

Civil and Municipal  
Engineering

# ARK Engineering and Development

## Serviceability Brief

Proposed 73 Lot Development  
Emerald Subdivision  
Ottawa (Greely), Ontario

Prepared For  
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# SERVICEABILITY BRIEF

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## SERVICEABILITY BRIEF

### 1.0 BACKGROUND

#### 1.1 General

The subject property encompasses a total area of approximately 35.03 hectares (86.56 acres) and is located within the Western limits of the existing Village of Greely, Ontario on Parts of Lot 3 and 4, Concession 3, just West of Stagecoach Rd. and south of Mitch Owens Rd. (see location map SK-1).

The average minimum lot size for each of the proposed lots has been assigned at approximately 0.40 hectares (1.0 acres) with a total of 73 lots. Permissible minimum lot size within the former Village of Greely, as referenced by the City of Ottawa Official Plan is set for this site at 0.40 hectare (1.0 acre).

It is proposed that the subdivision will be serviced by individual onsite wells and wastewater treatment systems. This form of servicing is consistent with the established hierarchy prescribed in Section 1.6.6.4 of the Ontario Provincial Policy Statement and is consistent with the established development within the Village of Greely and surrounding rural areas.

#### 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
- Two stormwater management ponds are proposed to ensure that the pre to post conditions of the site are respected after development.
- An internal Village Road Network as shown in the Village of Greely Community Design Plan, Schedule "C" is being considered which will provide this subdivision with three connection access points, one by Fox Valley Rd., the second by Jack Pine Crescent and the third by Green Links Way.
- Hydro, Bell, Cable and Gas will be circulated and their layouts/designs will be incorporated into a Composite Utility Plan.

## 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 is being prepared by Gemtec. Once the well is drilled, a water well record shall be provided to the homeowner and submitted to the Ministry of Environment.

### 2.2 Sewage

Since no sanitary sewer pipes are available for this area, septic systems for every dwellings are proposed which is typical in a rural setting. The septic system designs must be submitted and approved by the Ottawa Septic System Office in order to obtain a sewage system permit for its installation.

### 2.3 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 and Shields Creek Subwatershed Study 2004 which fall within the Middle Castor River Subwatershed.

In order to meet the MOE quality and quantity control criteria, a Stormwater Management Pond (SWM) is required. The existing site topography gently slopes from East to West. Although the study is still at a preliminary stage, the most probable pond locations will be as shown on the sketch SK-2. A centralized and south-western ponds are proposed since it will intercept runoff which currently drains from the East to West. This drainage pattern will also be respected during the final design.

The south-western pond outlet will be via a City of Ottawa drainage easement from an approved open ditch within the adjacent subdivision (Refer to Appendix "A" – GP-8 Emerald Links Phase III) which ultimately discharges into Grey's Creek. An overall drainage area delineation is shown on SK-2.

The purpose of the SWM will be to undertake the necessary hydrological analyses:

- i. to evaluate the existing drainage conditions of the subject site and nearby watercourse,
- ii. to size the proposed wet pond and configure the outlet control structure to provide the required controls. The need to provide quality control is secondary as much of this will be provided by the grass ditch drainage system,
- iii. to document the hydraulic operation of the pond.

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

- i) Stormwater will be restricted to ensure that the peak rate of runoff from the site does not exceed the allowable release Pre to Post flows after development.
- ii) Summer design storms: 4 hour Chicago and 24 hour SCS Type II distributions for 2 to 100 year storms (for quantity control) based on the updated City of Ottawa Design Guideline IDF curves.
- iii) Quantity control from the proposed SWM pond is to maintain future peak runoff flows, on the receiving watercourses, to existing levels or lower for the 2 year to 100 year design storms.
- iv) Quality control from the proposed SWM pond is to provide 80% long-term suspended sediment removal, described as “Enhanced” protection level.
- v) The pond’s extended detention volume (for quality control purposes) is to be released over a minimum period of 24 hours.

## 2.4 Site Grading

Preliminary findings indicate that grade raises up to 1.5m would probably be required in some areas in order to service the lands in question. That being said, a Geotechnical investigation for this proposed site has been conducted which states that grade raises up to 3.0m would be permissible, which would in turn prevent any future possible settlement.

The Macro grading plan is also included on SK-2 illustrating the overall intent in terms of proposed grades and drainage scheme for this development.

## 3.0 CONCLUSION

From the above statements the following can be concluded:

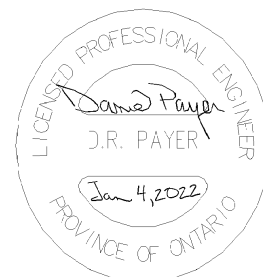
- i) This entire site can be serviced as proposed above.
- ii) All dwelling are to be serviced on private wells and septic systems.
- iii) The proposed subdivision will be drain towards two proposed SWM ponds which will provide adequate protection to the site and the environment.
- iv) The Geotechnical report determined the permissible grade raise of up to 3.0m.

Prepared by:

**ARK Engineering and Development**



Daniel Payer, P.Eng.  
President



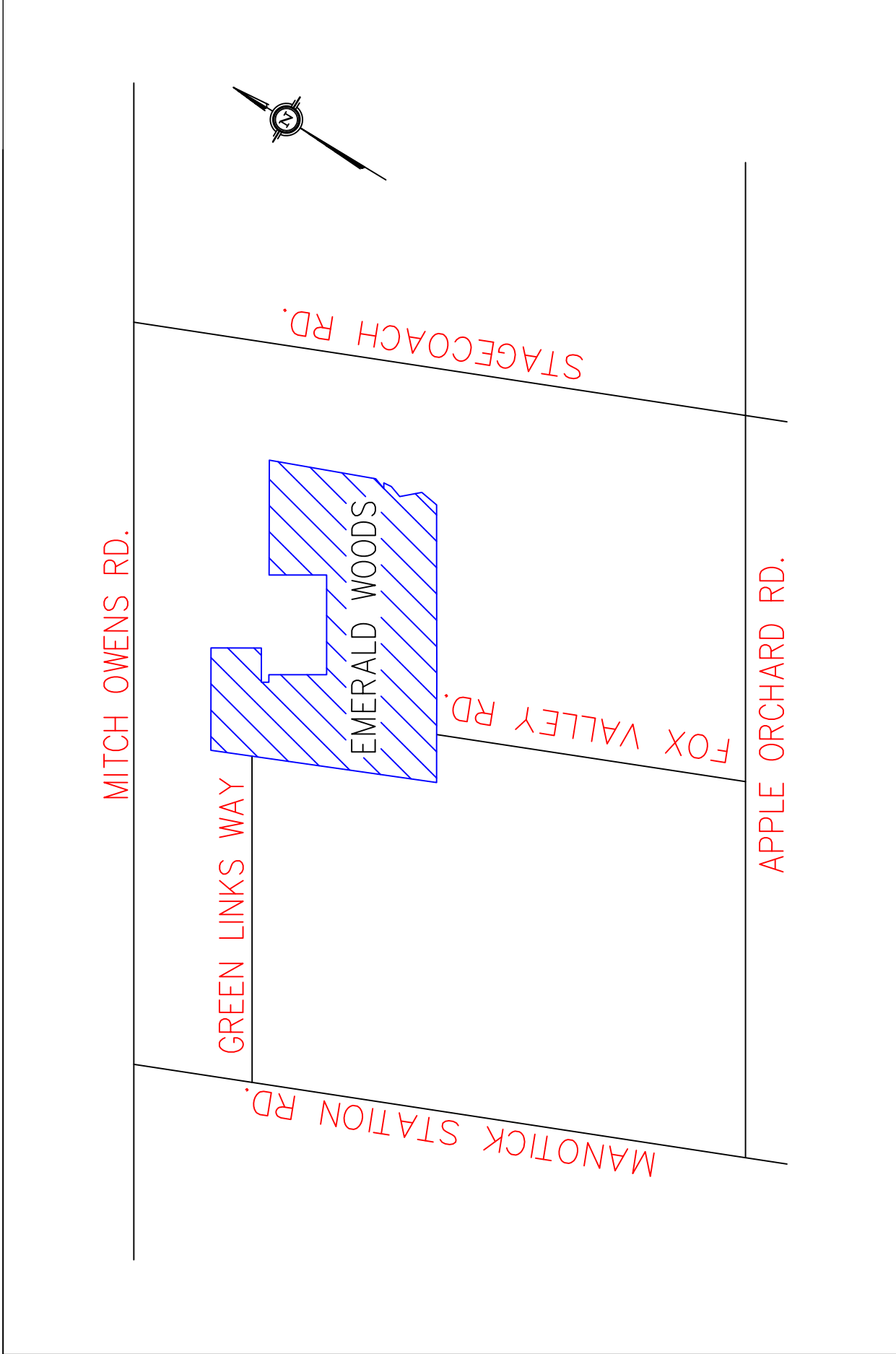
## **APPENDIX "A"**

SK-1 - Location Map

Figure 4.12.1 - Greely/Shields Creek Stormwater and Drainage Study

SK-2 - Storm Drainage and Macro Grading Plan

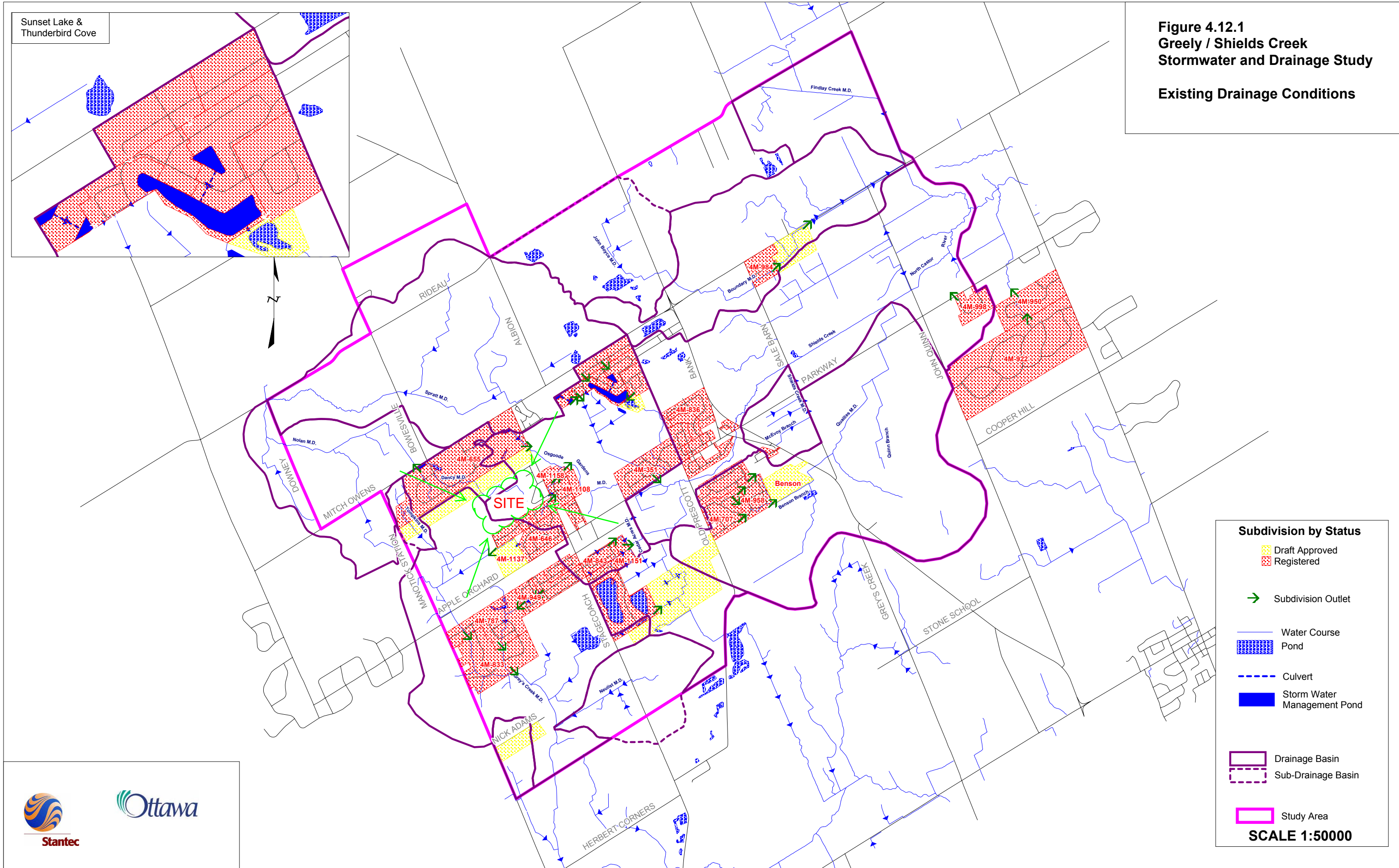
GP-8 – Emerald Links Phase III



<p>Completed By: ARK ENGINEERING AND DEVELOPMENT</p>	<p>Drawing No.: SK-1</p>	
	<p>Scale: 1: 6000</p>	<p>Date: JUNE 2021</p>
<p>LOCATION MAP</p> <p>CITY OF OTTAWA - Formerly TOWNSHIP OF OSGOODE</p>		

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

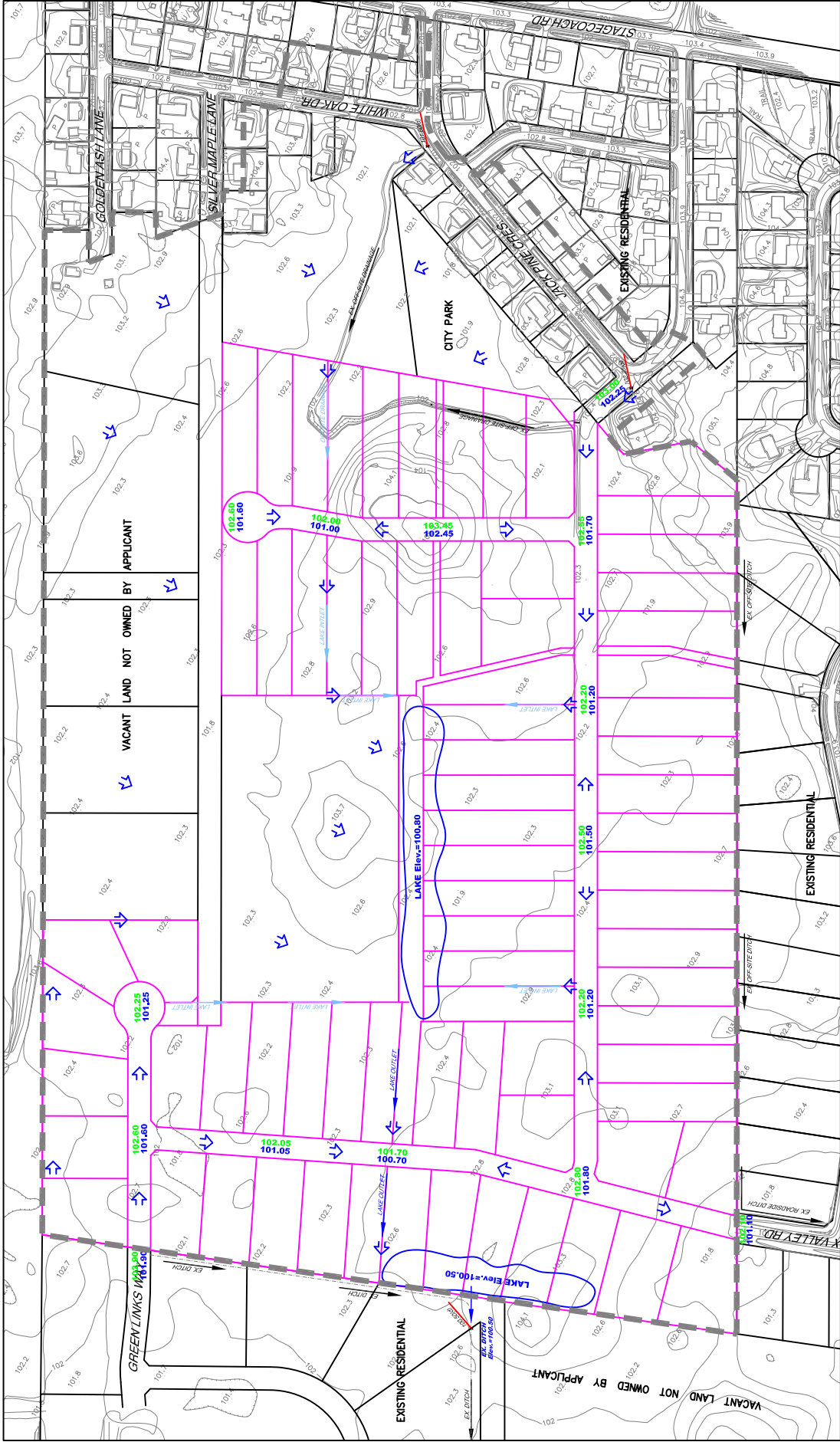
Drainage Basin

Sub-Drainage Basin

Study Area

**SCALE 1:50000**

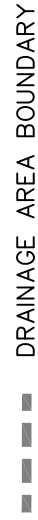




**LEGEND:**



MAJOR SYSTEM DRAINAGE



DRAINAGE AREA BOUNDARY

~~100.50 (P)~~

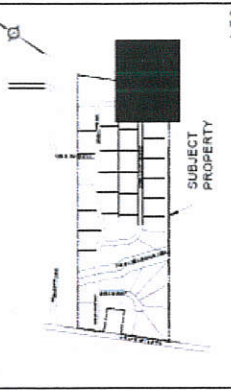
EXISTING DITCH ELEVATIONS

PROPOSED CENTER LINE OF ROAD ELEVATIONS  
 PROPOSED ROADSIDE DITCH ELEVATIONS

**102.55**  
**101.70**

<p>STORM DRAINAGE AND MACRO GRADING PLAN</p> <p>CITY OF OTTAWA - Formerly TOWNSHIP OF OSGOODE</p>	<p>Completed By:  <b>ARK ENGINEERING AND DEVELOPMENT</b></p>		<p>Drawing No.:  <b>SK-2</b></p>
	<p>Scale:  <b>NTS</b></p>	<p>Date:  <b>JUNE 2021</b></p>	

KEY PLAN



SUBJECT PROPERTY

**LEGEND**

[Symbol]	EXISTING ELEVATION
[Symbol]	PROPOSED ELEVATION
[Symbol]	PROPOSED GRADING
[Symbol]	PROPOSED STORMWATER MANAGEMENT
[Symbol]	PROPOSED PAVEMENT
[Symbol]	PROPOSED CONCRETE
[Symbol]	PROPOSED ASPHALT
[Symbol]	PROPOSED GRAVEL
[Symbol]	PROPOSED SAND
[Symbol]	PROPOSED FILL
[Symbol]	PROPOSED EXCAVATION
[Symbol]	PROPOSED EROSION CONTROL
[Symbol]	PROPOSED VEGETATION
[Symbol]	PROPOSED FENCE
[Symbol]	PROPOSED SIGNAGE
[Symbol]	PROPOSED LIGHTING
[Symbol]	PROPOSED UTILITIES

TOPOGRAPHIC INFORMATION

DATE OF SURVEY: 10/18/2020  
PROJECT NO: 15-933  
SHEET NO: 1 OF 2

GEOTECHNICAL STUDY

DATE OF STUDY: 10/18/2020  
PROJECT NO: 15-933  
SHEET NO: 1 OF 2

SITE SERVICES AND STORMWATER MANAGEMENT STUDY

DATE OF STUDY: 10/18/2020  
PROJECT NO: 15-933  
SHEET NO: 1 OF 2

1	15-933	15-933	15-933
2	15-933	15-933	15-933
3	15-933	15-933	15-933
4	15-933	15-933	15-933
5	15-933	15-933	15-933
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10	15-933	15-933	15-933

**PROJECT NO: 15-933**

**GRADING PLAN**

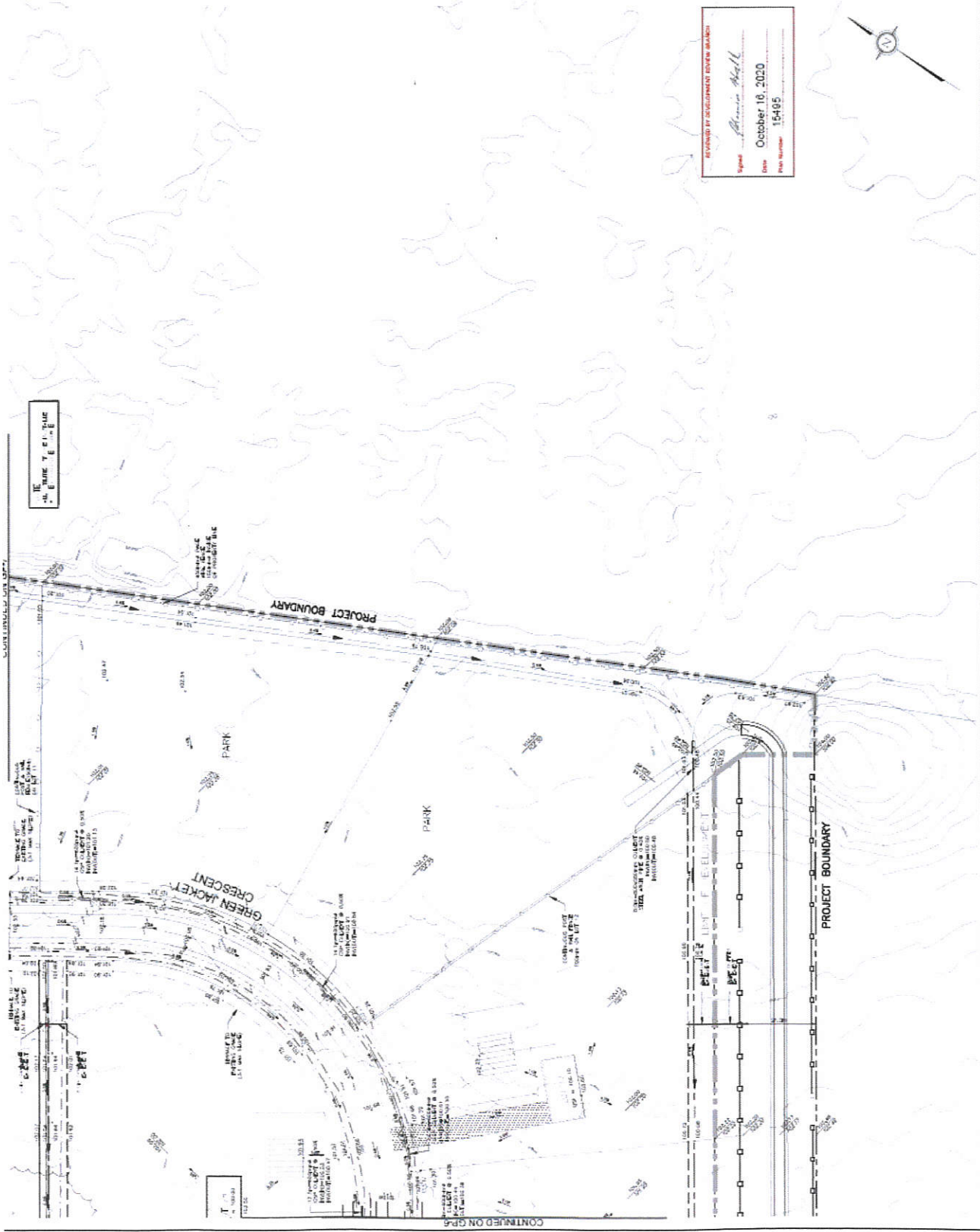
**EMERALD LINKS PHASE III - CASTOR CREEK**

EMERALD LINKS GOLF AND COUNTRY CLUB

100 NEW ROAD, SUITE 100  
GREENSBORO, NC 27409  
Tel: (336) 855-4545

DATE: 10/18/2020

9 OF 22

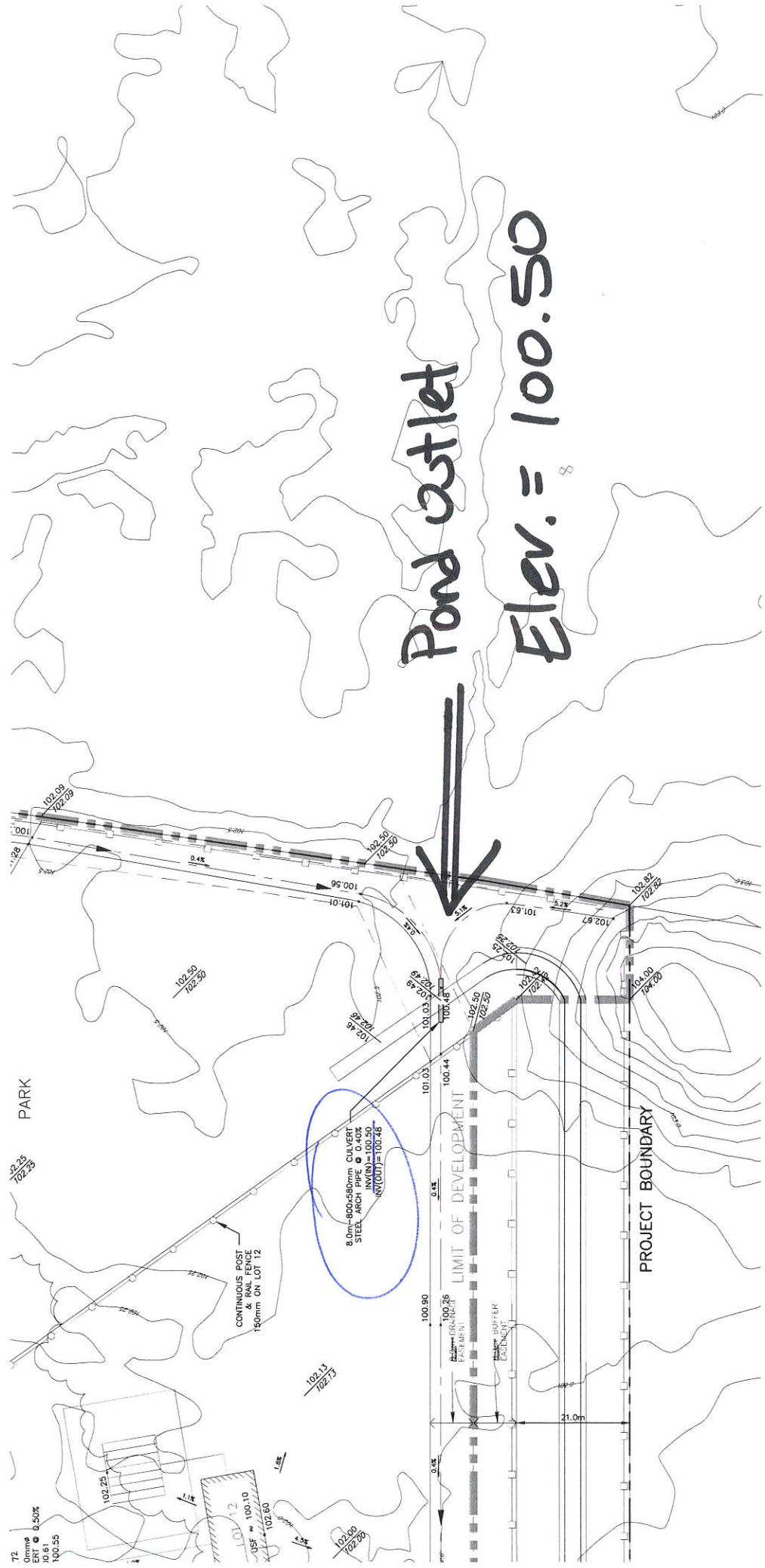


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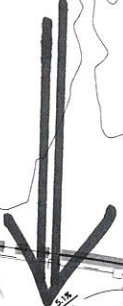
DATE: October 18, 2020

PROJECT NUMBER: 15495





Pond outlet  
Elev. = 100.50



72  
0mm  
ERT @ 0.50%  
100.55

PARK

LOT 12  
USE 100.10  
102.60

LIMIT OF DEVELOPMENT

PROJECT BOUNDARY

21.0m

102.13  
102.13

102.00  
102.00

100.90

100.76

100.48

100.46

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