

REHABILITATION NOTES:

GENERAL

1. THE MAXIMUM HECTARAGE TO BE REHABILITATED IS 118.5 HECTARES (293 ACRES).
2. REHABILITATION WILL BE PROGRESSIVE IN ACCORDANCE WITH THE STAGES OF OPERATION PLAN (SEE SHEETS 6, 7, AND 8). AS EXTRACTION MOVES FROM SOUTH TO NORTH, THE QUARRY FLOOR WILL BE PROGRESSIVELY REHABILITATED IN 25 HECTARE BLOCKS (APPROXIMATELY).
3. THE PROGRESSIVE AND FINAL REHABILITATION INCLUDES A SERIES OF FOREST BLOCKS, OPEN FIELD MEADOWS, SWAMPS, MARSH AND AGRICULTURAL LANDS. THESE USES WILL REINSTATE THE VARIETY OF PLANT AND WILDLIFE HABITAT CURRENTLY PRESENT. THE LAYOUT WILL CONNECT THE FOREST TO THE EAST AND FOREST POCKETS TO THE WEST, PROVIDING A WILDLIFE CORRIDOR ACROSS THE PROPERTY.
4. THE PROCESSING/SHIPPING/RECYCLING AREA WILL BE THE FINAL AREA TO BE REHABILITATED. EIGHT HECTARES OF THIS AREA WILL REMAIN POST-REHABILITATION TO BE USED FOR FUTURE LAND USES INCLUDING ACCESS TO AGRICULTURAL AREAS.
5. ALL EXTRACTION EQUIPMENT AND AGGREGATE STOCKPILES WILL BE REMOVED FROM THE SITE. BUILDINGS AND INTERNAL ROADS MAY REMAIN FOR ACCESS AND AGRICULTURAL USE.
6. ALL OVERBURDEN AND TOPSOIL STOCKPILES WILL BE UTILIZED IN PROGRESSIVE AND FINAL REHABILITATION.
7. THE FINAL REHABILITATED SITE WILL MAINTAIN DRAINAGE, INLETS/OUTLETS AND GENERAL FLOW DIRECTION.
8. STAGING OF PROGRESSIVE REHABILITATION AND FINAL REHABILITATION WILL FOLLOW THE DIRECTION AND SEQUENCE OF EXTRACTION AS SHOWN ON THE STAGES OF OPERATIONS PLAN (SHEETS 6 THROUGH 8). PROGRESSIVE REHABILITATION WILL OCCUR IN NINE PHASES COMPRISING OF 14 STAGES (SOUTH TO NORTH).
9. AS THE HORIZONTAL LIMIT AND/OR MAXIMUM DEPTH OF EXTRACTION IS REACHED IN EACH PHASE, PROGRESSIVE REHABILITATION WILL COMMENCE WITH BACKFILLING TO THE PRESCRIBED SLOPES AND ELEVATIONS (SEE DETAIL B) UTILIZING TOPSOIL/OVERBURDEN, UNMARKETABLE LIMESTONE, AND IMPORTED MATERIAL FROM STOCKPILES OR AREAS BEING PREPARED FOR EXTRACTION.
10. WHERE THE QUALITY OF AGGREGATE MATERIAL DOES NOT MEET THE OPERATOR'S MARKET REQUIREMENTS, THE HORIZONTAL EXTENT OR DEPTH OF EXTRACTION MAY BE REDUCED AND PROGRESSIVE REHABILITATION COMMENCED AS REQUIRED.
11. CLEARING OF VEGETATION IS TO OCCUR OUTSIDE THE PEAK BREEDING BIRD SEASON (APRIL 15TH - AUGUST 15TH).
12. ONLY NATIVE TREE AND SHRUB SPECIES INDIGENOUS TO THE ORILLIA/WASHAGO AREA AND DERIVED FROM STOCK FROM LOCAL NURSERIES OR THE NURSERY ON-SITE ARE TO BE USED IN THE PROGRESSIVE REHABILITATION PROCESS.

TOPSOIL/OVERBURDEN

13. TOPSOIL/OVERBURDEN STRIPPED PRIOR TO AGGREGATE EXTRACTION WILL BE UTILIZED ON FINAL GRADED SLOPES. TOPSOIL/OVERBURDEN WILL BE STORED IN BERMS ALONG THE EXTRACTION LIMITS OR ON THE QUARRY FLOOR, AND EVENTUALLY SPREAD OVER THE FINAL FLOOR. IT WILL BE GRADED AND SEEDED WITH GRASS SEED CONDUCTIVE TO PASTURING AND PLANTING OF TREES AND SHRUBS.
14. DUE TO THE THIN LAYER OF OVERBURDEN IN SOME AREAS OF THE SITE, SUFFICIENT MATERIAL TO COVER THE ENTIRE QUARRY FLOOR MAY NOT BE POSSIBLE. THUS, CLEAN INERT FILL MAY BE IMPORTED.

15. DEEPER/HEAVIER BANDS OR NODES OF TOPSOIL/OVERBURDEN WILL BE CREATED AND PLANTED WITH NATIVE TREE AND SHRUB SPECIES. THIS MATERIAL WILL BE SPREAD AT VARIABLE DEPTHS WITHIN THE TREE NODES AND A THIN LAYER OF SOIL SPREAD THROUGHOUT THE AREA IN ALL DIRECTIONS TO CREATE SUCCESSIONAL HABITATS AND AGRICULTURAL LANDS.
16. ORGANIC SOILS WILL BE STRIPPED AND STORED SEPARATELY FOR USE IN REHABILITATION OF WETLAND HABITAT IN PHASES 2, 3A AND 4A AS PER THE STAGES OF OPERATIONS PLAN (SHEETS 6, 7, AND 8).

IMPORTATION OF MATERIAL

17. CLEAN INERT FILL MAY BE IMPORTED TO FACILITATE THE ESTABLISHMENT OF 2:1 SLOPES ON THE QUARRY FACES. THE LICENSEE MUST ENSURE THAT THE MATERIAL IS TESTED AT THE SOURCE, BEFORE IT IS DEPOSITED ON-SITE, TO ENSURE THE MATERIAL MEETS THE MOECC'S CRITERIA UNDER TABLE 1 OF MOE'S SOILS, GROUND WATER AND SEDIMENT STANDARDS FOR USE UNDER PART XV.1 OF THE ENVIRONMENTAL PROTECTION ACT. SAMPLING RESULTS WILL BE PROVIDED TO THE MNRF UPON REQUEST.

QUARRY SLOPING

18. QUARRY FACES WILL BE BACKFILLED AND GRADED TO A MINIMUM 2:1 SLOPE FROM CREST TO TOE DOWN TO AN ELEVATION NO LOWER THAN 216.0 MASL.
19. QUARRY FACES WILL BE SLOPED USING A COMBINATION OF EXTRACTING METHODS AND BACKFILLING (SEE DETAIL A AND B ON SHEET 4 OF 8). TOPSOIL/OVERBURDEN, UNMARKETABLE LIMESTONE, OR CLEAN INERT FILL WILL BE USED TO BACKFILL TO ESTABLISH THE SLOPES. THIS MATERIAL WILL BE PLACED ON THE SLOPES AND GRADED TO THE DESIGN CONTOUR.

20. QUARRY FACES ALONG THE WEST SIDE OF PHASE 3B WILL BE PARTIALLY BACKFILLED USING ROCK DEBRIS/LITUS AND SCREE ALONG THEIR TOE. THE EXPOSED PORTION WILL REMAIN A VERTICAL FACE. THE SLOPES IN THESE AREAS WILL BE UTILIZED TO CREATE HABITAT ENHANCEMENTS USING FLAT LIMESTONE SLABS RANDOMLY PILED TO MAXIMIZE SPACES AND COVER FOR SNAKES. A VARIANCE IS REQUIRED TO PERMIT THIS VERTICAL FACE IN THIS PHASE (SEE TABLE 4 ON SHEET 2 OF 8). ALSO SEE DETAIL B ON SHEET 4 OF 8.

21. OTHER HABITAT ENHANCEMENTS WILL INCLUDE PILES OF CLEAN SAND NEAR THE WATERCOURSE TO A DEPTH OF 60 CENTIMETERS IN A 3 X 3 METRE AREA TO CREATE HABITAT FOR SPECIES AT RISK (I.E. SNAKES AND TURTLES). TWO SAND PILES AND TWO HIBERNACULA WILL BE CONSTRUCTED AS PART OF THE REHABILITATION PLAN.

VEGETATION

22. REHABILITATED SLOPES AND THE QUARRY FLOOR WILL BE VEGETATED PROGRESSIVELY AS THE RESOURCE IN EACH PHASE IS EXHAUSTED.
23. REHABILITATED SLOPES WILL BE VEGETATED WITH A NATIVE GRASS SEED MIX.
24. A COVER CROP OF AGRICULTURAL GRASSES SUCH RYE GRASSES, FESCUES AND LEGUMES SUCH AS BIRD'S FOOT TREFOIL, ALFALFA, AND RED CLOVER WILL BE PLANTED TO STABILIZE SOILS AND PROVIDE ORGANIC AMENDMENT THAT WILL EVENTUALLY BE INCORPORATED INTO THE SOIL. PROGRESSIVE REHABILITATION WILL PROVIDE TIME FOR NATURAL REGENERATION/SUCCESSION OF NATIVE VEGETATION.
25. FORESTED AREAS WILL BE COMPRISED OF SPECIES INDIGENOUS TO THE SEVERN AREA. 70% PERCENT OF THE TREES WILL BE CONIFEROUS AND 30% WILL BE DECIDUOUS (CONSISTENT WITH THE SURROUNDING NATURAL AREA). FORESTED AREAS WILL BE COMPRISED OF TREES SUCH AS:
 - a. SUGAR MAPLE (ACER SACCHARUM),
 - b. EASTERN WHITE PINE (PINUS STROBUS),
 - c. EASTERN HEMLOCK (TSUGA CANADENSIS),
 - d. EASTERN WHITE CEDAR (THUJA OCCIDENTALIS),
 - e. WHITE BIRCH (BETULA PAPERIFERA),
 - f. RED OAK (QUERCUS RUBRA), AND
 - g. RED MAPLE (ACER RUBRUM).

26. A FOREST CORRIDOR WITH A MINIMUM OF 100M WIDTH WILL BE CREATED TO CONNECT THE EAST AND WEST SIDES OF THE PROPERTY TO ACT AS A LINKAGE ACROSS THE PROPERTY. THIS CORRIDOR WILL BE LOCATED ALONG THE REALIGNED WATERCOURSE. AVAILABLE TOPSOIL/OVERBURDEN, ORGANIC SOILS, UNMARKETABLE LIMESTONE OR CLEAN INERT FILL WILL BE USED AND SPREAD 15 METERS BEYOND THE FOREST BLOCKS IN ALL DIRECTIONS TO CREATE SUCCESSIVE HABITATS.

27. WETLANDS WILL BE ESTABLISHED ALONG SECTIONS OF THE NEW DRAINAGE CHANNEL. STOCKPILED ORGANIC SOIL WILL BE RE-ESTABLISHED IN THOSE AREAS AND THE WETLAND PLANTED WITH A MIXTURE OF NATIVE TREE AND SHRUB SPECIES, THESE MAY INCLUDE BUT NOT LIMITED TO:

- a. BALSAM FIR (ABIES BALSAMEA),
- b. EASTERN WHITE CEDAR (THUJA OCCIDENTALIS),
- c. SILVER MAPLE (ACER SACCHARINUM),
- d. RED MAPLE (ACER RUBRUM),
- e. TAMARACK (LARIX LARICINA),
- f. RED-OSIER DOGWOOD (CORNUS STOLONIFERA),
- g. SPECKLED ALDER (ALNUS INCANA),
- h. NARROWLEAVED MEADOWSWERT (SPIRAEA ALBA), AND
- i. TUSSOCK SEDGE (CAREX STRICTA).

28. THERE ARE FOUR CATEGORY 2 BUTTERNUT TREES FOUND ON THE SITE. A NOTICE OF BUTTERNUT IMPACT FORM UNDER THE ENDANGERED SPECIES ACT WILL BE REQUIRED FROM THE MNRF TO ENSURE PROPER REPLACEMENT/COMPENSATION FOR THE REMOVAL OF THESE TREES.

29. THERE ARE EIGHT REGIONALLY RARE SPECIES IN THE PROPOSED LICENSED AREA. A PROFESSIONAL BIOLOGIST WILL DEVELOP A VEGETATION SALVAGE PLAN TO TRANSPLANT AND RELOCATED ANY RARE VEGETATION SPECIES. THE VEGETATION SALVAGE PLAN WILL BE APPROVED BY MNRF BEFORE EXTRACTION PROCEEDS.

BUILDINGS AND STRUCTURES

30. THE SCALE AND SCALE HOUSE WILL BE REMOVED WITHIN ONE YEAR OF FINAL REHABILITATION.

31. THE SHOP AND FUEL STORAGE FACILITIES WILL REMAIN ON-SITE TO ALLOW FOR CONTINUED USE OF THE AGRICULTURAL AREAS.

INTERNAL HAUL ROADS

32. INTERNAL HAUL ROADS AND EQUIPMENT CROSSINGS WILL REMAIN TO ALLOW ACCESS TO FUTURE LAND USES.

FINAL WATER TABLE ELEVATION

33. THE FINAL ELEVATION OF THE WATER TABLE WILL BE APPROXIMATELY 215.5 MASL.

SURFACE WATER DRAINAGE

34. TO ENSURE FLOW TO THE PSW CONTINUES POST-EXTRACTION, THE QUARRY FLOOR WILL BE GRADED TO CONVEY WATER TO A NEW DRAINAGE CHANNEL, WHICH WILL FLOW FROM THE NORTH PORTION OF THE SITE TO SETTLING POND 2 LOCATED ALONG THE EASTERN BOUNDARY.
35. WATER FROM THE SITE WILL BE PASSIVELY DISCHARGED VIA GRAVITY THROUGH AN OUTLET AT AN ELEVATION OF 215.5 MASL LOCATED ON THE DOWNSTREAM END OF SETTLING POND 2. THE NEW DRAINAGE CHANNEL WILL ALSO RECEIVE AND CONVEY WATER FROM THE SEVERN PINES QUARRY. THE STAGING OF THE NEW DRAINAGE CHANNEL IS SHOWN ON THE STAGING PLAN (SHEETS 6, 7 AND 8).
36. THE NEW DRAINAGE CHANNEL WILL CONNECT TO THE NORTH INLET OF THE SITE USING A HABITAT LINKAGE SEE OPERATIONAL PLAN (SHEET 3 OF 8) AND DETAIL D ON SHEET 4 OF 8. FINAL DESIGN DETAILS FOR THE HABITAT LINKAGE WILL BE PROVIDED AND APPROVED IN WRITING BY MNRF BEFORE EXTRACTION COMMENCES IN PHASE 3B.
37. TO ENSURE FLOW FROM THE SOUTHERN PORTION OF THE SITE TO THE PSW CONTINUES POST-EXTRACTION, SETTLING POND 2 WILL OUTLET GROUNDWATER AND SURFACE WATER COLLECTED ON-SITE TO WATERCOURSE 2.

38. SETTLING PONDS 1 AND 2 WILL REMAIN POST-EXTRACTION AND BE ALLOWED TO NATURALIZE.

WETLAND CREATION

39. ON THE QUARRY FLOOR A WETLAND WILL BE CONSTRUCTED ADJACENT TO THE NEW DRAINAGE CHANNEL. FINAL DESIGN DETAILS FOR THE CONSTRUCTED WETLAND WILL BE PROVIDED AND APPROVED IN WRITING BY MNRF BEFORE EXTRACTION PROCEEDS IN PHASE 3A.
40. THE NEW WETLAND WILL BE CONSTRUCTED IN PHASES AS PROGRESSIVE REHABILITATION OCCURS. WETLANDS WILL BE CONSTRUCTED DURING THE REHABILITATION OF PHASES 2, 3A AND 4A. THE NEW WETLAND WILL OVERLAP THE NEW DRAINAGE CHANNEL. THE NEW WETLAND WILL RECEIVE GROUNDWATER FROM THE ACTIVE QUARRY FACE AND SURFACE WATER COLLECTED ON THE QUARRY FLOOR FROM SPRING RUNOFF AND RAIN EVENTS.

PROVINCIALY SIGNIFICANT WETLAND

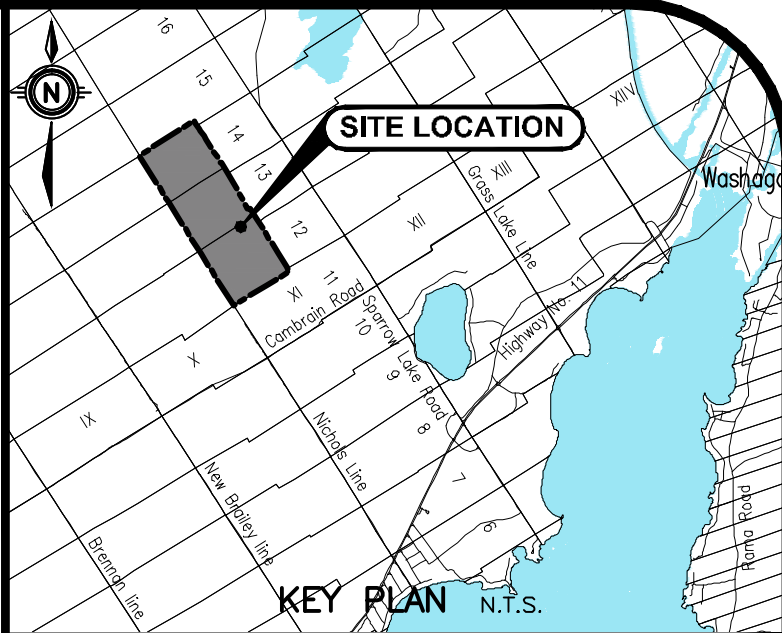
41. NO TREES OR VEGETATION WILL BE REMOVED AND NO DISTURBANCE UNDERTAKEN WITHIN THE SETBACK AREA FROM THE PROVINCIALY SIGNIFICANT WETLAND. NO STUMPS OR BERMS ARE TO BE LOCATED WITHIN THE 30 METRE SETBACK.

FISH SALVAGE PLAN

42. WHEN MAKING THE SWITCH FROM WATERCOURSE 1 TO THE NEW DRAINAGE CHANNEL, FISH WILL NEED TO BE SALVAGED AND TRANSFERRED TO THE NEW DRAINAGE CHANNEL.
43. TO AVOID THE MORTALITY OF INDIVIDUAL FISH FROM THE EXTRACTION PROCESS, A PROFESSIONAL BIOLOGIST WILL DESIGN AND IMPLEMENT A FISH SALVAGE PLAN BEFORE EXTRACTION PROCEEDS IN PHASE 3B. THE FISH SALVAGE PLAN WILL BE SUBMITTED TO MNRF AND THE DEPARTMENT OF FISHERIES AND OCEANS (DFO) TO DETERMINE IF A FISHERIES ACT AUTHORIZATION WILL BE REQUIRED.

SPECIES AT RISK

44. TO PROTECT ANY SPECIES AT RISK IDENTIFIED ON THE SITE, A SPECIES AT RISK PLAN WILL BE DEVELOPED AND SUBMITTED IN SUPPORT OF AN APPLICATION FOR AN OVERALL BENEFIT PERMIT FROM THE MNRF BEFORE EXTRACTION PROCEEDS.



LEGEND

- LICENCED BOUNDARY / PROPERTY BOUNDARY
- LIMIT OF EXTRACTION
- PHASE BOUNDARY
- SILT FENCE
- BARN
- POST & PAGE WIRE FENCE (UNLESS OTHERWISE NOTED)
- INTERNAL ROAD
- NEW WATER CHANNEL
- 250
- QUARRY ENTRANCE/EXIT
- GATE
- EQUIPMENT CROSSING
- PROVINCIALY SIGNIFICANT WETLAND
- NEA WETLAND BOUNDARY
- CROSS - SECTION ARROWS
- BENCHMARK WITH ELEVATION (masl)
- 227.0
- 226.0
- 216.5
- EXISTING GROUND ELEVATION
- REHABILITATION ELEVATION
- LOWEST QUARRY FLOOR ELEVATION

SITE PLAN AMENDMENTS

NO.	REVISION	BY	DATE

MTE
Engineers | Scientists | Surveyors
www.mte85.com

David W. Kennedy
V. E. ROWE
PROVINCE OF ONTARIO
04/20/18

DECLARATION OF PURPOSE
THIS SITE PLAN IS PREPARED UNDER THE AGGREGATE RESOURCES ACT FOR A CLASS 'A' LICENCE, CATEGORY 2.

PROJECT
CUMBERLAND QUARRY
LICENSEE: SEVERN AGGREGATES LIMITED
151 WHITENALL DRIVE,
MARKHAM, ONTARIO
L3R 9T1

DRAWING
FINAL REHABILITATION PLAN
WEST HALF LOTS 12, 13 AND 14, CONCESSION 11
GEOGRAPHIC TOWNSHIP OF ORILLIA, NORTH DIVISION
TOWNSHIP OF SEVERN, COUNTY OF SIMCOE

Project Manager J. Flanagan	Project No. 33876-300
Design By	Checked By
Drawn By K.X.M.	Checked By
Surveyed By	Sheet No.
Date April 24, 2018	5
Scale 1:4000	Sheet 5 of 8

