assessment).
3. The licensee shall obtain an environmental compliance approval under the Environmental Protection Act where required to carry out operations at the quarry.
4. The site will operate in accordance with the Best Management Practices Plan (BMPP) for Fugitive Dust Emissions. The BMPP may be amended from time to time, considering actual impacts and operational considerations. The recommendations in the BMPP are based on the maximum daily production rates. At lower production rates, the control measures specified in the BMPP can be reduced accordingly, provided dust remains mitigated on site.
5. The following mitigation measures shall be incorporated into the BMPP:
   a. Blasting operations occurring within 300 metres of a residential receptor shall have a smaller blast area, not exceeding 200 m² in area.
   b. Aggregate extraction, processing and shipping does not exceed 9,000 tonnes per day.
   c. Under dry conditions, the capacity to apply water on an hourly basis to all traveled haul routes within the licence boundaries is required.

C. Archaeology

1. Areas identified as "Archaeological Site - Protected Areas Requiring Further Archaeological Assessment" on this drawing reflect areas that require further archaeological assessment and are protected by a 20 to 30 metre protective buffer. A 50 metre monitoring buffer is also identified on this drawing.
2. No ground alterations including overburden stripping and excavation, or development of any kind shall occur within areas identified as "Archaeological Site - Protected Areas Requiring Further Archaeological Assessment" and their respective protective buffers until:
   a. the required investigations are completed in accordance with the Stage 1 and 2 Archaeological Assessment prepared by Archaeological Research Associates Ltd. (April 2020),
   b. any recommendations that the respective site(s) has no further cultural heritage value or interest are made as a result of completing further investigations, and,
   c. the associated reports are entered into the Ontario Public Register of Archaeological Reports and copies are provided to the MNRF.

   Should the required investigations noted above determine that any portion of the "Protected Areas Requiring Further Archaeological Assessment" contain significant archaeological resources that will require long term protection, the licencee shall amend the extraction limits to remove areas to be protected as set out by the assessment on all pages of the Site Plan accordingly.
3. Until note C.2 has been satisfied, a temporary barrier shall be established around the perimeter of each "Archaeological Site - Protected Areas Requiring Further Archeological Assessment" identified on this drawing as part of site preparation and in advance of ground alteration.
4. All soil disturbing activities within the 50 metres monitoring buffers shall be monitored by a licensed archaeologist to ensure the effectiveness of the avoidance strategy. The archaeologist shall ensure that the temporary barrier is in the appropriate location and shall be empowered to stop construction if there is a concern for impacts to an archaeological site. 'No go' instructions shall be issued to all work crews for the protected areas, and the locations of the protected areas shall be shown on all appropriate contract drawings. The protected areas shall be inspected by a licensed archaeologist once the strategy is no longer required, and the effectiveness of the strategy shall be reported to the MHSTCI.
5. Immediately upon issuance of the Licence, and once the construction schedule has been finalized, a licensed archaeologist will be retained by the licensee so that monitoring can occur where required. The remaining archaeological fieldwork will be completed upon issuance of the licence by the MNRF.
6. Should deeply buried archaeology remains be found during the course of site preparation and/or extraction related activities, the MHSTCI shall be notified.
7. In the event that human remains are encountered during construction or extraction activities, the licensee shall immediately contact both the MHSTCI and Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ministry of Government and Consumer Services (MGCS).

D. Blasting

1. An attenuation study shall be undertaken by an independent blasting consultant during the first 12 months of operation in order to obtain sufficient quarry data to confirm the initial guideline parameters and assist in refining future blast designs.
2. All blasts shall be monitored for both ground vibration and overpressure at the closest privately owned sensitive receptors adjacent the site, or closer, with a minimum of two (2) instruments - one installed in front of the blast and one installed behind the blast.
3. Blasts shall be designed to maintain vibrations below 13mm/s at the location of the closest identified active spawning bed as per DFO guidelines. When blasting during active spawning season, a minimum of one supplemental vibration monitor shall be installed on the shoreline closest to the spawning bed to confirm the vibration levels.
4. The guideline limits for vibration and water overpressure shall adhere to standards as outlined in the Guidelines For the Use of Explosives In or Near Canadian Fisheries Waters (1998) or any such document, regulation or guideline which supersedes this standard.
5. All blasts shall be monitored for ground vibration at the adjacent Trans Canada Energy High Pressure Natural Gas Pipeline when blasting within 100m of the pipeline or when calculations suggest vibrations in excess of 35mm/s.
6. Blasts shall be designed to maintain vibrations at the transmission towers in the Hydro One Corridor below 50mm/s or any such document, regulation or corporate policy in effect at the time. When vibration calculations suggest vibrations at the towers may exceed 35mm/s, the towers shall be monitored for ground vibration.
7. Blasts shall be designed to maintain vibrations at the 4832 Thorold Townline Road utility buildings below 50mm/s. When vibration calculations suggest vibrations at the utility buildings may exceed 35mm/s, the buildings shall be monitored for ground vibration.
8. The guideline limits for ground vibration and air overpressure shall adhere to standards as outlined in the Model Municipal Noise Control By-law publication NPC 119 (1978) or any such document, regulation or guideline which supersedes this standard.
9. Orientation of the aggregate extraction operation shall be designed and maintained so that the direction of the overpressure propagation will be away from structures as much as possible.
10. Blast designs shall be continually reviewed with respect to fragmentation, ground vibration and overpressure. Blast designs shall be modified as required to maintain compliance with current applicable guidelines and regulations.
11. Detailed blast records shall be maintained in accordance with current industry best practices.

E. Natural Heritage

1. General
   a. Existing vegetation within the setbacks shall be maintained except where berms, haul roads and conveyors are required.
   b. A monitoring program of all berm plantings, rehabilitation plantings and offsite mitigation and enhancement plantings shall be prepared in consultation with regulatory authorities to address replacement plantings if die off occurs and to confirm stable conditions have been established.
   c. New vegetation shall be maintained in accordance with note G.5 on this drawing.
   d. Prior to construction, silt fencing and sediment control measures shall be installed and implemented prior to and during construction at the easterly limit of Phases 1A and 2A where field drainage enters the existing watercourse. This may include the use of silt fencing, check dams, straw bales, rip-rap and/or other techniques as required depending on scope, nature and location. Silt fencing will serve to demarcate the limit of protected area until the watercourse is diverted.
   e. Stockpiling of all excavated material shall be in accordance with note H.7 on drawing 2 of 6.
   f. Topsoil and overburden stockpiles shall be maintained in accordance with the Best Management Practices for the Protection, Creation and Maintenance of Bank Swallow Habitat in Ontario (MNRF 2017). Stripped overburden and topsoil for rehabilitation shall be utilized in accordance with notes E.4, E.5 and E.6 on drawing 2 of 6.
   g. Dust control will be implemented in accordance with Section B on this drawing.
   h. Fuel storage shall be in accordance with the notes under Section K on drawing 2 of 6.
   i. 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. Natural Channel Design
   a. The existing watercourse will remain open (not culverted) where it enters the south limit of the South Extraction Area.
   b. Where the watercourse exits the North Extraction Area, a culvert will be installed to maintain the watercourse while allowing an acoustic berm to be constructed. As part of final rehabilitation, the berm and culvert shall be removed to allow for the watercourse to be open.
   c. As part of site preparation, a compensation pond will be constructed in the Watercourse Realignment Transition Area within Phase 2B, in accordance with the Natural Channel Design Report (Stantec 2021). The compensation pond will shall be excavated to a maximum depth of 174 masl in this area and in accordance with DFO authorization. No drilling or blasting shall occur in this Transition Area.
   d. As extraction is completed in Phases 1B and 2B, these areas will be filled with clay overburden material to an elevation ranging between 173 to 178 masl. In accordance with the Natural Channel Design Report (Stantec 2021), a new watercourse channel will shall be constructed, vegetated and designed in these areas and will shall include the following design elements:
      d.1. Floodplain wetlands
      d.2. Fish habitat ponds, including new pike spawning habitat as well as foraging, spawning and rearing habitat for other fish species
      d.3. Creek sections
      d.4. Wood debris toe protection and wood reinforced banks
      d.5. Log sills
      d.6. Augmented riffle
   e. Culverts will be installed under Upper's Lane and the unopened road allowance.
   f. 2:1 side slopes shall be established on the east side of the new watercourse channel down to the quarry floor.
   g. Once the realigned watercourse channel has been constructed in Phases 1B and 2B and adequate vegetation to mitigate potential erosion has been established (as confirmed by an ecologist), water from the existing watercourse will be diverted to the realigned watercourse in consultation with regulatory authorities. A fish rescue will shall be undertaken prior to dewatering and channel relocation. A License to Collect Fish for Scientific Purposes will be obtained for the fish rescue.
   h. The Natural Channel Design (NCD) Report details the Rehabilitation Planting Plan on drawings L-460 to L-463 and L-500 to L-503.
3. Woodland and Terrestrial Habitat Enhancement
   a. The 2.0 ha woodland situated on the east side of Thorold Townline Road shall be removed during the advancement of operations in Phase 1A/1B. Tree clearing in the woodlot shall be undertaken outside of the breeding bird period and the active bat season from March 23rd and August 26th.
   b. The lands identified off-site as "Woodland Compensation Mitigation and Enhancement Area" on this drawing, an area of 4.7 6.7 ha, shall be planted in accordance with the Rehabilitation Plan (drawing 5 of 6) and Planting Plan L-460 to L-463 and L-500 to L-503 from the NCD Report.
   c. The lands identified on-site as Deciduous Woodland, Treed Deciduous Swamp and Swamp Thicket / Marsh Meadow on drawing 5 of 6, an area of 4.0 ha, shall be planted in accordance with the Rehabilitation Plan.
   c. Planting for the off-site Woodland compensation Mitigation and Enhancement Area will commence in the appropriate planting season following licence approval.

5. Woodland and Wildlife Habitat Compensation Plan
   d. The goal of the on-site Rehabilitation, in particular, the detailed planting plan that accompanies the NCD and the off-site Woodland Mitigation and Enhancement Area (see drawing 5 of 6, Table 1) shall be refined in consultation with regulatory authorities to. A woodland and wildlife habitat compensation plan shall be prepared in consultation with regulatory authorities for (i) allow practices and management to respond to changing forest dynamics in the Woodland Compensation Mitigation and Enhancement Areas such as pest infestations, climatic conditions (e.g. species selection) and restoration ecology; and (ii) achieve a net gain in the ecological functions of the local and regional landscape through:
      d.1. Increasing the total area of woodland cover in the regional landscape;
      d.2. Improving associated landscape functions such as vegetative linkages and interior forest areas;
      d.3. Improving forest ecological characteristics such as species diversity, age class distribution and structural diversity, while retaining native genetics through seed collection and replanting. For example, prior to the removal of the existing 2 ha woodland:
         d.3.1. Establish the planting of the 6.7 ha of off-site Woodland Mitigation and Enhancement Area planting and approximately 4.5 ha on-site woodland planting
         d.3.2. Tree seeds and nuts will shall be gathered from the woodland for direct planting in the Woodland Compensation Mitigation and Enhancement Areas to promote the continuity of local genetic stock and a similar community composition to the removed vegetation community (FOD9);
         d.3.3. Leaf litter and sods containing native understory vegetation will shall be transplanted to promote rapid establishment of a healthy forest soil microbiome; and
         d.3.4. Transplanting of native saplings and small shrubs from the woodland to the off-site Woodland Mitigation and Enhancement Areas compensation planting area, where feasible.
      d.4. Incorporating specific wildlife habitat features for bats, deer and other wildlife, such as bat roosting structures (bat boxes or condos), coniferous tree clusters for cover, browse-tolerant shrubs and mast producing trees;
      d.5. Incorporating specific planting in setbacks and the watercourse realignment channel. For example, plantings that provide habitat for monarch including common milkweed (Asclepias syriaca), swamp milkweed (Asclepias incarnata) and nectar producing plants.
4. Significant Wildlife Habitat and Wildlife
   a. Vegetation clearing where milkweed plants are present will shall proceed when monarch larvae are absent (September 30th to April 1st).
   b. The setbacks along Thorold Townline Road and Beechwood Road shall be planted with a mix of deciduous and coniferous trees and shrubs with a range of sizes as per the Visual recommendations on this drawing. Native plant materials that are complementary to the regional and local landscape shall be used (see Rehabilitation Plan: drawing 5 of 6; planting plan drawings L-460 to L-463 and L-500 to L-503 from the NCD Report for additional information).
   c. Eight mutchambered bat boxes shall be installed in the NCD corridor where creek and vernal pool habitat is created.
5. Fish and Fish Habitat
   a. Implement notes D.3 and D.4 on this drawing.
   b. Water shall be discharged from the sump area to the existing watercourse until water flow is diverted to the watercourse realignment channel. Once the watercourse realignment has been completed, water shall be discharged from the sump locations to the realigned watercourse. Pumping and discharge shall occur as required to support fish habitat.
   c. Water collected from the sump area shall be directed to a holding pond for storage to allow for settling of suspended solids and dissipation of other constituents such as hydrogen sulfide and alkalinity. Following this pond treatment, water will be discharged to the existing watercourse until water flow is diverted to the watercourse realignment channel. Once the watercourse realignment has been completed, water shall be discharged from the holding pond to the realigned watercourse. Pumping and discharge shall occur as required to support fish habitat.
   d. Create riparian corridor to provide pike spawning habitat as shown on the rehabilitation plan, drawing 5 of 6.
6. Wetlands
   a. Wetlands along the existing watercourse will shall be maintained until the watercourse has been diverted to the watercourse realignment channel.
   b. Once the watercourse has been diverted, the created wetlands created in the watercourse realignment channel shall be maintained.
7. Monitoring Program
   a. A monitoring plan shall be prepared in consultation with regulatory authorities to assess the performance of the watercourse realignment channel and to confirm that impacts to off-site wetlands are not occurring as a result of dewatering.
   b. A monitoring program of compensation planting off-site woodland mitigation and enhancement planting shall be prepared in consultation with regulatory authorities to confirm stable conditions have been established.
   c. A trigger mechanism and contingency plan, as detailed in WSP's Level 2 Water Study Report, shall be implemented upon licence approval to proactively ensure natural heritage features and their functions are maintained (i.e. fish habitat, wetland features downstream and at 5584 Beechwood Road, and woodlands) during operational and rehabilitation phases.
   d. A Wetland Monitoring Program shall be prepared in consultation with regulatory agencies and shall be implemented to monitor the reconfigured wetland features to accurately monitor any changes in the wetland community over time and to measure the success of the re-configuration / restoration and management actions. Long-term monitoring plots and/or monitoring transects shall be established to include a count of the number of stems and percent cover for all plant species present. Monitoring shall be conducted annually at a similar time of year (i.e., late July) for the duration of Phase 1A through Phase 3A.
   e. All plants identified as part of the Wetland Monitoring Program shall be categorized by the wetness index based on the Floristic Quality Assessment System for Southern Ontario.
   f. The results of the Wetland Monitoring Program shall be submitted to the MNRF and all appropriate agencies, as determined by MNRF, annually prior to December 31st until the re-alignment and rehabilitation is complete. It is recommended that, at a minimum, a 5-year monitoring plan be undertaken upon completion of the wetland re-configuration plantings.

F. Traffic

1. Prior to commencement of extraction operations, the required entrance improvements, road improvements and dedication of road widenings (to Thorold Townline Road, Beechwood Road and Upper's Lane) shall be completed to the satisfaction of the applicable road authorities the Regional Municipality of Niagara and the City of Niagara Falls and in part in general accordance with the figures titled "Uppers Lane Conceptual Intersection Design" and "Uppers Lane Vehicle Movement Diagram" provided on this drawing 6 of 6.

G. Visual

1. Where possible and to the extent to which it is present, existing vegetation located along the site perimeter within the setback area shall be retained.
2. 3.0 metre high acoustic berms and 2.4 metre high visual berms shall be established in the locations shown on the plan view. Berms shall be constructed in a smooth, rolling manner with varying highpoints (where space permits while respecting minimum height requirements), and variations along the berm frontage to create a more natural appearance. Berms shall be seeded with a naturalizing mix of wildflowers and grasses to stabilize slopes and minimize mowing and maintenance.
3. Within the "Extended Planting Areas" (as shown on this drawing), trees shall be planted at a spacing of 5 to 10 metres on centre, depending on species. Where possible. Plantings shall be randomly spaced and staggered up on the berm up to one third of its maximum height to appear more natural. Plantings shall also extend a minimum of 3 metres out from the berm towards the road where available space permits. All vegetation shall be selected for wind, and salt and drought tolerance and hardiness. Native, non-invasive species that complement the existing surroundings shall be utilized.

   Where "Large Planting Stock" is indicated (see plan view "Extended Planting Areas" and "Typical Visual Berm Detail" on this drawing), this area shall be planted with deciduous trees of minimum 40 millimetres caliper, coniferous trees of minimum 1.5 2 metre in height, and shrub species of minimum 40 centimetres height.

   Where "Small Planting Stock" is indicated (see plan view "Extended Planting Areas" and "Typical Visual Berm Detail" on this drawing), this area shall be planted with deciduous tree whips of minimum 1.2 metres in height, coniferous trees of minimum 0.6 1.2 metre in height, and shrub species of minimum 20 centimetres in height (or bare root stock when in season).

   Planting shall occur for 40 metre stretches on either side of Upper's Lane and the unopened road allowance facing Thorold Town Line Road and on either side of the internal entrances off of Upper's Lane. The large planting stock shall be planted 3 metres beyond the berm and small planting stock shall extend from the toe of the berm to 2 metres up the berm.

   See "Planting Cell Detail for Planted Berms" and "Planting Cell Detail for at Grade Planting" on this drawing for additional information.

   Plant species for berms may include, but shall not be limited to the following:

   Trees

White Pine	Common Hackberry	Chokecherry	Eastern Hemlock
White Spruce	Paper Birch	Pin Oak	Balsam Fir
Sugar / Silver Maple	Trembling Aspen	Basswood	American Larch
White Pine Cedar	White Spruce	White Cedar	

   Shrubs

Staghorn Sumac	Nannyberry	Common Ninebark	Common Chokecherry
American Elder	Dogwood	Highbush Cranberry	

4. To ensure survival and positive growth rate, the vegetative screening shall be maintained as an effective visual screen over time. Allowance of natural succession is encouraged.
5. During the first year, planted trees and shrubs shall be watered and monitored until established. After the first year and up to five years, trees shall be inspected biannually (end of Year 1, beginning of Year 3 and end of Year 4). Trees or shrubs which are in poor condition at the time shall be fertilized, watered and monitored to improve their health and vigor.
6. A mortality rate of up to 15% of all trees planted over the course of the five year maintenance period is expected. Trees that die exceeding this percentage shall be replaced yearly, preferably in the spring or late summer. If the death or decline or trees open up direct views into the Quarry, these trees shall be replaced even if there is a die off rate below 15% of all trees.

H. Water Study

1. A long-term monitoring program will be implemented during the quarry operational and rehabilitation phases, until stable conditions are observed after quarry decommissioning.
2. In the event a well interference claim is received, the licensee shall implement the following mitigation plan to protect the local groundwater users.
   a. Prior to extraction, landowners shall be provided with a copy of the water well interference plan as well as the contact information for the licensee and MECP (Wells Help Desk 1-888-396-9355 or email wellshelpdesk@ontario.ca).
   b. If a water well interference claim is received by the licensee the following actions shall be taken:
      b.1. The licensee shall immediately notify MNRF and MECP of the complaint.
      b.2. The licensee shall contact a well contractor in the event of a well malfunction and residents will be provided a temporary water supply within 24 hours, if the issue cannot be easily determined and rectified.
   c. The well contractor shall contact the resident with the supply issue to rectify the problem as expeditently as possible, provided landowner authorization of the work.
   d. If the issue raised by the landowner is related to loss of water supply, the licensee shall have a qualified hydrogeologist / well contractor determine the likely causes of the loss of water supply, which can result from a number of factors, including pump failure (owner's expense), extended overuse of the well (owner's expense), lack of well maintenance / well cleaning (owner's expense) or lowering of the water level in the well from the quarry development (licensee expense). This assessment process shall be carried out at the expense of the licensee and the results provided to the homeowner.
   e. If it has been determined that the quarry caused the water supply interference (i.e., lowering of the water level), the licensee shall continue to supply water at their expense until the problem is rectified. The following mitigation measures shall be considered, and the appropriate measure(s) implemented at the expense of the licensee:
      e.1. Adjust pump pressure;
      e.2. Lowering of the pump to take advantage of existing water storage within the well;
      e.3. Deepening of the well to increase the available drawdown, if the well deepening changes the water quality a water treatment shall be provided;
      e.4. Widening of the well to increase the available storage of water;
      e.5. Relocation of the well to another area on the property; or
      e.6. Drilling multiple wells.
   f. If the issue raised by the landowner is related to water quality, the licensee shall have a qualified hydrogeologist / well contractor determine the likely causes of the change in water quality, and review monitoring results at the quarry and background monitoring results from the baseline well survey to determine if there is any potential correlation with the quarry. If it has been determined that the quarry caused a water quality issue, the licensee shall continue to supply water at their expense until the problem is rectified. The licensee shall be responsible for restoring the water supply by replacing the well or providing a water treatment system. The licensee is responsible for the expense to restore the water quality.
3. A spill action plan shall be carried out in accordance with the notes in Section N L Spills Plan on drawing 2 of 36.
4. A trigger mechanism and contingency plan as set out in WSP's Level 2 Water Study Report shall be implemented.
5. WSP's Water Study Report confirms that drawdown impacts do not extend to areas identified in the Niagara Peninsula Source Protection Plan as Intake Protection Zones.

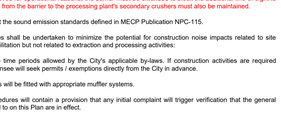
Moved traffic details to drawing 6 of 6 due to limited space

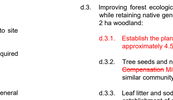
PLANTING CELL DETAIL FOR PLANTED BERMS

For Large Stock Species Planting on Berms, Approx Area: 200m2
Cell A1 - A4
34 Trees Total
• Deciduous 40mm cal.
• 1.5M Coniferous
• 1.2M Deciduous
• 1.2M Coniferous

For Small Stock Species Planting on Berms, Approx Area: 150m2
Cell B1 - B4
28 Trees Total
• 1.2M Deciduous
• 1.2M Coniferous
• +21 Shrubs Total

+30 Shrubs Total





Typical planting cells for berm planting.

Tree whips and saplings are to be planted at irregular +2.5m centres in a staggered fashion to maximize screening potential, and shrubs planted +1.5m on centre.

Planting cells will typically contain a higher ratio of deciduous plant material with trees (40mm caliper and 1.2m high deciduous tree whips and 1.2-1.5m height coniferous saplings), and shrub species (bareroot nursery stock or potted from 20-40cm in height).

Planting cells are to be implemented in a staggered layout (as illustrated) to provide an enhanced level of screening with the final concentration of coniferous versus deciduous planting within a plant cell to be determined on site to ensure that areas with the least amount of existing vegetation are filled to provide best screening potential.

Added Planting Cell Details

PLANTING CELL DETAIL FOR AT GRADE PLANTING

For Tree Planting from Transition Row to Extraction Limit
Approx Area: 200m2
Cell A1 - A4
12 Trees Total
• Deciduous 40mm cal.
• 1.5M Coniferous

For Transition from Shrub Planting to Tree Planting
Approx Area: 200m2
Cell B1 - B4
12 Trees Total
• Deciduous 40mm cal.
• 1.5M Coniferous
+24 Shrubs Total

For Shrub Planting Adjacent to Roadways
Approx Area: 200m2
Cell C1 - C4
+56 Shrubs Total

Just tree species onward to back of planting area

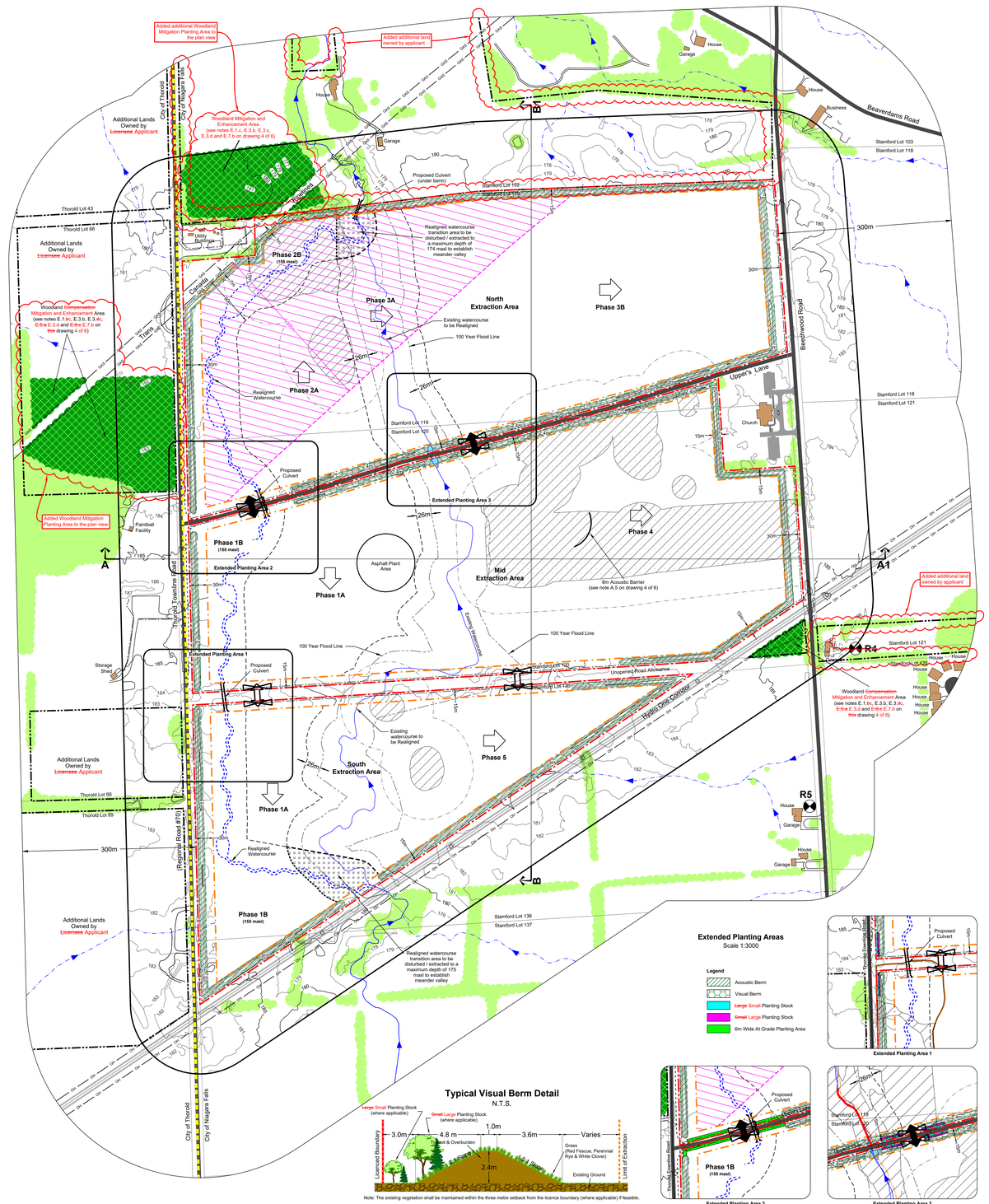
Transition from Shrubs to Trees

Typical planting cells for at grade planting

Tree whips and saplings are to be planted at irregular +2.5m centres in a staggered fashion to maximize screening potential, and shrubs planted +1.5m on centre.

Planting cells will typically contain a higher ratio of deciduous plant material with trees (40mm Cal.) and shrub species (bareroot nursery stock or potted 40cm in height).

Planting cells are to be implemented in a staggered layout (as illustrated) to provide an enhanced level of screening with the final concentration of coniferous versus deciduous planting within a plant cell to be determined on site to ensure that areas with the least amount of existing vegetation are filled to provide best screening potential.



Extended Planting Areas
Scale 1:3000

Legend
- Acoustic Berm
- Visual Berm
- Large Small Planting Stock
- Small Large Planting Stock
- 6m Wide At Grade Planting Area

Typical Visual Berm Detail
N.T.S.

Note: The existing vegetation shall be maintained within the three metre setback from the licence boundary (where applicable) if feasible.

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
- 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)
- Watercourse - Realigned (Stantec, 2020)
- 100 Year Floodline
- Water Feature
- Wooded Area
- Watercourse Realignment Transition Area
- Woodland Compensation Mitigation and Enhancement Area (Off-site)
- Archaeological Site (Protected Areas Requiring Further Assessment (Includes 20-30m Buffer)
- Archaeological Offset (50m Monitoring Buffer)
- 120m Offset From Licence Boundary
- Trans Canada Blasting Buffer Area - See Note D.5 on this drawing
- Parcel Fabric
- Trans Canada Pipeline Easement
- Hydro One Easement
- Entrance / Exit
- Limited Service Access (For Phases 1A, 1B and 5 in South Extraction Area
- Gate
- Culvert
- General Direction of Excavation & Boundary
- Berm (Top - Noise Attenuation Berm Bottom - Visual Berm)
- Building/Structure
- Noise Receptor
- Cross Sections

Site Plan Acronyms

1. ARA - Aggregate Resources Act
2. MNRF - Ministry of Natural Resources and Forestry
3. MHSTCI - Ministry of Heritage, Sport, Tourism and Culture Industries
4. MECP - Ministry of the Environment, Conservation and Parks
5. MGCS - Ministry of Government and Consumer Services
6. DFO - Department of Fisheries and Oceans Canada
7. ECA - Environmental Compliance Approval
8. BMPP - Best Management Practices Plan
9. PTTW - Permit to Take Water
10. MASL - Metres above sea level
11. TCPL - Trans Canada Pipeline
12. ROW - Right of way
13. HMA - Hot mix asphalt
14. PWQO - Provincial Water Quality Objectives
15. MISA - Municipal Industrial Strategy for Abatement
16. TSS - Total Suspended Solids
17. NCD - North Channel Design

Site Plan Amendments

No.	Date	Description	By

Site Plan Revisions (Pre-Licencing)

No.	Date	Description	By
1.	January 2022	Added note H.5 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.

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
113 COLLIER STREET, BARRIE, ON. L4M 1H2 | P: 705.728.0045 F: 705.728.2010 | WWW.MHBCPLAN.COM

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

Draft

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)
0 90 180 Meters

Date: October 2021 April 4, 2024
Drawn By: C.P.
Checked By: D.W.
File No.: 9811V

File Name
Report Recommendations

Drawing No.
4 of 6

File Path N:\Brian\9811V - Walker Uppers 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	**89.1 ha**
c.	Final rehabilitation within licence (total)	**103.6 ha**
c.a.	Lake	~~60.8~~ 70.0 ha
c.b.	Shoreline wetland	1.3 ha
c.c.	Wetland/pond/stream	2.9 ha
c.d.	Terrestrial ~~and Vegetated Slopes~~	~~22.7~~ 19.4 ha
c.e.	Deciduous Woodland & ~~Vegetated Screening~~	~~1.2~~ 6.1 ha
c.f.	~~Treed Deciduous Swamp~~	~~2.0 ha~~
c.g.	~~Swamp Thicket & Marsh Meadow~~	~~0.8 ha~~
c.h.	Undisturbed	3.9 ha
d.	To be rehabilitated outside of licence:	**~~4.7~~ 6.7 ha**
d.a.	Woodland Compensation Area	~~4.7~~ 6.7 ha

2. 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).

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~~ April 2024).

6. Reforestation Areas - There are two main reforestation areas:

   6.1. The Woodland ~~Compensation~~ Mitigation and Enhancement Area (Off-site) to be no less than ~~4.3~~ 6.7 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 licence 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 ~~4.0~~ 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-460 to L-463 and L-500 to L-503 respectively. In the Deciduous Woodlands (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.c~~ E.3.d 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. Leaving 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 excess 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 ~~2,460,000~~ 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, ~~treed deciduous swamp; swamp thicket/marsh meadow;~~ shoreline wetland, and realigned watercourse channel (riparian corridor) shall be planted with species identified in Tables ~~1-5~~ on this drawing and the Natural Channel Design Report planting plan drawings L-460 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 Beavердams 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 Beavердams 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 aquitard. 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.

3. Monthly sampling of the quarry sump discharge has been included in the monitoring program, for the analysis of parameters with an associated Provincial Water Quality Objectives (PWQO), as well as selected parameters which aid in the assessment of influence from the various bedrock units. The trigger mechanism for the sump discharge to the Existing Watercourse is to assess the monthly sump water quality results against the list of trigger concentrations summarized in the table below.

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 Beavердams 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 Objectives. 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 ditch network and sump pond for the Site. It is anticipated that the hydrogen sulphide concentration in the discharge to the Existing Watercourse will be lower than the PWQO / trigger concentration as a result of the off-gassing. If the hydrogen sulphide concentrations 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 ditch 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	Ht. (cm)	Root	O.C. Spacing
BP	5%	105	*Betula papyrifera*	Paper Birch	125	2 Gal. Pot	3 m to 7 m
CAO	5%	105	*Carya ovata*	Shagbark Hickory	100	2 Gal. Pot	3 m to 7 m
CGP	10%	211	*Carya glabra*	Pignut Hickory	100	2 Gal. Pot	3 m to 7 m
JN	15%	316	*Juglans nigra*	Black Walnut	250	15 Gal. Pot	3 m to 7 m
PT	15%	316	*Populus tremuloides*	Trembling Aspen	150	3 Gal. Pot	3 m to 7 m
PGA	10%	211	*Populus grandidentata*	Largetooth Aspen	175	10 Gal. Pot	3 m to 7 m
QA	15%	316	*Quercus alba*	White Oak	250	15 Gal. Pot	3 m to 7 m
QRU	10%	211	*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%	211	*Tilia americana*	Basswood	175	10 Gal. Pot	3 m to 7 m
Totals:	**100%**	**2107**	**Upland Zone Planting Density Target Goal = 5 trees / 100 m²**				

SHRUBS:

Sym.	Percent	Quantity	Botanical Name	Common Name	Ht. (cm)	Root	O.C. Spacing
CFO	15%	632	*Cornus racemosa*	Gray Dogwood	50	2 Gal. Pot	1 m to 1.5 m
EA	15%	632	*Euonymus atropurpureus*	Eastern Burning Bush	50	2 Gal. Pot	1 m to 1.5 m
HV	15%	632	*Hamamelis virginiana*	Common Witch-Hazel	50	3 Gal. Pot	1 m to 1.5 m
PRA	15%	632	*Prunus americana*	American Plum	100	2 Gal. Pot	1 m to 1.5 m
RT	15%	632	*Rhus typhina*	Staghorn Sumac	80	3 Gal. Pot	1 m to 1.5 m
RRI	10%	423	*Rubus idaeus*	Red Raspberry	60	2 Gal. Pot	1 m to 1.5 m
VT	15%	632	*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 m²**				

RIPARIAN PLANTING ZONE:

TREES:

Sym.	Percent	Quantity	Botanical Name	Common Name	Ht. (cm)	Root	O.C. Spacing
ASN	15%	66	*Acer saccharum subsp. nigrum*	Black Maple	100	2 Gal. Pot	8 m to 12 m
AF	20%	87	*Acer x freemanii*	Freeman Maple	250	10 Gal. Pot	8 m to 12 m
PD	10%	44	*Populus deltoides*	Eastern Cottonwood	175	10 Gal. Pot	8 m to 12 m
QB	15%	66	*Quercus bicolor*	Swamp White Oak	175	10 Gal. Pot	8 m to 12 m
QP	20%	87	*Quercus palustris*	Pin Oak	200	10 Gal. Pot	8 m to 12 m
SAG	10%	44	*Salix amygdaloides*	Peachleaf Willow	100	2 Gal. Pot	8 m to 12 m
SAN	10%	44	*Salix nigra*	Black Willow	200	3 Gal. Pot	8 m to 12 m
Totals:	**100%**	**438**	**Riparian Zone Planting Density Target Goal= 1 tree / 100 m²**				

SHRUBS:

Sym.	Percent	Quantity	Botanical Name	Common Name	Ht. (cm)	Root	O.C. Spacing
ARN	10%	654	*Aronia melanocarpa*	Black Chokeberry	60	2 Gal. Pot	1 m to 1.5 m
CEO	10%	654	*Cephalanthus occidentalis*	Buttonbush	60	3 Gal. Pot	1 m to 1.5 m
COR	10%	654	*Cornus sericea*	Red Osier Dogwood	50	2 Gal. Pot	1 m to 1.5 m
PH	10%	654	*Physocarpus opulifolius*	Common Ninebark	50	3 Gal. Pot	1 m to 1.5 m
SAD	15%	981	*Salix discolor*	Pussy Willow	60	3 Gal. Pot	1 m to 1.5 m
SAE	15%	981	*Salix eriocephala*	Heart-leaved Willow	60	2 Gal. Pot	1 m to 1.5 m
SAL	10%	654	*Salix lucida*	Shining Willow	60	2 Gal. Pot	1 m to 1.5 m
SCE	10%	654	*Sambucus canadensis*	American Elderberry	50	3 Gal. Pot	1 m to 1.5 m
SPL	10%	654	*Spiraea alba*	Meadowsweet	60	2 Gal. Pot	1 m to 1.5 m
Totals:	**100%**	**6540**	**Riparian Zone Planting Density Target Goal = 15 shrubs / 100 m²**				

UPLAND FOREST PLANTING ZONE:

TREES:

Sym.	Percent	Quantity	Botanical Name	Common Name	Ht. (cm)	Root	O.C. Spacing
BP	5%	158	*Asimina triloba*	Pawpaw	250	15 Gal. Pot	2 m to 4 m
BP	5%	158	*Betula papyrifera*	Paper Birch	125	2 Gal. Pot	2 m to 4 m
CAO	5%	158	*Carya ovata*	Shagbark Hickory	100	2 Gal. Pot	2 m to 4 m
CGP	10%	316	*Carya glabra*	Pignut Hickory	100	2 Gal. Pot	2 m to 7 m
FG	10%	316	*Fagus grandifolia*	American Beech	150	3 Gal. Pot	2 m to 4 m
JN	5%	158	*Juglans nigra*	Black Walnut	250	15 Gal. Pot	2 m to 4 m
OV	10%	316	*Ostrya virginiana*	Ironwood	175	10 Gal. Pot	2 m to 4 m
PS	5%	158	*Pinus strobus*	Eastern White Pine	100	7 Gal. Pot	2 m to 4 m
PT	10%	316	*Populus tremuloides*	Trembling Aspen	150	3 Gal. Pot	2 m to 4 m
PGA	10%	316	*Populus grandidentata*	Largetooth Aspen	175	10 Gal. Pot	2 m to 4 m
QA	5%	158	*Quercus alba*	White Oak	250	15 Gal. Pot	2 m to 4 m
QRU	10%	316	*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	5%	158	*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 m²**				

SHRUBS:

Sym.	Percent	Quantity	Botanical Name	Common Name	Ht. (cm)	Root	O.C. Spacing
CFO	15%	237	*Cornus racemosa*	Gray Dogwood	50	2 Gal. Pot	1 m to 1.5 m
EA	10%	158	*Euonymus atropurpureus*	Eastern Burning Bush	50	2 Gal. Pot	1 m to 1.5 m
HV	15%	237	*Hamamelis virginiana*	Common Witch-Hazel	50	3 Gal. Pot	1 m to 1.5 m
PRA	15%	237	*Prunus americana*	American Plum	100	2 Gal. Pot	1 m to 1.5 m
RT	15%	237	*Rhus typhina*	Staghorn Sumac	80	3 Gal. Pot	1 m to 1.5 m
RRI	10%	158	*Rubus idaeus*	Red Raspberry	60	2 Gal. Pot	1 m to 1.5 m
VL	10%	158	*Viburnum lentago*	Nannyberry	50	3 Gal. Pot	1 m to 1.5 m
VT	15%	237	*Viburnum trilobum*	Highbush Cranberry	40	3 Gal. Pot	1 m to 1.5 m
Totals:	**100%**	**1580**	**Upland Forest Zone Planting Density Target Goal = 5 shrubs / 100 m²**				

RIPARIAN FOREST PLANTING ZONE:

TREES:

Sym.	Percent	Quantity	Botanical Name	Common Name	Ht. (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
PD	15%	265	*Populus deltoides*	Eastern Cottonwood	175	10 Gal. Pot	2 m to 4 m
QB	15%	265	*Quercus bicolor*	Swamp White Oak	175	10 Gal. Pot	2 m to 4 m
QP	15%	177	*Quercus palustris*	Pin Oak	200	10 Gal. Pot	2 m to 4 m
SAG	15%	265	*Salix amygdaloides*	Peachleaf Willow	100	2 Gal. Pot	2 m to 4 m
SAN	10%	177	*Salix 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 m²**				

SHRUBS:

Sym.	Percent	Quantity	Botanical Name	Common Name	Ht. (cm)	Root	O.C. Spacing
ARN	10%	88	*Aronia melanocarpa*	Black Chokeberry	60	2 Gal. Pot	1 m to 1.5 m
CEO	5%	44	*Cephalanthus occidentalis*	Buttonbush	60	3 Gal. Pot	1 m to 1.5 m
COR	10%	88	*Cornus sericea*	Red Osier Dogwood	50	2 Gal. Pot	1 m to 1.5 m
LB	5%	44	*Lindera benzoin*	Spice Bush	60	3 Gal. Pot	1 m to 1.5 m
PH	10%	88	*Physocarpus opulifolius*	Common Ninebark	50	3 Gal. Pot	1 m to 1.5 m
SAD	15%	133	*Salix discolor*	Pussy Willow	60	3 Gal. Pot	1 m to 1.5 m
SAE	15%	133	*Salix eriocephala*	Heart-leaved Willow	60	2 Gal. Pot	1 m to 1.5 m
SAL	10%	88	*Salix lucida*	Shining Willow	60	2 Gal. Pot	1 m to 1.5 m
SCE	10%	88	*Sambucus canadensis*	American Elderberry	50	3 Gal. Pot	1 m to 1.5 m
SPL	10%	88	*Spiraea alba*	Meadowsweet	60	2 Gal. Pot	1 m to 1.5 m
Totals:	**100%**	**882**	**Riparian Forest Zone Planting Density Target Goal = 5 shrubs / 100 m²**				

DENSE UPLAND PLANTING ZONE:

TREES:

Sym.	Percent	Quantity	Botanical Name	Common Name	Ht. (cm)	Root	O.C. Spacing
PT	20%	41	*Populus tremuloides*	Trembling Aspen	150	3 Gal. Pot	3 m to 7 m
PGA	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
QRU	20%	40	*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**	**Dense Upland Zone Planting Density Target Goal= 5 trees / 100 m²**				

SHRUBS:

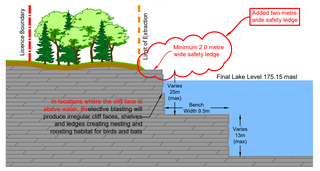
Sym.	Percent	Quantity	Botanical Name	Common Name	Ht. (cm)	Root	O.C. Spacing
CFO	40%	244	*Cornus racemosa*	Gray Dogwood	50	2 Gal. Pot	1 m to 1.5 m
HV	20%	122	*Hamamelis virginiana*	Common Witch-Hazel	50	3 Gal. Pot	1 m to 1.5 m
PRA	20%	122	*Prunus americana*	American Plum	100	2 Gal. Pot	1 m to 1.5 m
RRI	20%	122	*Rubus idaeus*	Red Raspberry	60	2 Gal. Pot	1 m to 1.5 m
Totals:	**100%**	**610**	**Dense Upland Zone Planting Density Target Goal = 15 shrubs / 100 m²**				

LIVESTAKE PLANTING ZONE:

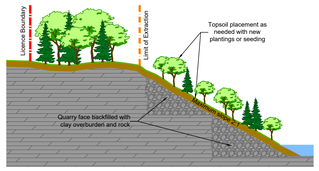
Sym.	Percent	Quantity	Botanical Name	Common Name	Ht. (cm)	Root	O.C. Spacing
COR	10%	2736	*Cornus sericea*	Red Osier Dogwood	min. 75	Livestake	50 cm
SAD	30%	8208	*Salix discolor*	Pussy Willow	min. 75	Livestake	50 cm
SAE	30%	8208	*Salix exigua*	Sandbar Willow	min. 75	Livestake	50 cm
SAP	30%	8208	*Salix petiolaris*	Slender Willow	min. 75	Livestake	50 cm
Totals:	**100%**	**27360**	**Livestake Zone Planting Density Target Goal = 3-5 livestakes / 1 m²**				

Replaced previous species tables with the one above

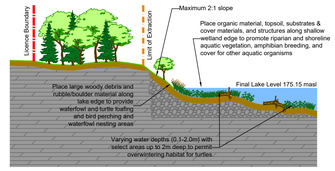
Stepped Cliff Face Detail
N.T.S.

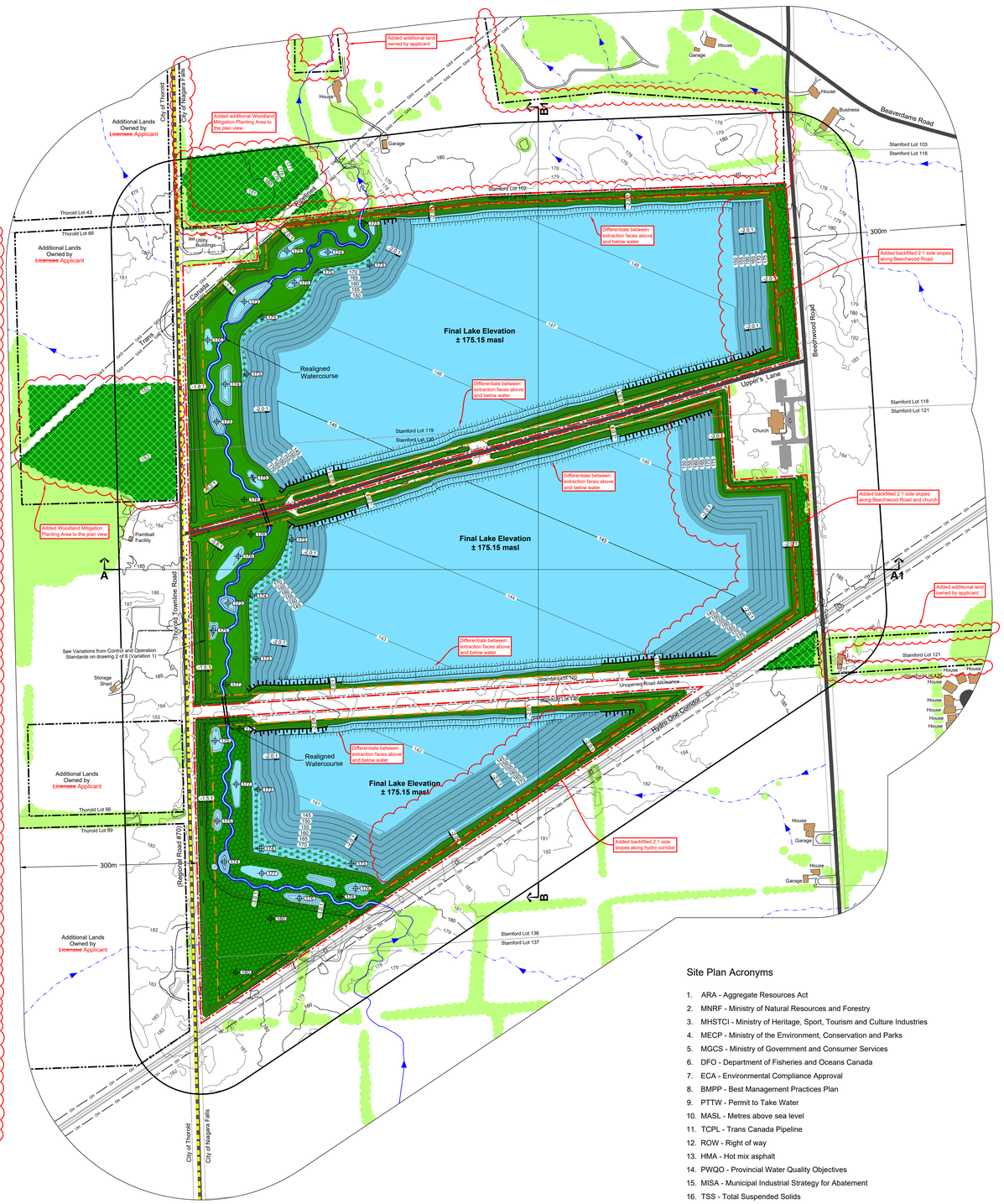


Typical Backfilled Side Slope Detail - Quarry
N.T.S.



Typical Shoreline Wetland Detail
N.T.S.





Site Plan Acronyms

1. ARA - Aggregate Resources Act
2. MNRF - Ministry of Natural Resources and Forestry
3. MHSTCI - Ministry of Heritage, Sport, Tourism and Culture Industries
4. MECP - Ministry of the Environment, Conservation and Parks
5. MGCS - Ministry of Government and Consumer Services
6. DFO - Department of Fisheries and Oceans Canada
7. ECA - Environmental Compliance Approval
8. BMPP - Best Management Practices Plan
9. PTTW - Permit to Take Water
10. MASL - Metres above sea level
11. TCPL - Trans Canada Pipeline
12. ROW - Right of way
13. HMA - Hot mix asphalt
14. PWQO - Provincial Water Quality Objectives
15. MISA - Municipal Industrial Strategy for Abatement
16. TSS - Total Suspended Solids
17. NCD - North Channel Design

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
- Watercourse — Direction of flow indicated by arrows
- Surface Drainage Feature — Direction of flow indicated by arrows
- Watercourse - Realigned (Stantec, 2020)
- Waterbody
- Shoreline Wetland
- Terrestrial Habitat
- Deciduous Woodland & Vegetated Screening
- ~~Treed Deciduous Swamp~~
- ~~Swamp Thicket and Marsh Meadow~~
- Woodland ~~Compensation~~ Mitigation Planting Areas (Off-site)
- Wooded Area
- 120m Offset From Licence Boundary
- Parcel Fabric
- Contours with Elevation — Metres above sea level (MASL)
- Public Road
- Trans Canada Pipeline Easement
- Hydro One Easement
- Extraction Face — Above Water - Bold; Below Water - Narrow
- Entrance / Exit — Differentiate between extraction faces above and below water
- Gate
- Culvert
- Fence — 1.2m post & wire farm fence unless otherwise noted
- Building/Structure
- Proposed Floor Elevation — Metres above sea level (MASL)
- Proposed Final Grade
- Cross Sections

Legend - Cross Sections

- Licence Boundary
- Limit of Extraction
- Existing Grade - Undisturbed
- Existing Grade - Removed / Altered
- Maximum Predicted Water Table (See note A.2 on this drawing)
- Quarry Floor / Face
- Backfilled
- Lake or Pond
- Hydro Corridor

Site Plan Amendments

No.	Date	Description	By

Site Plan Revisions (Pre-Licencing)

No.	Date	Description	By
1.	January 2022	Revised notes C.3 and G.1. Added notes C.2.2, C.4 and C.5.	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, BARRIE, ON, L4N 1H2 | P: 705.728.0045 F: 705.728.2010 | WWW.MHBCPLAN.COM

MHBC Stamp
Debra Walker
Is authorized by the Ministry of ~~Northern Development, Mines,~~ Natural Resources ~~and Forestry~~ pursuant to Subsection 6.2(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, Mines,~~ Natural Resources and Forestry pursuant to Subsection 6.2(3)(f) of Ontario Regulation 244/97 to prepare and certify site plans.

Draft

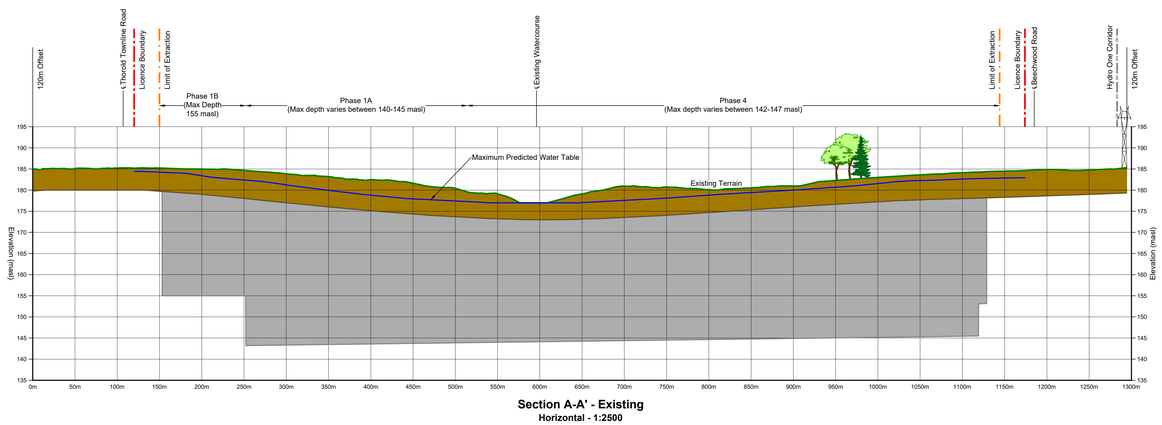
Applicant

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

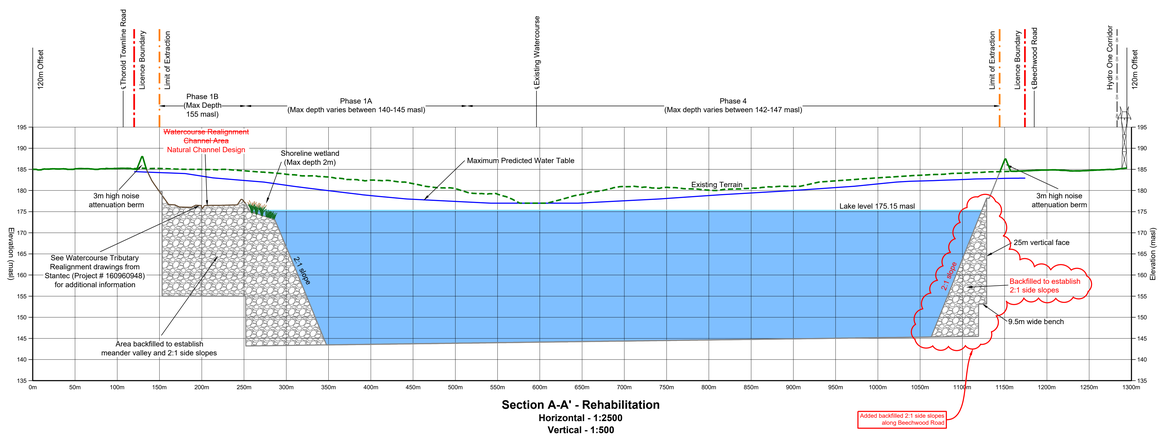
Project

Upper's Quarry

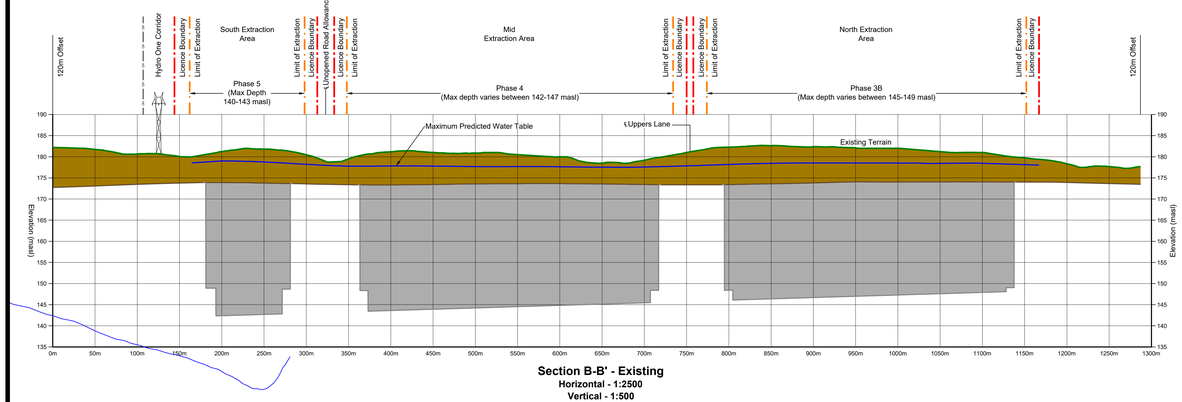
MNRF Licence Reference No.	**Applicant's Signature**
Plan Scale: 1:3000 (Arch E)	**Date** ~~October 2021~~ April 4, 2024
0 90 180 Meters	**Drawn By** C.P.
	Checked By D.W.
	File No. 9811V
File Name	**Rehabilitation Plan**
Drawing No.	**5 of 6**
File Path	N:\Brian\9811V - Walker Uppers Quarry\Drawings\Site Plan\CAD\9811V - Site Plan.dwg



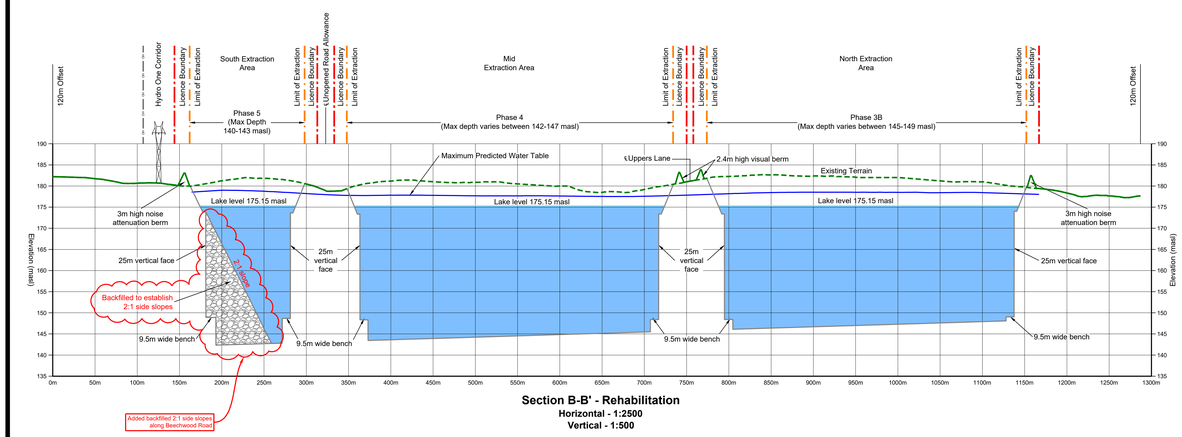
Section A-A' - Existing
Horizontal - 1:2500
Vertical - 1:500



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

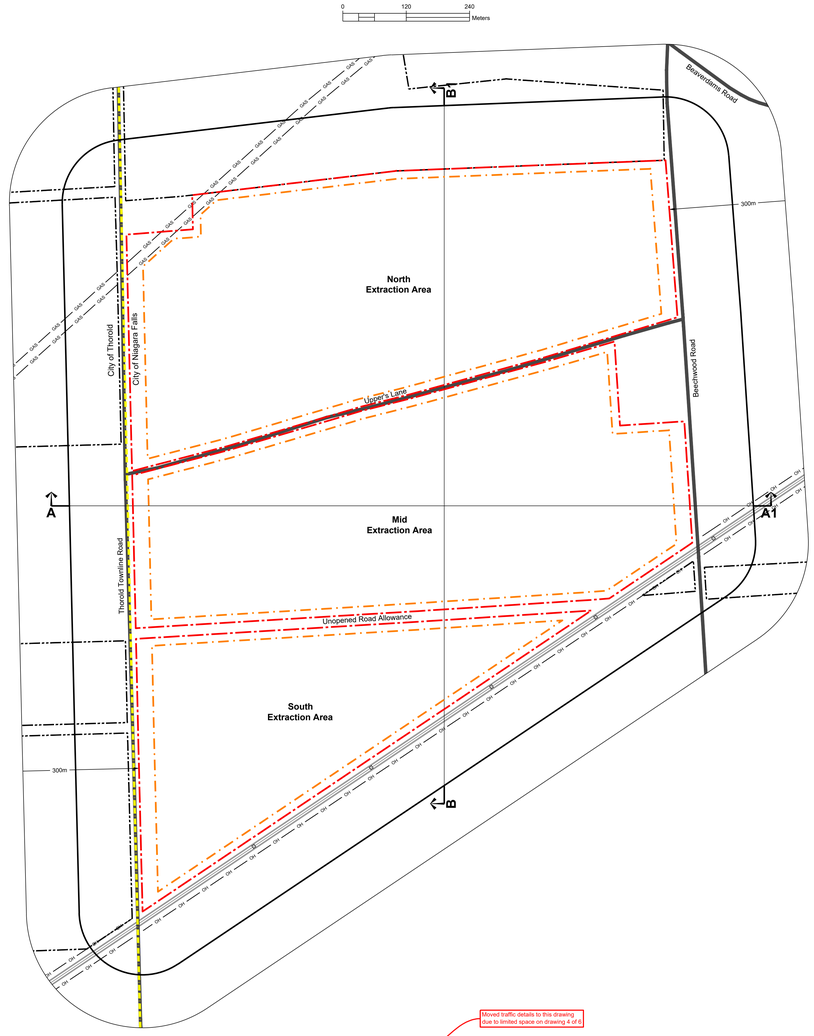


Section B-B' - Existing
Horizontal - 1:2500
Vertical - 1:500



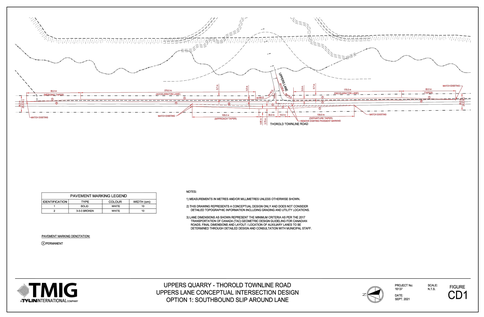
Section B-B' - Rehabilitation
Horizontal - 1:2500
Vertical - 1:500

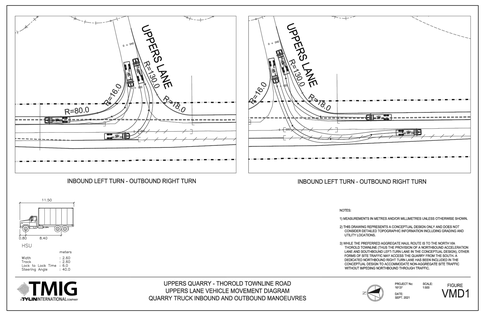
Cross Section Key Map
Scale 1:4000



Moved traffic details to this drawing due to limited space on drawing 4 of 6

See Section F on drawing 4 of 6 for Traffic Report Recommendations





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-Licencing)

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.

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
113 COLLIER STREET, BARRIE, ON, L4M 1H2 | P: 705.728.0045 F: 705.728.2010 | WWW.MHBCPLAN.COM

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

Draft

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: (Arch E)
Horizontal 1:2500
Vertical 1:500

Date ~~October 2021~~ April 4, 2024
Drawn By C.P.
Checked By D.W.
File No. 9811V

File Name
Cross Sections

Drawing No.
6 of 6

File Path N:\Brian\9811V - Walker Uppers Quarry\Drawings\Site Plan\CAD\9811V - Site Plan.dwg