

PHASE E SCALE 1:5000

PHASE B NOTES

- 1. BEGIN STRIPPING OF TOPSOIL AND OVERBURDEN SEPARATELY IN AREA 2. USE MATERIAL TO BEGIN CONSTRUCTION OF ACOUSTICAL BERMS ALONG THE SOUTHWEST AND SOUTHEAST LIMITS OF AREA 3 AND THE SOUTH AND SOUTHEAST
- LIMITS OF AREA 4. 2. CONSTRUCT WETLAND IN SOUTHEAST CORNER OF SITE.
- 3. COMPLETE EXTRACTION IN AREA 1 AND BEGIN BEDROCK EXTRACTION IN AREA 2
- 4. REMOVE NORTHWEST PORTION OF ACOUSTICAL BERM IN AREA 1 AND EXCAVATE MATERIAL PRIOR TO REHABILITATION.
- 5. USE MATERIAL STORED IN ACOUSTICAL BERM TO BEGIN PROGRESSIVE REHABILITATION OF NORTHWEST SLOPE IN AREA 1.
- 7. BEGIN SEQUENTIALLY STRIPPING OF AREA 3 AND USE TOPSOIL AND OVERBURDEN

6. STOCKPILE STUMPS, LOGS, WASTE ROCK, AND BRANCHES IN AREA 1 TO BE USED

- TO CONTINUE REHABILITATION IN AREA
- 8. BEGIN EXCAVATION OF SAND AND GRAVEL IN AREA 3, PROCESSING, STOCKPILING AND SHIPPING FROM THE FACE.
- 9. BEGIN REVEGETATION OF NORTHWEST SLOPE IN AREA 1. 10. MAINTAIN ALL VEGETATION IN A HEALTHY, VIGOROUS CONDITION.



PHASE D SCALE 1:5000 PHASE D NOTES

- 1. BEGIN STRIPPING OF TOPSOIL AND OVERBURDEN SEPARATELY FROM AREA 4. USE MATERIAL TO CONTINUE REHABILITATION OF SHORELINE IN AREA 2.
- 2. BEGIN EXTRACTION OF BEDROCK FROM AREA 4. AS SHOWN.
- 3. BEGIN REMOVAL OF BERMS ALONG WESTERN LIMITS OF AREA 2 AND 3 AND EXCAVATE MATERIAL PRIOR TO REHABILITATION.
- 4. USE MATERIAL TO CONTINUE SHORELINE REHABILITATION OF AREA 2.



SCALE 1:5000

- PHASE C NOTES 1. COMPLETE EXTRACTION OF SAND AND GRAVEL IN AREA 3.
- 2. REMOVE NORTHWEST PORTION OF ACOUSTICAL BERM IN AREA 2 AND EXCAVATE MATERIAL PRIOR TO REHABILITATION. USE MATERIAL TO BEGIN PROGRESSIVE REHABILITATION OF AREA 1.
- 3. BEGIN STRIPPING OF REMAINING OVERBURDEN FROM AREA 3 AND USE THE MATERIAL TO CONTINUE REHABILITATION OF SLOPES IN AREA 1 AND BEGIN **REHABILITATION OF SLOPES IN AREA 2.**
- 4. BEGIN REVEGETATION OF SLOPES IN AREA 2.
- 5. BEGIN EXTRACTION OF BEDROCK FROM AREA 3, AS SHOWN, AND PROCESS IN THE PERMANENT PLANT SITE.
- 6. MAINTAIN ALL VEGETATION IN A HEALTHY AND VIGOROUS CONDITION. AREA 4 WILL REMAIN UNDISTURBED



PHASE E

SCALE 1:5000 PHASE E NOTES

- 1. REMOVE ACOUSTICAL BERM FROM SOUTH SIDE OF AREA 3 AND 4 AND EXCAVATE MATERIAL PRIOR TO REHABILITATION
- 2. USE MATERIAL STORED IN ACOUSTICAL BERMS TO REHABILITATE NORTHEAST SHORELINE OF AREA 1, AREA 3 AND AREA 4.
- 3. REMOVE BERM ON EAST SIDE OF AREA 1 AND 4 AND USE TO CONTINUE
- REHABILITATION OF SHORELINE IN AREA 1. 4. EXTRACT ROCK BENEATH REMOVED BERMS IN AREA 1 AND 4 AND REHABILITATE
- 5. REMOVE ALL EQUIPMENT AND BEGIN TO ALLOW QUARRY TO FLOOD.
- 6. CONSTRUCT BERM AT SOUTHWEST CORNER OF LICENCE TO RETAIN WATER IN THE QUARRY AT AN ELEVATION OF ±281.86m A.SL..

7. THE CONSTRUCTED WETLAND IN THE SOUTHWEST CORNER OF THE SITE SHALL

8. REMOVE AND DECOMMISSION THE GROUNDWATER RECHARGE SYSTEM (GRS) WHEN IT IS NOT LONGER REQUIRED.

TECHNICAL RECOMMENDATIONS

7. MONITORING, TRIGGERING MECHANISMS AND CONTINGENCY PLANS

THE FOLLOWING ARE THE TECHNICAL RECOMMENDATIONS FROM ALL OF THE EXPERTS' REPORTS AS OF JANUARY 2009. ADDITIONAL RECOMMENDATIONS MAY BE INCLUDED AS A RESULT OF THE PRE-LICENCE REVIEW PROCESS. RCHAEOLOGICAL ASSESSMENT (STAGE 1, 2 &3) - ARCHAEOLOGIX INC. JULY 2004
HOULD DEEPLY BURIED ARCHAEOLOGICAL MATERIAL BE FOUND ON THE PROPERTY DURING CONSTRUCTION

ACTIVITIES. THE MINISTRY OF CULTURE SHOULD BE NOTIFIED IMMEDIATELY (519) 675-7742. IN THE EVENT THAT HUMAN REMAINS ARE ENCOUNTERED DURING CONSTRUCTION. THE PROPONENT SHOULD IMMEDIATELY CONTRACT

BOTH THE MINISTRY OF CULTURE AND THE REGISTRAR OR DEPUTY REGISTRAR OF THE CEMETERIES REGULATION UNIT OF THE MINISTRY OF CONSUMER AND COMMERCIAL RELATIONS, (416) 326-8392. ROGEOLOGICAL ASSESSMENT - AECOM (FORMERLY GARTNER LEE LIMITED) FEBRUARY 2009
THE HYDROGEOLOGICAL MONITORING PROGRAM AND TRIGGERING MECHANISMS SET OUT IN SECTION 7.1 OF

THE HYDROGEOLOGICAL ASSESSMENT (AECOM, 2008: HYDROGEOLOGICAL LEVEL 2 REPORT ST MARYS FLAMBOROUGH QUARRY, VOLUME 1) SHALL BE INCORPORATED.

7.1 MONITORING PROGRAMS THIS SECTION PROVIDES A RECOMMENDED FRAMEWORK FOR THE GROUNDWATER AND SURFACE WATER MONITORING PROGRAMS. NOTE THAT THESE MONITORING REQUIREMENTS ARE LIKELY TO BE MODIFIED OR EXTENDED BY THOSE REQUIRED IN ASSOCIATION WITH A PERMIT-TO-TAKE-WATER AND/OR CERTIFICATE OF APPROVAL UNDER THE ONTARIO WATER RESOURCES ACT, AND POSSIBLY OTHER APPROVALS. TO THE EXTENT OSSIBLE, ALL OF THESE SHOULD BE COORDINATED INTO A MASTER MONITORING PROGRAM TO AVOID DUPLICATION.

IARRY DEWATERING DISCHARGE TO THE GRS, AND THE INTERNAL USE OF THIS WATER IN AGGREGATE ROCESSING AND SITE OPERATIONS, WILL HAVE TO BE MONITORED IN CONJUNCTION WITH THE REQUIREMENTS ESTABLISHED BY THE PERMIT-TO-TAKE-WATER AND CERTIFICATE OF APPROVAL FOR THE SITE. 7.1.1 GROUNDWATER MONITORING

SITE HAVE ESTABLISHED A NETWORK OF GROUNDWATER MONITORING STATIONS. A SELECTION OF THESE SHOULD COMPRISE THE LONGTERM MONITORING PROGRAM FOR THE SITE IN ORDER TO ENSURE CONTINUITY THROUGHOUT MONITORING WELLS AROUND THE PERIMETER OF THE QUARRY AND EXTENDING OUT TO THE SITE BOUNDARY WILL SERVE TO CONFIRM THE DEWATERING EFFECTS AROUND THE QUARRY. THE PERFORMANCE OF THE GRS. AND TO ACT AS AN EARLY WARNING FOR ANY OFF-SITE GROUNDWATER IMPACTS. TABLE 7.1 LISTS THE RECOMMENDED MONITORING WELLS AND MONITORING FREQUENCIES.

THE INVESTIGATIONS AND BASELINE MONITORING THAT HAVE BEEN CARRIED OUT OVER SEVERAL YEARS AT THIS

THESE WELLS HAS VALUE IN ORDER TO REFINE AND CONFIRM PREDICTIONS OF THE DRAWDOWN EFFECTS AS THE QUARRY PROGRESSES, BUT IT IS NOT INTENDED, NOR IS IT NECESSARY, TO REPLACE THESE WELLS IN THE MONITORING PROGRAM AFTER THEY ARE DESTROYED. 7.1.2 PRIVATE WATER WELL MONITORING THE ON-SITE GROUNDWATER MONITORING WELLS AT THE QUARRY PROPERTY. ESPECIALLY THOSE AT THE

WATER LEVEL WATER

ADJUSTMENTS

AS NOTED ABOVE, SEVERAL OF THESE MONITORING WELLS ARE WITHIN THE FOOTPRINT OF THE PROPOSED QUARRY

EXPANSION, AND WILL EVENTUALLY BE DESTROYED AS THE QUARRY ADVANCES, NEVERTHELESS, MONITORING OF

PROPERTY BOUNDARIES. WILL PROVIDE AN ADEQUATE AND RELIABLE MEANS OF IDENTIFYING ANY OFF-SITE GROUNDWATER EFFECTS THAT MIGHT RESULT FROM THE QUARRY, AND SERVE AS AN "EARLY WARNING". NEVERTHELESS. TO THE EXTENT THAT ANY PRIVATE WATER WELL OWNER WILL PERMIT MONITORING OF THEIR PRIVATE WATER WELLS, AND WHERE THE WELLS ARE OF SUITABLE CONSTRUCTION TO SAFELY PERMIT MONITORING. WE RECOMMEND THAT ST MARYS SHOULD INCORPORATE A SELECTION OF THESE WELLS INTO THE MONITORING PROGRAM FOR PURPOSES OF ADDITIONAL VERIFICATION AS WELL AS DUE DILIGENCE AGAINST ANY FUTURE CLAIM OF INTERFERENCE OR CONTAMINATION.

TABLE 7.1 PROPOSED GROUNDWATER MONITORING PROGRAM

OREHOLE OR MONITOR ID GEOLOGICAL UNIT

LOCATION ID	MONITORID	GEOLOGICAL UNIT	MONITORING METHOD	QUALITY (ANNUAL)
MWB1-I	MWB1-I-A	UPPER AMABEL	DATA LOGGER	X
MWB1-II	MWB1-II-B	MIDDLE OF AMABEL	DATA LOGGER	X
	MWB1-II-C	NEAR BASE OF AMABEL	DATA LOGGER	X
MWB3	MWB3-A	UPPER AMABEL	DATA LOGGER	
MA/D 4 I	MWB3-B	BASE OF AMABEL	DATA LOGGER	
MWB4-II	MWB4-I-A MWB4-II-B	UPPER AMABEL UPPER AMABEL	DATA LOGGER DATA LOGGER	
	MWB4-II-C	BASE OF AMABEL	DATA LOGGER	
MWB6-I	MWB6-I-A	UPPER AMABEL	DATA LOGGER	
MWB6-II	MWB6-II-B	MIDDLE OF AMABEL	DATA LOGGER	
	MWB6-II-C	BASE OF AMABEL	DATA LOGGER	
MWB7-1	MWB7-I-A	UPPER AMABEL	DATA LOGGER	
MWB7-II	MWB7-II-B	MIDDLE OF AMABEL	DATA LOGGER	
1.01/00 1	MWB7-II-C	BASE OF AMABEL AND REYNALES	DATA LOGGER	
MWB8-I	MWB8-I-A	OVERBURDEN & UPPER FRACTURED ZONE OF AMABEL	DATA LOGGER	X
MWB8-II	MWB8-II-B MWB8-II-C	MIDDLE OF AMABEL BASE OF AMABEL	DATA LOGGER DATA LOGGER	X
MWB9-I	MWB9-I-A	UPPER AMABEL	DATA LOGGER	X
MWB9-II	MWB9-II-B	BASE OF AMABEL	DATA LOGGER	X
MWB10-I	MWB10-I-A	UPPER AMABEL	DATA LOGGER	
	MWB10-I-B	MIDDLE OF AMABEL	DATA LOGGER	
	MWB10-I-C	LOWER AMABEL	DATA LOGGER	
MWB10-II	MWB10-II-D	REYNALES & CABOT HEAD FORMATIONS	DATA LOGGER	
MWB12	MWB12-A	UPPER AMABEL	DATA LOGGER	
	MWB12-B	MIDDLE OF AMABEL	DATA LOGGER	
	MWB12-C	LOWER AMABEL/ REYNALES	DATA LOGGER	
MWB13 MWB17	MWB13-A	UPPER AMABEL	DATA LOGGER	
	MWB13-B MWB13-C	LOWER AMABEL BASE OF AMABEL	DATA LOGGER DATA LOGGER	
	MWB17-A	UPPER AMABEL	DATA LOGGER DATA LOGGER	X
	MWB17-B	BASE AMABEL	DATA LOGGER	X
MWB19	MWB19-A	UPPER AMABEL	DATA LOGGER	
	MWB19-B	LOWER AMABEL	DATA LOGGER	
MWB20-I	MWB20-I-A	UPPER AMABEL	DATA LOGGER	X
MWB20-II	MWB20-II-B	MIDDLE OF AMABEL	DATA LOGGER	X
	MWB20-II-C	LOWER AMABEL	DATA LOGGER	X
MWB21	MWB21-A	MIDDLE OF AMABEL	DATA LOGGER	
MWB22-I	MWB21-B	LOWER AMABEL	DATA LOGGER	
	MWB22-I-A MWB22-I-C	UPPER AMABEL LOWER AMABEL	DATA LOGGER DATA LOGGER	-
MWB22-II	MWB22-II-D	BASE OF AMABEL	DATA LOGGER	
MWB25-I	MWB25-I-A	UPPER AMABEL	DATA LOGGER	
MWB25-II	MWB25-II-B	MIDDLE OF AMABEL	DATA LOGGER	
MWB25-III	MWB25-III-D	LOWER AMABEL	DATA LOGGER	
MWB27-I	MWB27-I-A	UPPER AMABEL	DATA LOGGER	X
MWB27-I	MWB27-II-B	LOWER AMABEL	DATA LOGGER	X
MWB28	MWB28-A	UPPER AMABEL	DATA LOGGER	
	MWB28-B	MIDDLE OF AMABEL	DATA LOGGER	
OVERBURDEN	WELLS		-	
MWO1-I	MWO1-I-A	OVERBURDEN	DATA LOGGER	X
	MWO1-I-B	OVERBURDEN	DATA LOGGER	X
MWO1-II	MWO1-II-C	OVERBURDEN	DATA LOGGER	X
MWO4	MWO4	OVERBURDEN	DATA LOGGER	
MWO6	MWO6	OVERBURDEN	DATA LOGGER	
MWO12	MWO12	OVERBURDEN	DATA LOGGER	
MWO16	MWO16	OVERBURDEN	DATA LOGGER	
MINI-PIEZOME	TERS			
MP1	MP1	WETLAND	MANUAL	
MP2	MP2	WETLAND	MANUAL	
MP5	MP5	WETLAND	MANUAL	
BOREHOLE OR LOCATION ID	MONITOR ID	GEOLOGICAL UNIT	WATER LEVEL MONITORING METHOD	WATER QUALITY (ANNUAL)
MP6	MP6	WETLAND	MANUAL	
MP7	MP7	WETLAND	MANUAL	
MP8	MP8	WETLAND	MANUAL	
MP9	MP9	WETLAND	MANUAL	
MP10 MP11	MP10 MP11	WETLAND WETLAND	MANUAL MANUAL	
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NOTES: PRIOR TO QUARRY DEVELOPMENT, DATA LOGGERS PROGRAMMED TO 24-HOUR INTERVALS. DATA LOGGERS PROGRAMMED TO 6-HOUR INTERVALS UPON COMMENCEMENT OF QUARRY ACTIVITIES. QUARTERLY (SEASONAL) MANUAL WATER LEVEL MEASUREMENTS COLLECTED FROM ALL LOCATIONS LISTED ABOVE. GENERAL CHEMISTRY AND HYDROCARBON INDICATORS (OIL & GREASE, BTEX). NEW MONITORS TO BE INSTALLED PRIOR TO ADVANCEMENT INTO ADJACENT QUARRY PHASE.

MONITORS THAT WILL BE REMOVED DUE TO EXTRACTION; TO BE INCLUDED UNTIL REMOVED. T SHOULD BE NOTED THAT PRIVATE WATER WELL MONITORING RESULTS MUST BE INTERPRETED WITH CAUTION THE USE OF THE WELLS PRIOR TO OR DURING THE MONITORING EVENT CAN AFFECT THE RESULTS.

THE YIELD AND WATER QUALITY OF ANY WELL CAN BE STRONGLY INFLUENCED BY THE AGE AND CONDITION OF THE WELL ITSELF ALONG WITH THE EQUIPMENT. THE YIELD AND WATER QUALITY OF ANY WELL CAN BE AFFECTED BY ANY NUMBER OF OTHER NEARBY LAND

USES (OTHER WELLS, SEPTIC FIELDS, ETC.). HE FOLLOWING APPROACH IS RECOMMENDED FOR MONITORING PRIVATE RESIDENTIAL WATER WELLS: A SELECTION OF SUITABLE PRIVATE WATER WELLS COMPLETED IN THE AMABEL AQUIFER, WITHIN APPROXIMATELY 500 M OF THE QUARRY FOOTPRINT, SHOULD BE ESTABLISHED BASED ON A DOOR-TO-DOOR SURVEY CARRIED OUT AT LEAST ONE YEAR PRIOR TO QUARRY OPERATION, WELLS ON PROPERTIES DIRECTLY ADJACENT TO THE QUARRY, WELLS COMPLETED AT A SHALLOW DEPTH, AND A DISTRIBUTION OF WELLS ON EACH

WATER LEVELS SHOULD BE MEASURED ON A QUARTERLY BASIS. AN ANNUAL WATER SAMPLE SHOULD BE TAKEN AND TESTED FOR GENERAL CHEMISTRY AND HYDROCARBON

SIDE OF THE QUARRY SHOULD BE USED AS SELECTION CRITERIA.

MONITORING PROGRAM IF APPROPRIATE.

AND SAVANTA, 2008).

THE RESULTS SHOULD BE INCORPORATED INTO THE REGULAR REVIEW AND REPORTING FOR THE SITE, AND THE DATA SHOULD BE PROVIDED ANNUALLY TO INDIVIDUAL OWNERS FOR THEIR OWN WELLS. AN ANNUAL REVIEW OF MOE WATER WELL RECORDS, SUPPLEMENTED WITH A FIELD RECONNAISSANCE SURVEY. SHOULD BE CARRIED OUT TO IDENTIFY ANY NEW WELLS THAT MAY BE ESTABLISHED IN THE AMABEL AQUIFER WITHIN 500 M OF THE QUARRY FOOTPRINT. A WATER WELL RECORD AND BASELINE WATER LEVEL MEASUREMENT SHOULD BE DOCUMENTED FOR ANY NEW WELLS, AND THEY SHOULD BE ADDED TO THE

1 3 SURFACE WATER MONITORING THE INVESTIGATIONS AND BASELINE MONITORING THAT HAVE BEEN CARRIED OUT OVER SEVERAL YEARS AT THIS SITE HAVE ESTABLISHED A NETWORK OF SURFACE WATER MONITORING STATIONS. A SELECTION OF THESE SHOULD COMPRISE THE LONG-TERM MONITORING PROGRAM FOR THE SITE IN ORDER TO ENSURE CONTINUITY THROUGHOUT THE LIFE OF THE QUARRY. A LONG-TERM SURFACE WATER MONITORING REPORT HAS BEEN DEVELOPED AND RECOMMENDED IN THE HYDROLOGICAL REPORT (STANTEC CONSULTING LTD., 2008). THE SURFACE WATER MONITORING PROGRAM SHOULD ALSO BE COORDINATED AND COMPLEMENT THE ECOLOGICAL MONITORING

PROGRAM DETAILED IN THE COMPANION EIS AND NATURAL ENVIRONMENT LEVEL 2 TECHNICAL REPORT (STANTEC 7.1.4 TRIGGERING MECHANISM RIGGERING MECHANISMS ARE ESTABLISHED IN ORDER TO IDENTIFY HOW AN UNEXPECTED OR UNACCEPTABLE RESULT FROM THE MONITORING PROGRAM LEADS TO A RESPONSE, EITHER THROUGH THE ADAPTIVE MANAGEMENT PLAN (AMP) DESCRIBED PREVIOUSLY IN THIS REPORT, OR A CONTINGENCY ACTION DESCRIBED LATER IN THIS

THE FOLLOWING FRAMEWORK IS RECOMMENDED FOR THE TRIGGERING MECHANISM. AGAIN, IT IS IMPORTANT TO NOTE HERE THAT A PERMIT-TO-TAKE-WATER AND/OR CERTIFICATE OF APPROVAL UNDER THE ONTARIO WATER RESOURCES ACT MAY SPECIFY ADDITIONAL TRIGGERING MECHANISMS RELATED TO THE TAKING, TRANSMISSION AND DISCHARGE OF WATER AT THE SITE (I.E., THE OPERATION OF THE GRS AND ANY DIRECT DISCHARGE TO

SECTION. BIOLOGICAL TRIGGERS ARE DISCUSSED IN THE COMPANION NATURAL ENVIRONMENT REPORT (STANTEC

F THE ROUTINE MONITORING PROGRAM IDENTIFIES ANY ONE OF THE FOLLOWING CONDITIONS THAT WOULD ONSTITUTE AN UNEXPECTED OR UNPREDICTED EFFECT: GROUNDWATER LEVELS IN ANY PERIMETER MONITOR LOCATED AT THE PROPERTY BOUNDARY (I.E., OUTSIDE OF

THE GRS) ARE REDUCED BY MORE THAN 10% BELOW THE LOWEST SEASONALLY EQUIVALENT RECORDED WATER

OUTSIDE OF THE GRS) EXCEEDS THE ONTARIO DRINKING WATER STANDARDS (ODWS), OR EXCEEDS THE 75TH

PERCENTILE OF ITS PRE-DEVELOPMENT CONCENTRATION WHERE ODWS IS ALREADY EXCEEDED IN THE

SURFACE WATER LEVELS IN ANY WETLAND MONITOR ARE REDUCED BY MORE THAN 10% BELOW THE LOWEST SEASONALLY EQUIVALENT RECORDED WATER LEVEL; OR THE GROUNDWATER QUALITY IN ANY PERIMETER MONITOR LOCATED AT THE PROPERTY BOUNDARY (I.E.,

THE SURFACE WATER QUALITY AT ANY STREAM MONITORING STATION EXCEEDS THE PROVINCIAL WATER QUALITY OBJECTIVE (PWQO), OR EXCEEDS THE 75TH PERCENTILE OF ITS PRE-DEVELOPMENT CONCENTRATION WHERE PWQO IS ALREADY EXCEEDED IN THE BACKGROUND; OR

VISUAL INSPECTION IDENTIFIES A DOWNSTREAM FLOODING OR EROSION CONDITION WITHIN 1 KM OF THE QUARRY FOOTPRINT. THEN THE FOLLOWING ACTIONS WILL BE INITIATED: THE COMPANY SHALL TAKE ANY IMMEDIATE CORRECTIVE ACTION THAT CAN BE REASONABLY TAKEN WITH THE

THE DISTRICT OFFICES OF THE MINISTRY OF THE ENVIRONMENT AND THE MINISTRY OF NATURAL RESOURCES SHALL BE INFORMED OF THE FINDINGS WITHIN ONE BUSINESS DAY OF THE RESULTS BEING IDENTIFIED. THE MONITORING ASSOCIATED WITH THE FINDING SHALL BE REPEATED AS SOON AS POSSIBLE AND PRACTICAL AND CONTINUE ON AT LEAST A WEEKLY BASIS DURING THE PERIOD WHEN THE EFFECT PERSISTS.

QUARRY OPERATION TO CORRECT THE SITUATION (E.G., REDUCE OR SUSPEND DIRECT QUARRY DEWATERING

IF THE INTENSIFIED MONITORING RESULTS CONFIRM THAT THE EFFECT IS NOT CONTINUING, THEN THE ROUTINE MONITORING PROGRAM MAY RESUME: OR IF THE INTENSIFIED MONITORING RESULTS CONFIRM THAT THE EFFECT IS CONTINUING, THEN A SPECIFIC CONTINGENCY PLAN SHALL BE PREPARED DOCUMENTING: THE NATURE, EXTENT AND SIGNIFICANCE OF THE IMPACT, A RECOMMENDATION REGARDING ITS MITIGATION (I.E., IN ACCORDANCE WITH THE ADAPTIVE MANAGEMENT PLAN), RECOMMENDATIONS REGARDING ANY ADDITIONAL MONITORING REQUIREMENTS, AND

THE MONITORING DATA AND OTHER RELEVANT INFORMATION SHALL BE REVIEWED BY A QUALIFIED

PROFESSIONAL AS SOON AS REASONABLY POSSIBLE.

RECOMMENDATIONS REGARDING THE RESUMPTION OF OPERATIONS.

ENVIRONMENT AND THE MINISTRY OF NATURAL RESOURCES. SUBJECT TO APPROVAL BY THE DISTRICT OFFICES OF THE MINISTRY OF THE ENVIRONMENT AND THE MINISTRY OF NATURAL RESOURCES, THE OPERATOR SHALL IMPLEMENT THE CONTINGENCY PLAN.

A REPORT ON THE ABOVE SHALL BE CIRCULATED TO THE DISTRICT OFFICE OF THE MINISTRY OF THE

2. AN ADAPTIVE MANAGEMENT PLAN SHALL BE DEVELOPED IN CONSULTATION WITH THE MINISTRY OF NATURAL RESOURCES MINISTRY OF THE ENVIRONMENT AND CONSERVATION HALTON BASED ON THE STRUCTURE SET OUT IN SECTION 6.6 OF THE HYDROGEOLOGICAL ASSESSMENT (AECOM, 2008: HYDROGEOLOGICAL LEVEL 2 REPORT ST MARYS FLAMBOROUGH QUARRY, VOLUME 1).

6.6 ADAPTIVE MANAGEMENT PLAN "ADAPTIVE MANAGEMENT" REFERS TO A PROCESS OF CONTINUAL REFINEMENT OF THE MITIGATION SYSTEMS EMPLOYED AS PART OF THE QUARRY OPERATION, BASED ON PERFORMANCE MONITORING RESULTS. ALTHOUGH THE FEASIBILITY OF THESE MITIGATION SYSTEMS IS ESTABLISHED HEREIN THROUGH A COMBINATION OF THOROUGH FIELD INVESTIGATION, CAREFUL ANALYSIS (SUCH AS THE GROUNDWATER MODELLING) AND EXPERIENCE IN OTHER APPLICATIONS, NEVERTHELESS GROUNDWATER, SURFACE WATER AND RELATED ECOLOGICAL FUNCTIONS ARE NATURAL SYSTEMS THAT EVOLVE OVER TIME, OFTEN DUE TO NATURAL STIMULUS, IT IS PRUDENT TO RETAIN THE FLEXIBILITY TO REFINE AND ADAPT THE MITIGATION SYSTEMS ON AN ONGOING BASIS TO CONTINUALLY IMPROVE THEIR PERFORMANCE.

THIS SECTION OF THE REPORT DETAILS THE ADAPTIVE MANAGEMENT PLAN (AMP) ASSOCIATED WITH THE MAJOR ELEMENTS OF THE GROUNDWATER AND SURFACE WATER MITIGATION SYSTEMS, WHILE THE MONITORING PROGRAMS DETAILED LATER IN THIS REPORT (OR IN THE COMPANION NATURAL ENVIRONMENT REPORT, WHERE THE MONITORING IS RELATED TO THE ECOSYSTEM RESPONSE) ARE DESIGNED TO SUPPORT THESE ADAPTIVE MANAGEMENT CONCEPTS.

GENERALLY THE COMPLETE SCOPE OF AN AMP IS NOT FULLY DETAILED UNTIL INPUT IS REALIZED FROM VARIOUS AGENCIES (INCLUDING THE MUNICIPALITY, THE CONSERVATION AUTHORITIES, THE MOE AND THE MNR), SO THE FOLLOWING IS INTENDED AS OUTLINE OF THE KEY COMPONENTS. AGAIN, AN AMP NEEDS TO BE DISTINGUISHED FROM A CONTINGENCY PLAN. THE AMP IS INTENDED AS A METHOD TO

CONTINUALLY ADJUST AND IMPROVE MITIGATION FOR THOSE EFFECTS THAT ARE PREDICTED AND CAN BE REASONABLY EXPECTED TO OCCUR. CONTINGENCY PLANS, PRESENTED LATER IN THIS REPORT, ARE ACTIONS TAKEN IN RESPONSE TO UNEXPECTED EVENTS OR EFFECTS. 6.6.1 THE GROUNDWATER RECIRCULATION SYSTEM (GRS)

IT WILL BE IMPORTANT TO EVALUATE THE PERFORMANCE OF THE GRS, AS THE QUARRY IS DEVELOPED, TO ENSURE THAT WATER LEVELS ARE MAINTAINED AT A PRESCRIBED LEVEL. THIS WILL INVOLVE THE ACTIVE MONITORING OF: QUANTITIES, TEMPERATURE AND QUALITY OF WATER PUMPED TO THE GRS GROUNDWATER LEVELS BEYOND THE PERIMETER OF THE GRS;

WATER LEVELS, TEMPERATURE, WATER QUALITY AND VEGETATIVE HEALTH IN THE WETLANDS ADJACENT TO THE QUARRY: AND STREAM FLOW, WATER QUALITY AND TEMPERATURE IN THE STREAM REACHES ADJACENT TO THE QUARRY. THESE DATA WILL BE COLLECTED AND REVIEWED ON A REGULAR BASIS THROUGHOUT EACH SEASON BEGINNIN PRIOR TO THE DEVELOPMENT OF THE QUARRY (TO ESTABLISH BASELINE CONDITIONS) AND CONTINUING THROUGHOUT THE OPERATION OF THE GRS (WHICH IS EXPECTED TO EXTEND BEYOND THE QUARRY OPERATIONS, WHILE THE QUARRY IS STILL FILLING WITH WATER). PERIODICALLY THE RESULTS WILL BE SUMMARIZED INTO REPORTS. THE MONITORING AND REPORTING FREQUENCIES ARE EXPECTED TO BE MORE INTENSIVE DURING THE EARLY YEARS OF THE GRS OPERATION WHILE ITS FIELD PERFORMANCE IS REFINED AND IMPROVED, AND THEN TAPER OFF SOMEWHAT IN LATER YEARS. PERFORMANCE GOALS

THE SPECIFIC PERFORMANCE GOALS OF THE GRS WILL BE RELATED TO THE FOLLOWING: MAINTENANCE OF GROUNDWATER LEVELS AT THE ST. MARYS PROPERTY BOUNDARIES THAT ENSURE ADEQUATE

WATER SUPPLIES IN OFF-SITE PRIVATE WATER WELLS. MAINTENANCE OF THE PRE-QUARRY (BASELINE) SEASONAL WATER LEVELS. WATER TEMPERATURES AND WATER

MAINTENANCE OF THE PRE-QUARRY (BASELINE) FLOWS, WATER TEMPERATURES AND WATER QUALITY IN THE REACHES OF MOUNTSBERG CREEK AND FLAMBORO CREEK ADJACENT TO THE NORTHERN AND SOUTHEASTERN PERIMETER OF THE QUARRY, RESPECTIVELY.

QUALITY IN THE LOWER MOUNTSBERG CREEK WETLAND COMPLEX, TO THE NORTH, SOUTH AND SOUTHEAST OF

A HIGHLY FLEXIBLE GRS CONCEPT HAS BEEN PROPOSED, INCORPORATING A WIDE RANGE OF ADJUSTMENTS AND REFINEMENTS THAT CAN BE IMPLEMENTED AS PART OF THE AMP, INCLUDING: AUGMENTING THE RECHARGE SYSTEM WITH ADDITIONAL RECHARGE WELLS IN SPECIFIC AREAS AND DEPTHS WHERE WATER LEVELS ARE NOT BEING FULLY MAINTAINED.

AUGMENTING THE GRS WITH RECHARGE TRENCHES, ESPECIALLY IF SHALLOW GROUNDWATER LEVELS ARE NOT BEING MAINTAINED. PASSIVE BOREHOLES CAN ALSO BE ADDED TO THE TRENCHES IF GROUNDWATE LEVELS ARE NOT BEING SUSTAINED IN DEEPER BEDROCK ZONES, AND WHERE THERE IS ALSO A RISK THAT THIS WILL UNDERDRAIN WETLANDS OR AFFECT OFF-SITE WATER WELLS FINISHED IN DEEPER AQUIFER UNITS. RE-BALANCING THE DISTRIBUTION OF RECHARGE IN DIFFERENT SECTIONS OF THE GRS IF THE RESULTING

WATER LEVELS ARE UNEVEN, OR IF THERE IS A DEFICIT OF RECHARGE WATER THEN DIRECTING MORE RECHARGE TOWARDS THE MOST SENSITIVE AREAS (TYPICALLY THE WETLANDS). REVISING THE SUMP AND SETTLING POND DESIGN IN THE QUARRY FLOOR IF THE DISCHARGE THROUGH THE GRS CONTAINS EXCESSIVE SEDIMENT.

REVISING THE INTAKE SYSTEM FOR THE GRS IF THERE IS A NEED TO ADJUST DISCHARGE WATER TEMPERATURES (E.G., DRAW FROM A DEEPER SUMP FOR COLDER WATER TEMPERATURES, OR A SHALLOWER

INSTALLING A PASSIVE BARRIER WALL11 BETWEEN THE GRS AND QUARRY, OR PRESSURE GROUTING THE BEDROCK IN ANY SECTION(S) WHERE THE BACKFLOW INTO THE QUARRY IS EXCESSIVE, AND/OR WHERE RECYCLING THE WATER INCREASES MINERALIZATION LEADING TO UNACCEPTABLE DISCHARGE WATER QUALITY. 6.6.2 SURFACE WATER DISCHARGE VERIFICATION MONITORING AND EVALUATION

THE EFFECTS ASSOCIATED WITH THE DIRECT DISCHARGE OF ANY SURPLUS WATER FROM THE QUARRY SHOULD BE MONITORED TO ENSURE THAT THE QUANTITY AND QUALITY ARE BEING ADEQUATELY ASSIMILATED: FLOW RATES, WATER QUALITY AND TEMPERATURE OF THE DIRECT DISCHARGE FROM THE QUARRY. STREAM FLOW, WATER QUALITY AND TEMPERATURE IN THE STREAM REACHES ADJACENT TO THE QUARRY. INSPECTION OF THE DISCHARGE POINT AND ADJACENT STREAM REACHES FOR ANY EVIDENCE OF EXCESSIVE

THESE DATA WILL BE COLLECTED AND REVIEWED ON A REGULAR BASIS FOR THE DURATION OF DIRECT DISCHARGE FROM THE QUARRY. PERIODICALLY THE RESULTS WILL BE SUMMARIZED INTO REPORTS. NOTE THAT A BIOLOGICAL MONITORING PROGRAM HAS BEEN DEVELOPED AND IS PRESENTED IN THE COMPANION NATURAL ENVIRONMENT REPORT (STANTEC AND SAVANTA, 2008). PERFORMANCE GOALS

THE SPECIFIC PERFORMANCE GOALS RELATED TO DIRECT SURFACE WATER DISCHARGES ARE: A) NO CONTRIBUTION TO FLOODING CONDITIONS IN THE ADJACENT AND DOWNSTREAM REACHES. B) NO CONTRIBUTION TO EXCESSIVE EROSION IN THE ADJACENT AND DOWNSTREAM REACHES. C) NO CONTRIBUTION TO ANY EXCEEDANCE OF PWQO IN THE ADJACENT AND DOWNSTREAM REACHES. D) MAINTENANCE OF PRE-QUARRY WATER TEMPERATURES RANGES IN THE ADJACENT STREAM REACHES. WHEREVER THERE ARE TEMPERATURE-SENSITIVE AQUATIC HABITATS AND SPECIES PRESENT.

FOLLOWING ARE A NUMBER OF ADJUSTMENTS AND REFINEMENTS THAT CAN BE IMPLEMENTED TO THE SURFACE WATER DISCHARGE, AS NECESSARY:

USING STORAGE IN THE QUARRY SUMPS, FLOOR AND GRS SYSTEM TO RETAIN AND REGULATE DISCHARGES FROM THE QUARRY ADJUSTING THE PUMP INLET CONFIGURATION AND DEPTH TO REGULATE DISCHARGE TEMPERATURES. MODIFYING THE SUMPS AND/OR SEDIMENT PONDS TO FURTHER REDUCE SEDIMENT LEVELS IN THE DISCHARGE. ADDING SEDIMENT FILTERS TO THE DISCHARGE LINES OR CHANNELS TO FURTHER REDUCE SEDIMENT. MODIFYING THE DISCHARGE STRUCTURE TO FURTHER DISPERSE FLOW AND REDUCE EROSION.

6.6.3 REHABILITATION VERIFICATION MONITORING AND EVALUATION

PERIMETER OF THE QUARRY, RESPECTIVELY.

AIR VIBRATION EFFECTS.

THE EFFECTS ASSOCIATED WITH THE ESTABLISHMENT OF A PASSIVE LAKE IN THE FINISHED QUARRY SHOULD BE MONITORED CAREFULLY, ESPECIALLY IN THE INITIAL STAGES WHILE THE GRS INFRASTRUCTURE IS STILL IN PLACE AS A BACKUP. THIS WILL INVOLVE THE ACTIVE MONITORING OF: GROUNDWATER LEVELS AT THE PERIMETER OF THE SITE;

WATER LEVELS, TEMPERATURE, WATER QUALITY AND VEGETATIVE HEALTH IN THE WETLANDS ADJACENT TO THE STREAM FLOW, WATER QUALITY AND TEMPERATURE IN THE STREAM REACHES ADJACENT TO THE QUARRY. THESE DATA WILL BE COLLECTED AND REVIEWED ON A REGULAR BASIS THROUGHOUT EACH SEASON FOLLOWING THE SHUTDOWN OF THE GRS (WHICH IS EXPECTED TO OPERATE UNTIL THE QUARRY IS FILLED WITH WATER). ERIODICALLY THE RESULTS WILL BE SUMMARIZED INTO REPORTS. THE MONITORING AND REPORTING FREQUENCIES ARE EXPECTED TO BE MORE INTENSIVE DURING THE EARLY YEARS OF THE PASSIVE LAKE WHILE ITS FIELD PERFORMANCE IS REFINED AND IMPROVED. AND THEN TAPER OFF SOMEWHAT IN LATER YEARS. THE MONITORING PROGRAM WILL BE CONCLUDED FOLLOWING TWO YEARS OF CONSISTENT SEASONAL WATER LEVELS INDICATING THAT THE POST-EXTRACTION LAKE HAS STABILIZED TO STATIC CONDITIONS.

PERFORMANCE GOALS THE SPECIFIC PERFORMANCE GOALS OF THE PASSIVE LAKE WILL BE RELATED TO THE FOLLOWING (AND ARE SIMILAR TO THOSE FOR THE GRS OPERATION): MAINTENANCE OF GROUNDWATER LEVELS AT THE ST. MARYS PROPERTY BOUNDARIES THAT ENSURE ADEQUATE WATER SUPPLIES IN OFF-SITE PRIVATE WATER WELLS.

MAINTENANCE OF THE PRE-QUARRY (BASELINE) SEASONAL WATER LEVELS, WATER TEMPERATURES AND WATER QUALITY IN THE LOWER MOUNTSBERG CREEK WETLAND COMPLEX, TO THE NORTH, SOUTH AND SOUTHEAST OF MAINTENANCE OF THE PRE-QUARRY (BASELINE) FLOWS, WATER TEMPERATURES AND WATER QUALITY IN THE REACHES OF MOUNTSBERG CREEK AND FLAMBORO CREEK ADJACENT TO THE NORTHERN AND SOUTHEASTERN

A RANGE OF ADJUSTMENTS AND REFINEMENTS THAT CAN BE IMPLEMENTED AS PART OF THE AMP, INCLUDING: ADJUSTING THE OUTLET ELEVATION AND FUNCTION FROM THE LAKE TO MAKE MINOR ADJUSTMENTS TO THE WATER LEVEL, AND IN TURN RAISE OR LOWER THE GROUNDWATER LEVELS AROUND THE SITE. PRESSURE GROUTING THE BEDROCK BELOW THE PASSIVE BARRIER WALL IF THERE ARE AREAS OF EXCESSIVE

SELECTIVELY OPERATING THE GRS IN CERTAIN LOCATIONS WHERE WATER LEVELS MAY NEED TO BE AUGMENTED ON OCCASION, DRAWING WATER FROM THE LAKE. RAISING THE HEIGHT OF THE RETAINING BERM, IF THE LAKE LEVEL NEEDS TO BE GREATER IN ORDER TO MEET THE WATER LEVEL OBJECTIVES ON THE NORTHERN PERIMETER OF THE SITE ADJACENT TO THE WETLANDS.

RELEASING SOME OF THE WATER FROM THE LAKE DIRECTLY INTO THE ADJACENT STREAMS IF STREAM FLOWS ARE INSUFFICIENT. WATER SHALL BE USED AS A DUST SUPPRESSION AGENT TO THE EXTENT NECESSARY TO MINIMIZE AIR AISSIONS FROM THE SITE. ANY DUST SUPPRESSION AGENTS NECESSARY TO AUGMENT THE USE OF WATER SHALL BE USED SPARINGLY, AND SHALL INCLUDE ONLY DUST SUPPRESSION AGENTS APPROVED BY THE MINISTRY OF THE ENVIRONMENT FOR THIS PURPOSE.

QUARRY DEWATERING HAS THE POTENTIAL TO LOWER GROUNDWATER LEVELS AROUND THE QUARRY WITH POSSIBLE ADVERSE EFFECTS ON NEARBY WATER WELLS, WETLANDS, STREAMS AND VEGETATION. A GROUNDWATER RECIRCULATION SYSTEM (GRS) WILL BE INCORPORATED INTO THE QUARRY DESIGN IN ORDER TO MITIGATE THESE EFFECTS, WITH PARTICULAR EMPHASIS ON THE ADJACENT WETLANDS WHICH ARE SENSITIVE TO GROUNDWATER TABLE FLUCTUATIONS. THE GRS WILL BE DESIGNED TO RECHARGE PRECIPITATION AND GROUNDWATER SEEPAGE BACK INTO THE GROUNDWATER SYSTEM AROUND THE QUARRY. THE GRS WILL BE BASED ON RECHARGE WELLS INSTALLED AROUND PORTIONS OF THE QUARRY PERIMETER. OTHER TYPES OF RECHARGE COMPONENTS SUCH AS RECHARGE TRENCHES AND PASSIVE BOREHOLES MAY ALSO BE INCORPORATED IN TO THE GRS DESIGN AS PART OF AN ADAPTIVE MANAGEMENT PLAN. PRIOR TO THE COMMENCEMENT OF EXTRACTION AT THE SITE, A DETAILED DESIGN AND SPECIFICATIONS FOR THE GRS SHALL BE DEVELOPED AND SUBMITTED FOR APPROVAL IN CONJUNCTION WITH APPLICATIONS FOR A

FURTHER CONSULTATION SHALL BE CARRIED OUT WITH LOCAL AND PROVINCIAL AUTHORITIES REGARDING THE ADAPTIVE MANAGEMENT PLAN, AND THE REFINED AMP SHALL BE PUT IN PLACE PRIOR TO ANY SITE

PERMIT TO TAKE WATER AND CERTIFICATE OF APPROVAL REQUIRED UNDER THE ONTARIO WATER RESOURCES

BLASTING AND VIBRATION - GOLDER ASSOCIATES LTD. AUGUST 2008

• THE INITIAL SERIES OF REGULAR PRODUCTION BLASTS SHALL BE MONITORED AT A MINIMUM OF FIVE LOCATIONS AT VARYING DISTANCES FROM EACH BLAST TO CONFIRM THAT THE ACTUAL GROUND AND AIR VIBRATION ATTENUATION CHARACTERISTICS ARE IN ACCORDANCE WITH THE ATTENUATION CHARACTERISTICS DISCUSSED IN THIS REPORT. THIS WOULD ENTAIL ESTABLISHING MONITORING STATIONS BETWEEN THE BLAST SITE AND NEIGHBOURING RESIDENTS TO THE WEST AND SOUTH DURING THE SINKING CUT AND DEVELOPMENT OF THE BENCH FACE. THE SITE SPECIFIC ATTENUATION DATA DEVELOPED DURING THIS MONITORING PERIOD SHALL THEN BE USED TO BETTER DEFINE GROUND AND AIR VIBRATION EFFECTS AT THE NEAREST PROPERTIES. SUBSEQUENT ROUTINE MONITORING OF ALL BLASTING OPERATIONS SHALL BE CARRIED OUT IN THE VICINITY OF THE CLOSEST RECEPTOR TO THE PROPOSED BLASTING OPERATIONS. AS EXTRACTION CONTINUES WITHIN THE QUARRY AND BLASTING OPERATIONS MOVE THE ACTUAL MONITORING SITE SHALL BE ROLITINELY AND

OPERATIONS SUCH THAT A SUITABLE PERIOD OF BASELINE MONITORING IS ESTABLISHED.

 BLASTING SHALL BE SCHEDULED SO THAT IT OCCURS ROUTINELY DURING A SPECIFIC PERIOD OF TIME EACH. DAY. FOR EXAMPLE, ALL BLASTING MAY OCCUR DURING A WINDOW OF TIME FROM SAY 12:00 NOON TO 2:00 P.M. WHATEVER WINDOW OF TIME IS SELECTED BY THE QUARRY, THIS INFORMATION SHALL BE MADE AVAILABLE TO THE NEIGHBOURING PROPERTY OWNERS. THE MINIMUM BLAST HOLE SIZE SHALL BE LIMITED TO 114 MM TO MINIMIZE THE POTENTIAL FOR HOLES TO

REGULARLY REVIEWED SO THAT THE CLOSEST RECEPTOR IS ALWAYS BEING MONITORED FOR GROUND AND

WANDER IF DRILLING A 35 TO 38 M BENCH. IN THE EVENT THAT THE QUARRY IS EXTRACTED USING A SINGLE BENCH, BLAST HOLES SHALL BE PERIODICALLY SURVEYED, SUCH AS WITH A BORETRAC, TO ENSURE THEY ARE BEING DRILLED VERTICALLY AS PER THE BLAST DESIGN. ONLY A FEW HOLES NEED TO BE SURVEYED IN ANY PARTICULAR BLAST. THE FREQUENCY OF THE SURVEYS SHALL BE INCREASED IF THERE IS EVIDENCE OF HOLE DEVIATION BUT AS A MINIMUM THE BLAST HOLES SHALL BE SURVEYED FOUR TIMES PER YEAR.

NOISE ASSESSMENT - AERCOUSTICS ENGINEERING LIMITED FEBRUARY 2009
ANY PROPOSED CHANGES TO THE ASPECTS OF THE EXTRACTION, PROCESSING AND SHIPPING OPERATIONS DEALT WITH IN THE NOISE IMPACT STUDY AS RELATING TO NOISE CONTROL SHALL BE REVIEWED BY A QUALIFIED ACOUSTICAL CONSULTANT FOR COMPLIANCE WITH THE RELEVANT NOISE CRITERIA.

QUARRY BENCH HEIGHT EVALUATION - GOLDER ASSOCIATES NOVEMBER 2008
THE SITE PLANS HAVE BEEN DEVELOPED IN RESPONSE TO THE QUARRY BENCH HEIGHT EVALUATION AND AS SUCH CONTAIN NOTES OR ILLUSTRATE THE ITEMS DISCUSSED IN THE REPORT. THERE ARE NO ADDITIONAL TECHNICAL RECOMMENDATIONS IN THE QUARRY BENCH HEIGHT REPORT.

---* EXISTING FENCE

CONSULTATION WITH THE MNR;

EXISTING TRAIL

■1 EXISTING BUILDING

EXISTING LANEWAY

BOUNDARY OF AREA TO BE LICENCED - - - - - LIMIT OF EXTRACTION REGULATORY SETBACK LINE

— - - — - - - — - - — - - — PROPERTY / LOT/ CONCESSION LINE PROVINCIALLY SIGNIFICANT WETLAND (LOWER MOUNTSBERG CREEK SWAMP COMPLEX) __ 345.00 __ _ EXISTING 5m CONTOUR LINE **EXISTING SURVEYED WETLAN** __ 344.00 _ _ EXISTING 1m CONTOUR LINE EXISTING VEGETATION

EXISTING SPOT ELEVATION EXISTING TRIBUTARY / RIVER AREA STRIPPED OF TOPSOIL AND OVERBURDEN- BEDROCK AREA STRIPPED OF TOPSOIL

AND OVERBURDEN- SAND AN GRAVEL EXPOSED INDISTURBED AREA

DIRECTION OF SURFACE WATER DRAINAGE LOCATION OF NOISE RECEPTOR

SHORELINE REHABILITATION SHORELINE REHABILITATION XTRACTION FACE DIRECTION OF EXTRACTION DIRECTION OF TOPSOIL AND

PROPOSED BERM OVERBURDEN MOVEMENT ■■■■ MOVEMENT OF EXTRACTION

CONSULTATION WITH THE MNR AND CONSERVATION HALTON PRIOR TO ROOT PRUNING AND THE INSTALLATION OF SILT FENCING: A BUTTERNUT STEWARDSHIP AGREEMENT SHALL BE DEVELOPED AND IMPLEMENTED IN

AN ADAPTIVE MANAGEMENT PLAN, WITH APPROPRIATE MONITORING AND REPORTING, SHALL BE DEVELOPED AND IMPLEMENTED IN CONSULTATION WITH THE MNR, MINISTRY OF THE ENVIRONMENT AND CONSERVATION HALTON. F THERE ARE SUBSTANTIAL CHANGES TO THE PROPOSED SITE PLANS OR GROUNDWATER

MITIGATION APPROACH, WHICH WOULD AFFECT THE NATURAL ENVIRONMENT ADDRESSED IN THE LEVEL 2 REPORT, THESE WILL BE REVIEWED BY A QUALIFIED PROFESSIONAL TO CONFIRM THAT THEY DO NOT AFFECT THE CONCLUSIONS OF THE NATURAL ENVIRONMENT LEVEL 2 REPORT. OTHER RECOMMENDATIONS THAT ARE PRESENTED IN THE LEVEL 2 NATURAL ENVIRONMENT REPORT

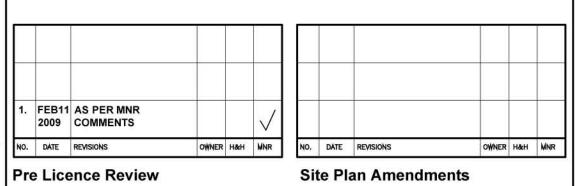
INCLUDE THE FOLLOWING: CREATED WETLAND PLANNING AND DESIGN (SEE SECTION 7.1.1.1) TWO WETLAND FEATURES ARE PROPOSED TO PERFORM HYDROLOGIC AND ECOLOGIC FUNCTIONS AT THE DISCHARGE OUTLETS INTO EXISTING PSW AREAS. THE DESIGNS FOR THESE FEATURES WILL BE

SUBJECT OF MORE DETAILED DISCUSSIONS WITH KEY AGENCIES AND THE DEVELOPMENT OF DESIGNS THAT WILL OPTIMIZE FUNCTIONS. PLANT/BUTTERNUT NURSERY ESTABLISHMENT THE CREATION OF A SMALL ON-SITE NURSERY WILL ALSO SERVE AS A PROPAGATION LOCATION FOR LOCALLY RAISED BUTTERNUT GRAFTS AND SEEDLINGS (IF THESE MATERIALS CAN BE DEVELOPED IN

A MANNER THAT WILL EXHIBIT DISEASE RESISTANCE. THE NURSERY WILL ALSO BE USED TO PROPAGATE INDIGENOUS POPULATIONS OF LOCALLY AND REGIONALLY RARE PLANT SPECIES. PLANNING AND EARLY DESIGN EFFORTS WILL BE UNDERTAKEN FOR DISCUSSIONS WITH THE KEY AGENCIES AND WITH THE FOREST GENE CONSERVATION ASSOCIATION

HE GROUND AND SURFACE WATER COMPONENTS OF THE PROPOSED QUARRY WILL BE THE SPECIFIED PERFORMANCE GOALS INCLUDING FOR EXAMPLE, THE MAINTENANCE OF PRE-QUARRY (BASELINE) SEASONAL GROUND WATER LEVELS. SURFACE WATER TEMPERATURES AND SURFACE WATER QUALITY IN ADJACENT NATURAL FEATURES (WETLANDS AND WATERCOURSES). A HIGHLY FLEXIBLE GRS SYSTEM HAS BEEN PROPOSED INCORPORATING A WIDE RANGE OF ADJUSTMENTS AND REFINEMENTS THAT CAN BE IMPLEMENTED AS NEEDED. FROM A SURFACE WATER PERSPECTIVE MEETING THESE PERFORMANCE GOALS WILL RESULT IN NO CONTRIBUTION TO INCREASED FLOODING OR EROSION DOWNSTREAM, NO CONTRIBUTION TO PROVINCIAL WATER QUALITY OBJECTIVES (PWQO) EXCEEDANCES, AND MAINTENANCE OF WATER TEMPERATURES AND QUALITY IN ADJACENT SENSITIVE STREAM HABITATS.

AN ADAPTIVE MANAGEMENT PLAN SHALL BE DEVELOPED IN CONSULTATION WITH THE MINISTRY OF NATURAL RESOURCES, MINISTRY OF THE ENVIRONMENT AND CONSERVATION HALTON, BASED ON THE OBJECTIVES AND KEY COMPONENTS OUTLINED IN SECTION 7.0 OF THE HYDROLOGICAL LEVEL 2 TECHNICAL REPORT, ST. MARYS FLAMBOROUGH QUARRY, STANTEC CONSULTING LTD., 2009.









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

Scale 1:5000

PHASE B-E

Drawn S.J.P.

Drawing Title

JBMIT FOR PERMSSION TO BE CONSULTATION PROCESS

CITY OF HAMILTON

Checked G.D.H./ B.J. Issue Date FEB 2009

OPERATIONAL

Drawing Number