

Civil and Municipal
Engineering

ARK Engineering and Development

Serviceability Brief

Cedar Lakes Subdivision
Phases 3 - 4
Ottawa (Greely), Ontario

Prepared For
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**LOT 7 AND 8,
CONCESSION 3**

**WATER SUPPLY, SEWAGE,
GRADING AND STORMWATER**

PRELIMINARY SERVICEABILITY STUDY

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EC-1	Erosion and Sediment Control Plan

PRELIMINARY SERVICEABILITY STUDY

1.0 BACKGROUND

1.1 General

The proposed development site situated on Lot 7 and 8 of Concession 3 consists of approximately 48 ha and is situated West of the Stagecoach Rd. and South of Courtland Grove Crescent (see location map SK-1). The proposed subdivision will consist of 71 lots, which are all a minimum half acre in size and are to be developed on full private services and roadside drainage ditches.

1.2 Existing Services

This area of development in Greely has no existing sanitary, watermain and storm sewers to services this proposed subdivision. Therefore, this rural development will be constructed as follows:

- All dwellings will have their own:
 1. wells for domestic water usage
 2. septic systems for sewage treatment
- Roadside ditches and culvert crossings will be proposed and sized to accommodate the 10yr storm as a minimum to drain the lots and roads
- Three stormwater management ponds are proposed to ensure that the pre to post conditions of the site are respected after development.
- An internal road network as shown in the SK-2 drawing in Appendix A is being proposed which will provide this subdivision with three connection access points, one by the existing Phase 1, the second by Deermeadow Dr. and the other off of Stagecoach Rd.
- Hydro, Bell Cable and Gas were not part of this preliminary serviceability study; it should be verified prior to proceeding with the first design submission.

2.0 PROPOSED SERVICES

2.1 Water Supply

As previously mentioned, all dwellings will have their own individual wells in order to supply domestic water. These wells will have to be drilled by a licensed water well contractor and its construction method will have to be in accordance to the approved Hydrogeological report which was prepared by Gemtec. All new wells shall have a minimum casing length of 40.0m. Once the well is drilled, a Certificate of Well Compliance and a MOE Well Record shall be provided to the City of Ottawa.

2.2 Sewage

Since no sanitary sewer pipes are available for this area, septic systems for every dwelling are proposed which is typical in a rural setting. These septic systems must be designed and installed carefully to protect the surrounding water resources. The proposed designs must be submitted, approved and then inspected by the local Ottawa Septic System Office (OSSO).

3.0 STORMWATER MANAGEMENT

The SWM report will have to be written/designed in conjunction with the approved Stantec Consulting Ltd: "Greely/Shields Creek Stormwater and Drainage Study", 2002, which fall within the Middle Castor River Subwatershed.

In order to meet the MOE quality and quantity control criteria, Stormwater Management Ponds (SWM) are required. Due to the existing site topography, two stormwater management ponds are required to be constructed as shown on sketch SK-2. Although the study is still at a preliminary stage, the most probable pond locations are as shown on the sketch SK-2, since it will intercept runoff which currently drains from the North to the South. The pond outlets will be via existing open ditch from this site which ultimately discharges into Grey's Creek Municipal Drain (refer to Figure 4.9.2 for site outlet locations, identified as SNC18 and SNC 20 and Figure 4.12.1 also depicts existing drainage outlets, for existing Phases 1 and 2)

The following are some Design Objectives and Criteria which will be analyzed:

The design criteria and guidelines used for the stormwater management of the subject subdivision are based on the October 2012 City of Ottawa Sewer Design Guidelines and subsequent technical memorandums, as well as generally accepted stormwater management design guidelines. The design guidelines used for the SWM design of the subject site include the following:

- City of Ottawa Sewer Design Guidelines, October 2012
- The September 2016 City of Ottawa Technical Bulletin PIEDTB-2016-01
- The March 2018 City of Ottawa Technical Bulletin ISTB-2018-01
- The MECP Stormwater Management Planning and Design Manual, March 2003

Additional design criteria are based on generally accepted stormwater management design guidelines. The specific criteria used for the minor and major system and SWM pond design are presented below:

3.1 Minor System

- Roadside ditches and driveway culverts are to be designed to provide, at a minimum, a 2-year level of service. That is, for a 2-year design storm, all surface drainage draining to the SWM pond shall be contained within the roadside ditches.
- All driveway culverts shall be a minimum of 500 mm in diameter.

3.2 Major System

- The 100-year Water surface elevation in the roadside ditch should not exceed the lowest ground elevation around the perimeter of the adjacent building.
- The spread of major system flows for the 100-year + 20% stress test shall not exceed the building's lowest opening.
- Roof leaders shall be installed to direct the runoff to grassed areas.

3.3 Quality and Quantity Control Design

- As per Stantec's "Greely/Shield Creek Stormwater and Drainage Study" for future developments with stormwater management (SWM) controls, the recommended SWM strategy is to control the 2-year post-development flow to 50% of predevelopment peak flow and control 5-year to 100-year post-development peak flows to match pre-development conditions.
- The site is required to provide an Enhanced level of protection for stormwater quality or 80% long-term removal of suspended solids as per the MECP Stormwater Management Planning and Design Manual.

4.0 SITE GRADING

A preliminary permissible grade raise restriction has been provided by Paterson Group for the southwest portion of the site where a silty clay deposit was encountered and is set between 2.0 m to 2.5m. Footings bearing upon a sand/silty sand, glacial till or bedrock bearing medium will not be subject any grade raise restrictions. This is shown on the Paterson Group, Drawing PG6871-2 - Permissible Grade Raise Plan included in Appendix 2.

If higher than permissible grade raises are required, preloading with or without a surcharge, lightweight fill, and/or other solutions may be recommended by the geotechnical consultant, if required, to mitigate the risks of unacceptable long-term post-construction total and differential settlements.

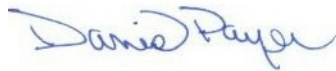
5.0 CONCLUSION

From the above statements the following can be concluded:

- i) This entire site can be serviced as proposed above.
- ii) All dwelling are to be serviced on private wells with 40.0m casings and septic systems approved by OSSO.
- iii) The proposed subdivision will be drain towards two proposed SWM ponds which will provide adequate protection to the site and the environment.
- iv) The Geotechnical report determine the permissible grade raise of up to 2.0m-2.5m in the South-Western corner.

Prepared by:

ARK Engineering and Development



Daniel Payer, P.Eng.
President

APPENDIX "A"

SK-1	Location Map
Figure 4.9.2	Geomorphic Stream Reaches
Figure 4.12.1	Greely/Shields Creek Stormwater and Drainage Study
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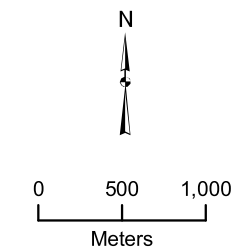
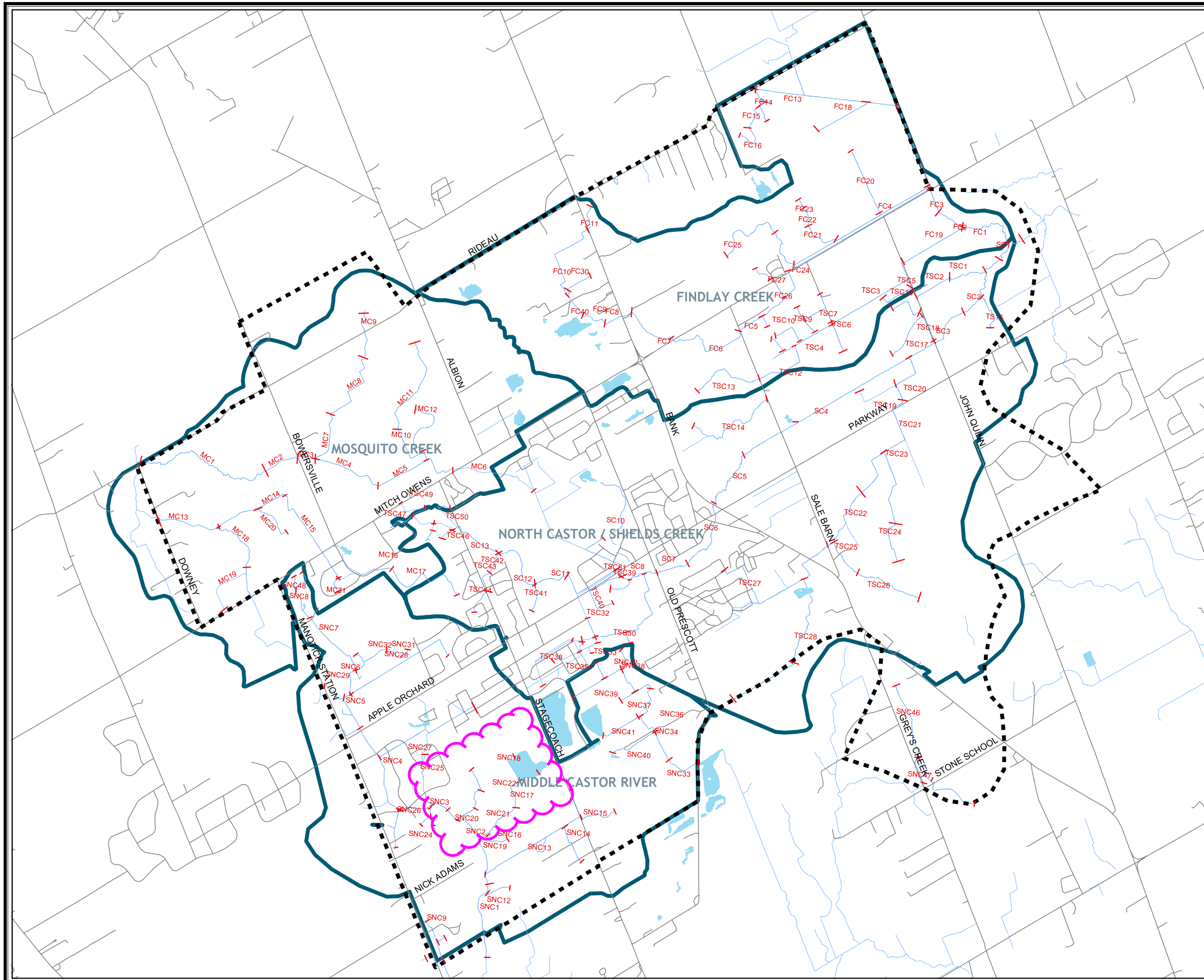
	<p>LOCATION MAP</p> <p>CITY OF OTTAWA - Formerly TOWNSHIP OF OSGOODE</p>	<p>Completed By: ARK ENGINEERING AND DEVELOPMENT</p> <p>Scale: 1:6000</p>	<p>Drawing No.: SK-1</p> <p>Date: DEC 2023</p>
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Shields Creek Subwatershed Study

GEOMORPHIC STREAM REACHES

Legend

-  Reach Breaks
-  Roads
-  Watercourse
-  Ponds
-  Study Area Boundary
-  Subwatershed



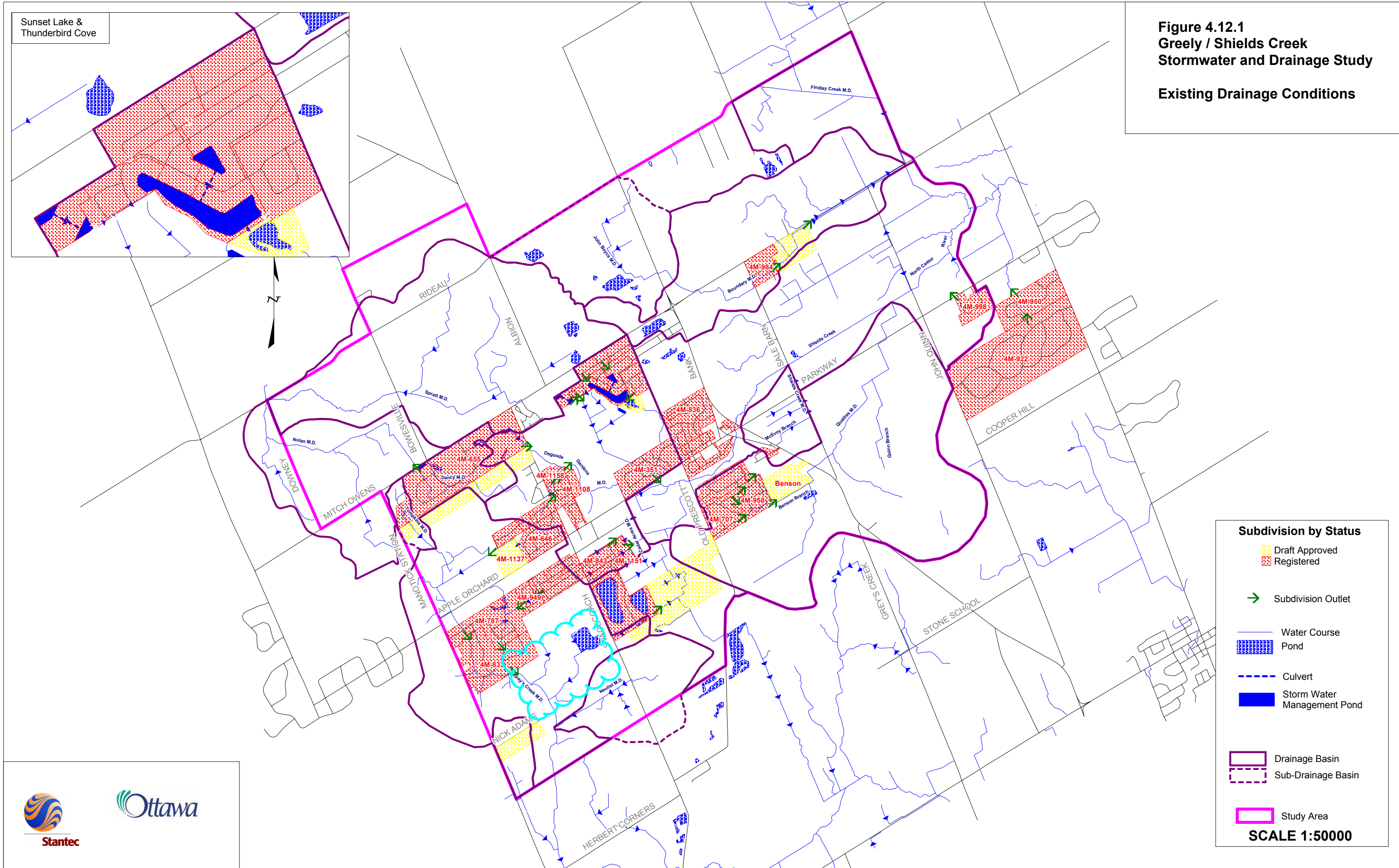
Blackport & Associates
Donald G. Weatherbe Associates Inc.

June 28, 2004

Figure 4.9.2

Sunset Lake & Thunderbird Cove

Figure 4.12.1
Greely / Shields Creek
Stormwater and Drainage Study
Existing Drainage Conditions



Subdivision by Status

- Draft Approved
- Registered

Subdivision Outlet

Water Course

Pond

Culvert

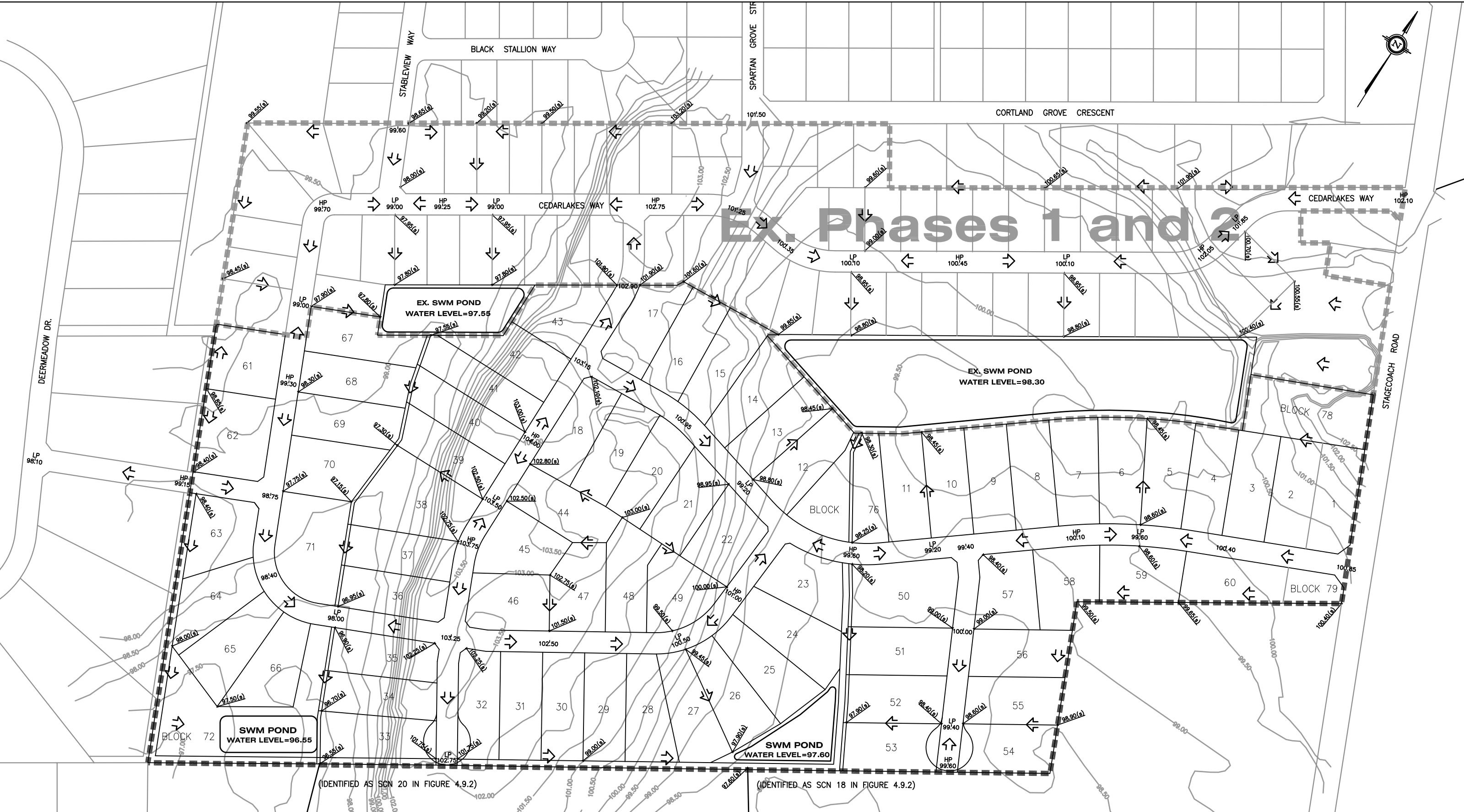
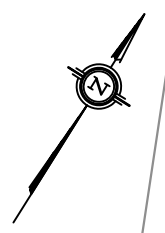
Storm Water Management Pond

Drainage Basin

Sub-Drainage Basin


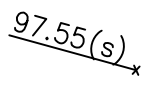

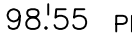
Study Area

SCALE 1:50000



Ex. Phases 1 and 2

LEGEND:

	RUNOFF FLOW DIRECTION		PROPOSED SWALE AND DITCH ELEVATIONS
	DRAINAGE AREA BOUNDARY		PROPOSED CENTER LINE OF ROAD ELEVATIONS

STORM DRAINAGE AND MACRO GRADING PLAN
CEDAR LAKES - PHASES 3 to 4

CITY OF OTTAWA - Formerly TOWNSHIP OF OSGOODE

Completed By: ARK ENGINEERING AND DEVELOPMENT	
Scale: NTS	Date: DEC 2023

Drawing No.:
SK-2

Responsibility / Copyright Reserved

The location of under/overground utilities and structures are not necessarily shown on the contract drawings, and/or where shown. The accuracy of the position of such utilities and structures is not guaranteed. The Contractor shall verify and be responsible to determine the exact location of all such utilities and structures and assumes all liability for any damage to them.

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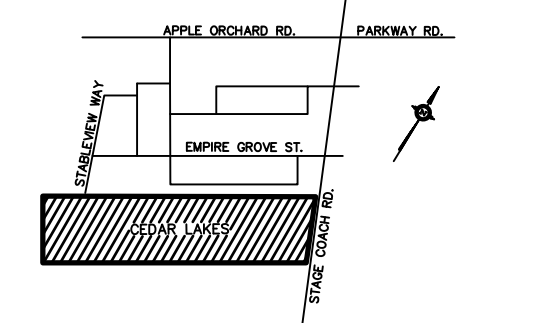
Legend

- SITE BOUNDARY
- DIRECTION OF SHEET FLOW DRAINAGE
- - - SILTATION CURTAIN
- STRAW BALES

Notes

- 1) STRAW BALES SHOULD BE INSTALLED AS PER OPSD 219.180
- 2) STRAW BALES MAY BE INSTALLED ALONG THE VARIOUS SWALES (MAN MADE OR EXISTING) WHERE JUDGED NECESSARY BY THE ENGINEER AND/OR THE CITY OF OTTAWA'S INSPECTOR.
- 3) ALL SEDIMENT CONTROL LOCATIONS MUST BE INSPECTED ON A REGULAR BASIS ESPECIALLY FOLLOWING A RAINFALL EVENT. SEDIMENTS SHALL BE REMOVED AND CONTROLS REINSTALLED AS NECESSARY.
- 4) SHOULD IT BE IMPOSSIBLE TO PREVENT OVERLAND SHEET FLOW TO AN EXTERNAL AREA DURING THE CONSTRUCTION PHASE, SUCH AREA SHALL BE PROTECTED WITH A SILT FENCE AS PER OPSD 219.110 TO ENSURE FLOW IS MAINTAINED ON-SITE.
- 5) ANY MATERIAL STOCKPILES SHOULD BE LOCATED ON FLAT AREAS WELL AWAY FROM ANY DRAINAGE OUTLETS. ALL STOCKPILES ARE TO BE STABILIZED BY VEGETATION AND/OR GEOTEXTILE. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS FEASIBLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 7 DAYS AFTER THE CONSTRUCTION ACTIVITY HAS TEMPORARILY OR PERMANENTLY CEASED.
- 6) STOCKPILES AS WELL AS EQUIPMENT FUELING AND MAINTENANCE AREAS WILL BE LOCATED A MINIMUM OF 30m FROM THE DITCH AND OTHER CONVEYANCE ROUTES.
- 7) PREPARATIONS TO RESPOND TO ANY ACCIDENTAL SPILLS, INCLUDING KEEPING A SPILLS RESPONSE KIT ON SITE, WILL BE MAINTAINED DURING THE CONSTRUCTION PHASE.
- 8) NO SEDIMENT CONTROL STRUCTURES SHALL BE REMOVED UNLESS DEEMED UNNECESSARY.
- 9) THE SEDIMENT AND EROSION CONTROL MEASURES MAY BE MODIFIED IN THE FIELD AT THE DISCRETION OF THE CITY OF OTTAWA SITE INSPECTOR.
- 10) THIS PLAN IS A "LIVING DOCUMENT" AND THAT ANY MODIFICATION TO THE PLAN SHALL BE SUBMITTED TO THE SATISFACTION OF SNC AND MAY BE MODIFIED BY SNC STAFF.

Key Plan



Revision

Revision	Date
0. SUBMITTED FOR APPROVAL	JAN 4/24

Seal



Client / Project

6980848 CANADA CORPORATION
CEDAR LAKES - Phases 3 - 4

Drawing Name

EROSION and SEDIMENT CONTROL PLAN

Scale



Revision

REV-0

Sheet

1 of 1

Drawing No.

EC-1

