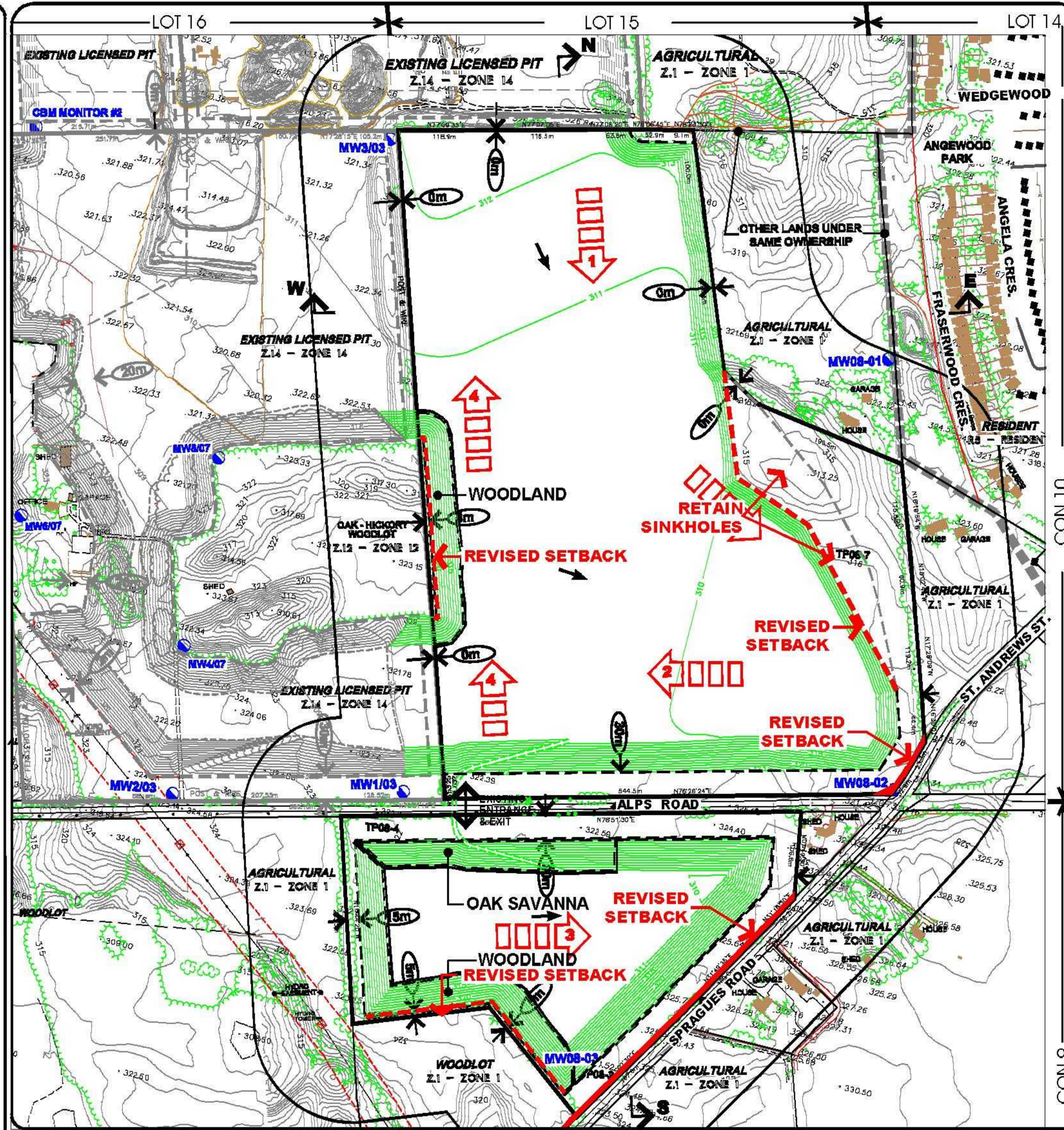


NORTH DUMFRIES PIT EXPANSION

PART OF LOTS 14 AND 15 CONCESSION 10
PART OF LOTS 14 AND 15 CONCESSION 9
TOWNSHIP OF NORTH DUMFRIES
REGIONAL MUNICIPALITY OF WATERLOO

3 of 3 PROGRESSIVE AND FINAL REHABILITATION PLAN



LEGEND

- BOUNDARY OF AREA TO BE LICENSED
- BOUNDARY OF AREA TO BE EXCAVATED
- EXCAVATION SETBACK AND WIDTH
- EXISTING 1m CONTOURS
- EXISTING SPOT ELEVATIONS
- EXISTING TREE COVER
- EXISTING FENCE LINE
- PROPOSED SURFACE DRAINAGE
- PROPOSED 1m CONTOURS
- SEQUENCE AND DIRECTION OF SLOPE REHABILITATION
- NATURAL ENVIRONMENT SLOPE TREATMENTS

NOTES

1. AS EACH STAGE OF EXCAVATION IS COMPLETE IT IS TO BE REHABILITATED CONCURRENTLY WITH THE BEGINNING OF EXCAVATION IN THE NEXT STAGE. EDGE AND FLOOR REHABILITATION TO BE COMPLETED WITHIN 1 FULL GROWING SEASON OF THE BEGINNING OF EXCAVATION IN THE NEXT STAGE. REQUIRED STAGE 1 FLOOR AREA FOR THE CONVEYOR ROUTE WILL BE REHABILITATED UPON COMPLETION OF EXCAVATION OF ALL STAGES WHEN AGGREGATE PROCESSING AND SHIPPING IS NO LONGER REQUIRED.
2. TOPSOIL AND SUBSOIL STRIPPED FROM CURRENT EXTRACTION AREAS WILL BE PLACED IN BERMS AND ONTO AREAS UNDERGOING REHABILITATION. LONG TERM SOIL STOCKPILING AND BERMING WILL BE KEPT TO A MINIMUM.
3. ALL EXTRACTION FACES SHALL BE SLOPED AND GRADED TO NO STEEPER THAN 3:1, ACCOMPLISHED BY BACKFILLING WITH CLEAN COMPACTED FILL MATERIAL OBTAINED FROM WITHIN THE AREA TO BE EXCAVATED WHERE THERE IS A DEFICIENCY OF FILL FOR SLOPE REHABILITATION, INERT FILL MAY BE IMPORTED IN ACCORDANCE WITH MNR POLICY 6.00.03.
4. 0.2 m TOPSOIL AND 0.3 m MINIMUM SUBSOIL SHALL BE REPLACED ON PIT SLOPES AND THE PIT FLOOR AND GRADED AND CULTIVATED IN PREPARATION FOR SEEDING. FERTILIZER (5-20-20) OR EQUAL MAY BE APPLIED ON THE AREAS TO BE SEED.
5. THE PROPOSED CONTOURS ARE APPROXIMATE, BASED ON THE PROPOSED MAXIMUM DEPTH OF EXCAVATION, AND MAY BE RE-ASSESSED PER DRAWING 2, NOTE W1 AND THE APPLICATION OF 0.5 m SUBSOIL AND TOPSOIL, SPECIFIED IN NOTE 4, ABOVE.

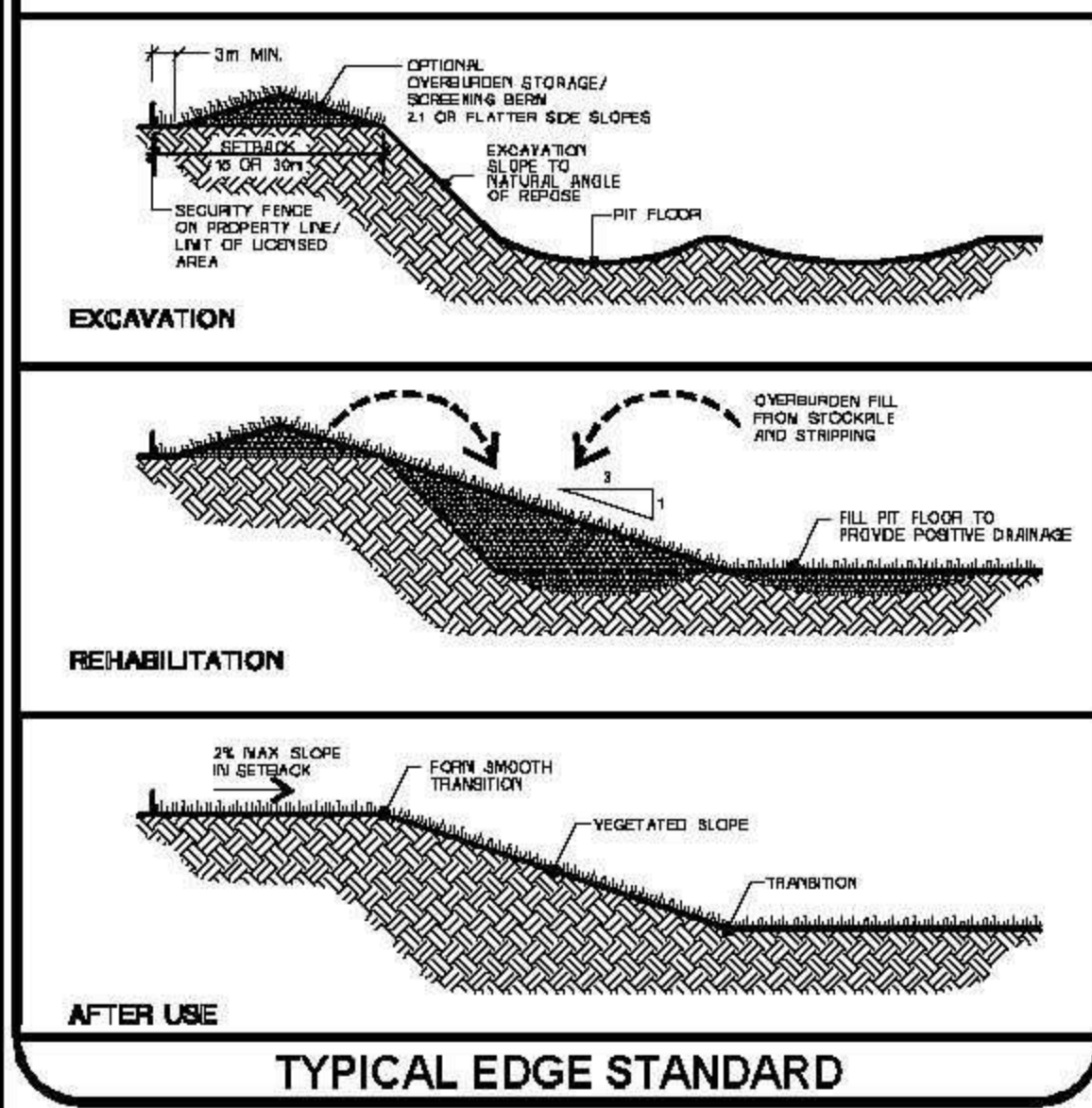
- PIT FLOOR - AGRICULTURAL REHABILITATION**
6. SOIL COMPACTION SHALL BE ALLEVIATED BY RIPPING TO A MINIMUM DEPTH OF 0.5m, BY CULTIVATING AND/OR DISING THE PIT FLOOR.
 7. REHABILITATED PIT FLOOR AREAS SHALL BE SEED WITH A GRASS/LEGUME SEED MIXTURE COMPRISING WHITE CLOVER, TIMOTHY AND PERENNIAL RYEGRASS. A COVER CROP OF OATS OR RYE GRASS MAY BE APPLIED WITHIN THE INITIAL YEAR TO HELP PREVENT EROSION.
 8. GRASS/LEGUME CROPPING SHOULD CONTINUE FOR 5 YEARS TO IMPROVE SOIL STRUCTURE AND ADD FERTILITY. ALL VEGETATION PLANTED ON AREAS UNDERGOING REHABILITATION SHALL BE REPLANTED, IF REQUIRED, TO ENSURE SUCCESSFUL ESTABLISHMENT AND PREVENT EROSION.
 9. THE AREA TO BE REHABILITATED IS EQUAL TO THE AREA TO BE EXCAVATED (45.8 HA, 113 AC) PLUS ANY AREAS WITHIN THE SETBACKS WHICH HAVE BEEN DISTURBED AS A RESULT OF REMOVING BERMS. THE PIT FLOOR AREA TO BE REHABILITATED FOR AGRICULTURE WILL BE APPROXIMATELY 38 HA (93 AC). THE REMAINING 10 HA OF SLOPES AND DISTURBED SETBACKS WILL BE REHABILITATED TO NATURAL ENVIRONMENT, AS PER NOTES 11 TO 14.
 10. ALL SURFACE DRAINAGE WILL BE INTERNAL THROUGH INFILTRATION INTO THE REHABILITATED PIT FLOOR.

- PIT SLOPES - NATURAL ENVIRONMENT REHABILITATION**
11. **WOODLAND PLANTINGS**
RATE: 30 KG/HA - NATIVE SEED MIX
RECOMMENDED WOODY PLANTINGS - WOODLAND:
DECIDUOUS - RED OAK, WHITE OAK, BLACK OAK, SHAGBARK HICKORY, RED MAPLE, BASSWOOD.
CONIFEROUS - WHITE PINE.
SHRUBS - GREY DOGWOOD, ROUND-LEAVED DOGWOOD, NANNYBERRY, HIGH-BUSH CRANBERRY, HAWTHORNS (IF NATIVE SPECIES ARE AVAILABLE).

12. **WOODLAND NATIVE SEED MIX**
USE TO ESTABLISH GROUND COVER ON SELECTED SLOPES AND WITHIN WOODLAND PLANTING ZONES.
RATE: 30 KG/HA
RECOMMENDED NATIVE SEED MIX:
FROM:
PEARLY EVERLASTING, CANADA ANEMONE, TALL ANEMONE, HEMP DOGBANE, HEART-LEAVED ASTER, HEATH ASTER, SMOOTH ASTER, NEW ENGLAND ASTER, ARROW-LEAVED ASTER, WILD COLUMBINE, CANADA WILD RYE, SLENDER WHEAT GRASS, WHITE SNAKEROOT, GRASS-LEAVED GOLDENROD, WOODLAND SUNFLOWER, WILD BERGAMOT, FOXGLOVE BEARDTONGUE, BLACK-EYED SUSAN, CANADA GOLDENROD.

13. **OAK SAVANNA PLANTINGS:**
DECIDUOUS
WHITE OAK, BLACK OAK, BUR OAK, SHAGBARK HICKORY.
CONIFEROUS
WHITE PINE
SHRUBS
GREY DOGWOOD, ROUND-LEAVED DOGWOOD, HAWTHORNS (IF NATIVE SPECIES ARE AVAILABLE).

14. **OAK SAVANNA PRAIRIE SEED MIX:**
RATE: 30 KG/HA - PRAIRIE SEED MIX
RECOMMENDED PRAIRIE SEED MIX:
FROM (70% GRASS/SEEDS, 30% FORBS):
BIG BLUESTEM, LITTLE BLUESTEM, INDIAN GRASS, SWITCH GRASS, CANADA WILD RYE, PENNSYLVANIA SEDGE, AMERICAN HAZEL, NEW JERSEY TEA, FROST ASTER, SMOOTH ASTER, ARROW-LEAVED ASTER, BUTTERFLY-WEBB, ROUND-HEADED BUSH- CLOVER, WOODLAND SUNFLOWER, EARLY GOLDENROD, GRAY GOLDENROD, HAIRY BEARDTONGUE, WILD BERGAMOT, BLACK-EYED SUSAN.



TYPICAL EDGE STANDARD

DRAFT

PROJECT:	CAMWAT2
DRAWN:	T.M.L. (Dr. Autodesk)
CHECKED:	R.J.L.
PLOTTED:	4 JUNE 2010
AMENDMENT NO.	0

**LONG ENVIRONMENTAL
CONSULTANTS INC.**
ENVIRONMENTAL ENGINEERS & PLANNERS
Cambridge, Ontario

