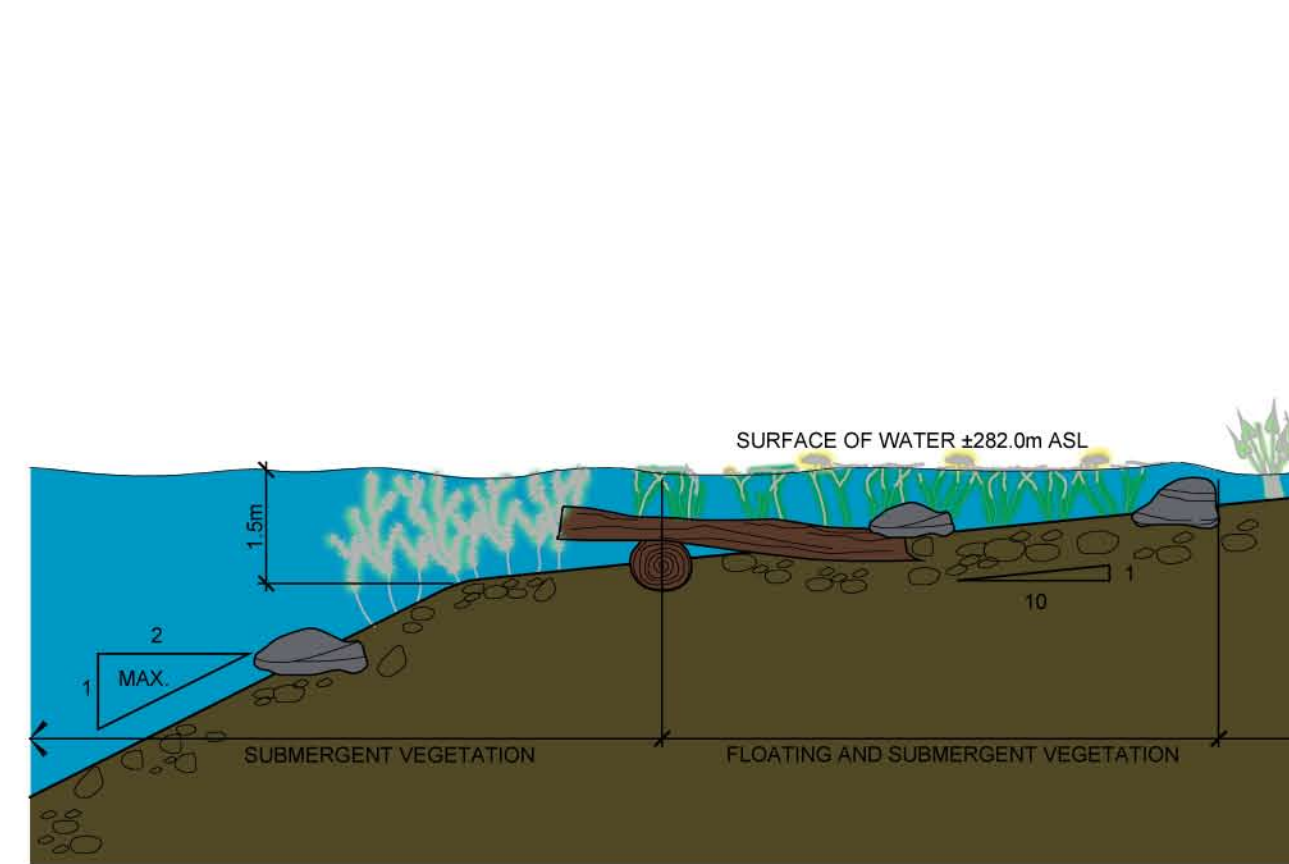
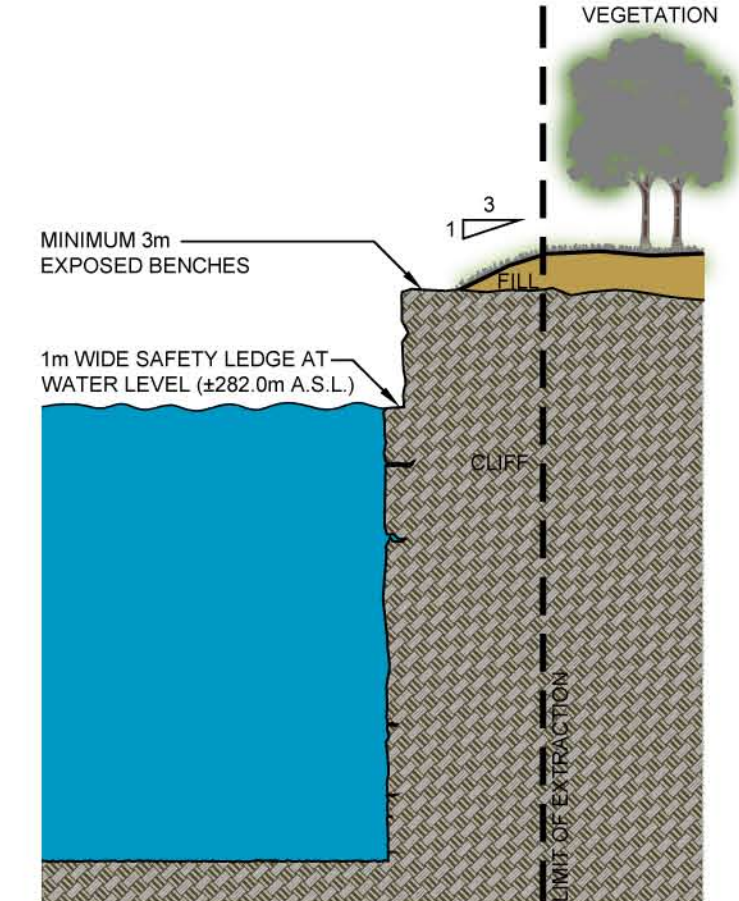


**PLANT LIST FOR CREATED COMMUNITIES**

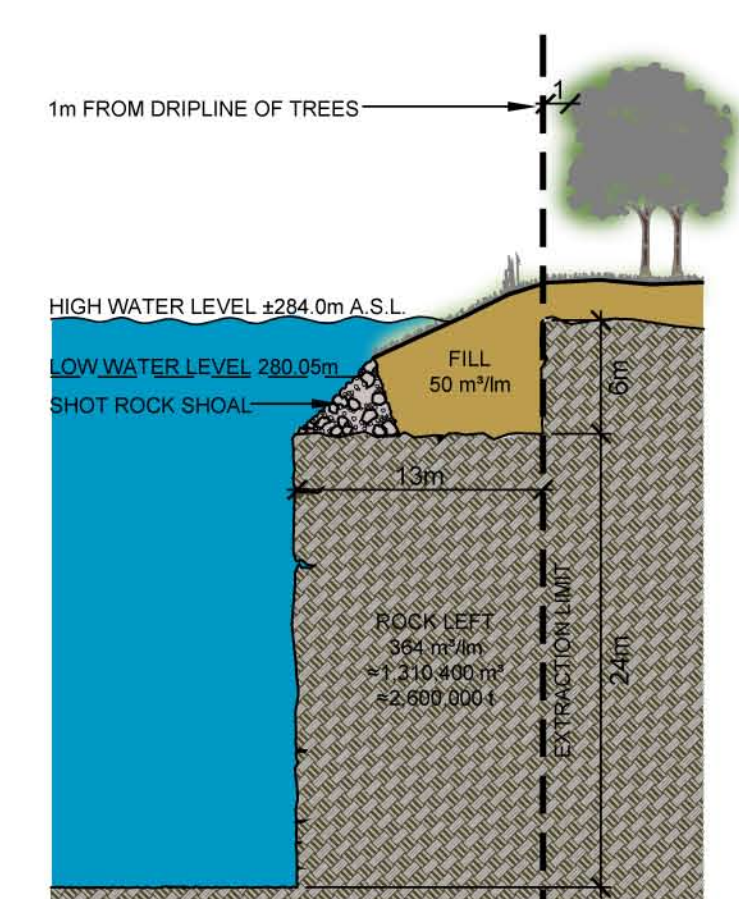
- UPLAND AFForestation:**  
 TREMBLING ASPEN (*Populus tremuloides*)  
 WHITE PINE (*Pinus strobus*)  
 EASTERN WHITE CEDAR (*Taxus occidentalis*)  
 ALTERNATE-LEAVED DOGWOOD (*Cornus alternifolia*)  
 BLUE BEECH (*Carpinus carolinensis* ssp. virginiana)
- RIparian SHRUBBERy ZONE:**  
 DWARF RASPBERRY (*Rubus pubescens*)  
 RED-CORNER DOGWOOD (*Cornus stolonifera*)  
 ROUND-LEAVED DOGWOOD (*C. rugosa*)  
 BERRY WILLOW (*Salix baccata*)  
 ROUGH GOLDENROD (*Solidago rugosa*)  
 MARSH FERN (*Thelypteris palustris* var. pubescens)
- WET MEADOW:**  
 SWAMP LOGSPOKE (*Lysimachia terrestris*)  
 SWAMP MILKWEED (*Asclepias incarnata* ssp. incarnata)  
 SPOTTED TOUCH ME-NOT (*Impatiens capensis*)  
 SPOTTED JOE-PYE WEEED (*Eupatorium maculatum* ssp. maculatum)  
 TALL WHITE ASTER (*Aster lanceolatus* ssp. lanceolatus)  
 SENSITIVE FERN (*Cheilanthes lanuginosa*)  
 THREE-SEALED SEDGE (*Carex tripartita* var. *tripartita*)  
 SPOT-LEAVED SEDGE (*Carex diopetris*)
- EMERGENT WETLAND VEGETATION ZONE:**  
 SMALLER FORESET ME-NOT (*Sparganium angustifolium*)  
 SMALL'S SPIKE-RUSH (*Eleocharis acicularis*)  
 MARSH FERN (*Thelypteris palustris* var. *pubescens*)  
 BLUE-JOINT GRASS (*Calamagrostis canadensis*)
- FLoating AND SUBMERGENT VEGETATION:**  
 COMMON FLOATING PONDWEED (*Peltandra natans*)
- SUBMERGENT VEGETATION:**  
 CANADA WATERWEED (*Elodea canadensis*)



TYPICAL SECTION THROUGH SHORELINE



CLIFF EDGE REHABILITATION DETAIL



PROPOSED SHORELINE SECTION

**NOTES (CONTINUED)**

- ENHANCEMENT AREA INFORMATION**
18. ENHANCEMENT AREA #1 - TWIG-LEAVED TOOTHWORT (0.88 ha) PLANTINGS FROM INDIGENOUS AND LOCAL SOURCES, PLANTED TO CREATE A LARGER POPULATION OVER TIME.
- ENHANCEMENT AREA #2 - THICKLY ASH THicket REGENERATION (1.14 ha) COMPRISED OF TRANSPLANTS FROM EXISTING PATCHES ON THE WESTERN MARGINS OF THE SUBJECT LANDS. TRANSPLANTS TO BE SUPPLEMENTED WITH STEMS PROPAGATED FROM ROOT CUTTINGS FROM INDIGENOUS STOCK.
- ENHANCEMENT AREA #3 - WETLAND AREA 3 (0.22 ha) WETLAND CREATION INCLUDING TYPHA SPP. - SHALLOW WETLAND FEATURE WITH DIFFUSE SUBSURFACE DRAINAGE TO EXISTING SALAMANDER POND TO THE EAST.
- ENHANCEMENT AREA #4 - CULTURAL MEADOW (1.12 ha) REHABILITATION TO OPTIMIZE AMPHIBIAN FORAGING AND WATERFOWL NESTING HABITAT ADJACENT TO EXISTING POND.
- ENHANCEMENT AREA #5 - PLANT NURSERY AND PROPAGATION FACILITY (0.24 ha) LOCATED IN AN AREA SILENTLY CONVERTED TO NURSERY USE. WILL FACILITATE TEMPORARY STORAGE OF TRANSPLANT AND CUTTING MATERIALS, CUTTING AND WOUNDING AREAS FOR SEEDLINGS AND SAPLINGS, SMALL GREENHOUSE FACILITY SPACE FOR ON-SITE PROPAGATION AND RESEARCH FACILITY.
- ENHANCEMENT AREA #6 - TRANSPLANT AREA (1.06 ha) AREAS FOR SCATTERED TRANSPLANT ESTABLISHMENT AND PLANTINGS OF DISEASE RESISTANT BUTTERNUT (AS AVAILABLE).
- ENHANCEMENT AREA #7 - WETLAND 2 (1.15 ha) PROPOSED TO BE CONSIDERED TO ACCOMMODATE THE DISCHARGE OUTLET FOR THE RESERVOIR DISCHARGE INTO THE DOWNSTREAM COMPONENT OF THE FIRM ALONG THE NORTH SIDE OF ELEVENTH CONCESSION ROAD EAST. INCLUDES A WETLAND TYPICAL DOMINATED AND A GENERALLY SHALLOW FEATURE WITH SOME DEEPER HOLES.
- ENHANCEMENT AREA #8 - WETLAND AREA 3 (0.24 ha) THIS FEATURE WILL BE ESTABLISHED TO DISCHARGE SURFACE WATER DIRECTLY INTO THE ADJACENT WETLAND LIKELY INTO THE EXISTING POND AFTER MOVING THROUGH THE CREATED SLOPE SEEPAGE FEATURE. THE RESULT WILL BE THE ESTABLISHMENT OF A MEADOW/MARSH AS SLOPE SEEPAGE ZONE, DOMINATED BY EQUSETUM, JUNCUS AND CAREX SPP.

**LEGEND**

- BOUNDARY OF AREA TO BE LICENCED
- LIMIT OF EXTRACTON
- REGULATORY SETBACK LINE
- 200% INFORMATION CONTOUR
- PROPERTY / LOT / CONCESSION LINE
- ZONING / LANDUSE BOUNDARY
- PROVINCIALLY SIGNIFICANT WETLAND (LOWER MOUNTAIN CREEK SWAMP COMPLEX)
- EXISTING VEGETATION
- EXISTING SPOT ELEVATION
- EXISTING POND
- EXISTING FENCE
- EXISTING TRIBUTARY / RIVER
- EXISTING TRAIL
- EXISTING LANEWAY
- EXISTING BUILDING AND BUILDING NUMBER
- DIRECTION OF SURFACE WATER DRAINAGE
- SECTION LINE
- EXISTING VEGETATION
- PROPOSED PLANTING
- PROPOSED POND
- ENHANCEMENT AREA (REFER TO REHAB NOTE #1-8)

**NOTES**

**GENERAL INFORMATION**

1. REFER TO SHEET 4 OF 5 FOR SECTIONS AND NOTES, SHEET 2 AND 3 OF 5 FOR OPERATIONS AND PHASING DIAGRAMS AND NOTES AND SHEET 5 OF 5 FOR FINAL REHABILITATION AND NOTES.

2. PROPERTY SHALL BE REHABILITATED TO:

OPEN WATER	57.27 HA
WETLAND	2.00 HA
NATURALIZED AREA	2.73 HA
REFORESTED AREA (INSIDE EXTRACTION AREA)	4.64 HA
TOTAL OF REHABILITATION INSIDE EXTRACTION AREA	66.64 HECTARES
REFORESTED AREA (OUTSIDE EXTRACTION AREA)	0.36 HA
WETLAND (OUTSIDE OF EXTRACTION AREA)	0.22 HA
TOTAL REHABILITATION OUTSIDE EXTRACTION AREA	0.53 HECTARES
TOTAL REHABILITATION	68.97 HECTARES

- HYDROGEOLOGICAL INFORMATION**
3. IT IS ANTICIPATED THAT THE GROUNDWATER ELEVATION ACROSS THE SITE WILL REMAIN RELATIVELY UNCHANGED. THE LAKE WATER LEVEL SHALL BE 182.0m A.S.L.
- SIDESLOPE/OPEN SPACE REHABILITATION INFORMATION**
- GRADING INFORMATION**
4. REHABILITATED SLOPES WITHIN THE LICENCED AREA WILL BE CONSTRUCTED AS SHOWN ON THE CROSS SECTIONS. REHABILITATION OF ADJACE WATER SLOPES SHALL BE BY BACKFILLING (MINIMUM 2:1) AND/OR CUT AND FILL METHOD USING AVAILABLE ON-SITE OVERBURDEN AND TOPSOIL FROM WITHIN THE LICENCED AREA AND/OR CLEAN IMPORTED FILL AS DESCRIBED IN NOTE #5.
- PORTIONS OF THE SITE WILL BE REHABILITATED TO VERTICAL CLIFF FACES AND HABITAT CREATION FOR NESTING BIRDS AND OTHER WILDLIFE WILL BE INCORPORATED REFER TO NATURAL ENVIRONMENT REPORT FOR DETAILS.
- AVAILABLE TOPSOIL REPLACED WILL BE APPROXIMATELY 300mm THICK.
- OVERBURDEN SHALL BE A MINIMUM OF 1m THICK.
- REFER TO DRAWING 3 OF 5, SECTIONS, FOR MORE INFORMATION ON BACKFILLING AND CREATION OF REHABILITATED SLOPES.
5. REHABILITATED SLOPES WITHIN THE LICENCED AREA WILL BE CONSTRUCTED AS SHOWN ON THE CROSS SECTIONS. ALL MATERIALS USED FOR PROPOSED CUT AND FILL FOR REHABILITATION WORK WILL BE FROM ON-SITE OR AN ADEQUATE OFF-SITE SOURCE OF CLEAN INERT FILL. BASED ON CALCULATIONS THERE IS INSUFFICIENT OVERBURDEN ON-SITE TO COMPLETE REHABILITATION THEREFORE CLEAN INERT FILL MAY BE IMPORTED TO FACILITATE THE ESTABLISHMENT OF 2:1 SLOPES ON THE QUARRY FILL. THE LICENCED AREA SHALL BE REHABILITATED AS DESCRIBED AT THE SOURCE BEFORE IT IS DEPOSITED ON-SITE TO ENSURE THAT THE MATERIAL MEETS THE MINIMUM OF THE ENHANCEMENT PARAMETERS. THE FILL SHALL BE PLACED IN LAYERS OF 150mm TO 200mm AND SEGMENT STANDARDS FOR USE UNDER PART 703.1 OF THE ENVIRONMENTAL PROTECTION ACT. SAMPLING RESULTS TO BE PROVIDED TO THE LICENCED AREA.
- NOTWITHSTANDING THE ABOVE, WHERE THE IMPORTED MATERIAL IS NOT BEING PLACED WITHIN 1.5 METRES OF THE SURFACE, THE CRITERIA UNDER TABLE 1 FOR SCORIUM ADSORPTION RATIO AND ELECTRICAL CONDUCTIVITY DO NOT HAVE TO BE MET.
- TOPSOILING INFORMATION**
6. APPROXIMATELY 130,000m<sup>3</sup> OF TOPSOIL IS REQUIRED FOR THE REHABILITATION OF THIS SITE. APPROXIMATELY 1130,700m<sup>3</sup> OF TOPSOIL EXISTS WITHIN THE EXTRACTION AREA. APPROXIMATELY 1100,000m<sup>3</sup> OF EXCESS TOPSOIL MAY BE REMOVED FROM THE SITE. REFER TO SITE PLAN OVERBRIE ON OPERATIONS PLAN (SHEET 2).
- VEGETATION STABILIZATION INFORMATION**
7. TOPSOIL SHALL BE SEEDS WITH A MIXTURE OF GRASSES AND LEGUMES THAT MAY INCLUDE THE FOLLOWING AT A RATE OF APPROXIMATELY 1250g/ha:
- |             |              |
|-------------|--------------|
| RED CLOVER  | WHITE CLOVER |
| TALL FESCUE | ANNUAL RYE   |

- OPEN WATER POND REHABILITATION INFORMATION**
8. THE AVERAGE WATER LEVEL IN THE POST-EXTRACTION LAKE IS ESTIMATED TO BE 182.0m A.S.L. BASED ON THE HYDROLOGICAL ASSESSMENT.
9. THE SHAPE AND GRADING OF THE PROPOSED POND IS APPROXIMATE, BASED ON THE BEST AVAILABLE INFORMATION AT THE TIME OF LICENSING. ACTUAL EXTRACTION WILL FOLLOW THE BELOW WATER DEPOSIT AND REHABILITATION SHALL FOLLOW THE CONCEPT ILLUSTRATED.
- SHORELINE REHABILITATION INFORMATION**
10. AREAS SHALL BE REHABILITATED TO POND AS FOLLOWS:
- UNDERWATER SLOPES WILL BE FORMED WITH ON-SITE FILL AND/OR IMPORTED, INERT FILL.
  - UNDERWATER SLOPES SHALL BE A MINIMUM OF 2:1.
  - RESTORATION OF THE POND, AS SHOWN ON THE PROPOSED SHORELINE SECTION, SHEET 5 OF 5 WILL GENERALLY BE ACCOMPLISHED AS FOLLOWS:
  - EXTRACTION AND IN-SITU GRADING WILL CREATE A NEARSHORE SHORELINE AREA AT A SLOPE OF 1:1.
  - THE QUARRY FLOOR SHALL BE LEFT IRREGULAR AND THE EDGES OF THE POND SHALL BE SCULPTED TO AND STRUCTURES WILL BE ADDED TO LENGTHEN THE SHORELINE FOR THE PURPOSE OF ENHANCING BIOLOGICAL DIVERSITY AND PRODUCTIVITY.
  - WOODY CERES BRANCHES, TREE TRUNKS, STUMPS, ETC. CLEANED IN THE EXTRACTION PROCESS WILL BE SALVAGED WHERE POSSIBLE. FOR USE IN SHORELINE RESTORATION.
  - STUMPS, LOGS, BRUSH BUNDLES, ETC. SHALL BE INSTALLED 230m O.C. ALONG THE SHORELINE IN THE SHALLOW ZONE TO CREATE PHYSICAL DIVERSITY.
  - DIVERSITY ROCKS NOT UTILIZED IN THE AGGREGATE OPERATIONS WILL ALSO BE PLACED IN THE SHALLOW ZONE TO CREATE PHYSICAL DIVERSITY.

- REFORESTATION REHABILITATION INFORMATION**
11. ALL VEGETATION PLANTED DURING THIS LICENSE WILL BE MAINTAINED IN A HEALTHY, VIGOROUS GROWING CONDITION.
12. UPLAND AREAS INCLUDING SIDESLOPES SHALL BE REFORESTED, WHERE SHOWN, AS FOLLOWS:
- |              |             |              |                 |
|--------------|-------------|--------------|-----------------|
| WHITE PINE   | SUGAR MAPLE | CHOKEBERRY   | GREY DOGWOOD    |
| RED PINE     | WHITE BIRCH | SILVER MAPLE | SNOWBERRY       |
| WHITE CEDAR  | SUN OAK     | RED MAPLE    | NANANIBERRY     |
| WHITE SPRUCE | RED OAK     | RED MAPLE    | STAGHORN SILMAG |
|              |             |              | ELDERBERRY      |
- SETBACK REHABILITATION INFORMATION**
13. AFTER SIDESLOPES ARE CREATED AND REQUIRED BERMS ARE REMOVED FROM SETBACKS THESE AREAS WILL BE IMMEDIATELY STABILIZED WITH A SUITABLE GROUND COVER AND THEN REFORESTED.

NOTES CONTINUED BELOW

NO.	DATE	ISSUED BY	REVISION	DESCRIPTION
1.	FEB11	AS PER MNR		
	2009			COMMENTS

**Pre Licence Review**

**Site Plan Amendments**

**Harrison and Hoye Ltd.**  
 LANDSCAPE ARCHITECTS  
 91 Anderson Avenue, Unit #2  
 Markham, Ontario, L3R 1A4  
 Telephone: (905) 944-8582  
 Fax: (905) 944-7659  
 Office in Markham and Cambridge

**Project Name**

**ST. MARYS**

St. Marys Cement Inc. (Canada)  
 55 Industrial Street  
 Toronto, Ontario  
 M4G 3W9  
 (416) 423-1300

**ST. MARYS**

**FLAMBOROUGH QUARRY**

PART OF LOT 1, LOTS 2 AND 3 - CONCESSION 11  
 GEOGRAPHIC TOWNSHIP OF EAST FLAMBOROUGH  
 CITY OF HAMILTON

**Scale** 1:2500

**North**

**Stamp**

**Drawing Status**  
 SUBMIT FOR PERMISSION TO BEGIN CONSULTATION PROCESS

**Drawn** S.J.P. **Checked** G.D.H./B.J. **Issue Date** FEB 2009

**Drawing Title**  
**REHABILITATION PLAN**

**Project Number**  
 06-25

**Drawing Number**  
 5 OF 5