

October 2, 2023

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GraceLife Church  
51529A Range Road 262  
Spruce Grove, AB T7Y 1B3  
Attn: Rob Chomiak

**RE: Desktop Wetland Assessment within a Portion of LSD 13-35-051-26-W4M in Parkland County**

## **1 INTRODUCTION**

Paragon Soil and Environmental Consulting Inc. (Paragon) was approached by Chomiak Builds Ltd. on behalf of GraceLife Church of Edmonton to complete a desktop wetland assessment, including the identification, classification, and delineation of wetlands, within a property in Parkland County for a possible church expansion project (the Project). The property of interest (Project Area) is located to the east of Range Road 262 and south of Highway 627, directly south of and adjacent to the current GraceLife Church of Edmonton property at 51529A Range Road 262, Spruce Grove, Alberta shown in Figure 1.

## **2 METHODS**

Paragon identified, classified, and delineated all potential wetlands within the Project Area following guidelines and practices set out in the *Alberta Wetland Identification and Delineation Directive* (Government of Alberta [GOA] 2015a) and *Alberta Wetland Classification System* (GOA 2015b). All work was completely desktop-based, through publicly available databases and searches along with interpretation of aerial photographs and digital imagery.

Historical aerial photographs were used to evaluate visible surface water, wet areas, and land use change over time. Aerial photographs were purchased from the Government of Alberta's Air Photo Library and used along with free online imagery from multiple years and seasons to capture different climate (i.e., wetter or drier) periods. Historical aerial photographs from 1950, 1967, 1973, 1987, 1994, 2007, and 2015 along with current (2022) ESRI GIS Mapping Software imagery in ArcGIS were chosen for the Project.

To select relevant photos for assessment, a cumulative historical precipitation departure graph was developed using the annual total precipitation values (rain and snow) for the nearest weather station over the time period available (Alberta Agriculture and Forestry 2020). The deviation from average total precipitation for each year was calculated by subtracting the historic precipitation average from the yearly precipitation value. The cumulative deviation from historical precipitation average was calculated by adding the deviation from the current year to the previous year's cumulative value. The resulting cumulative precipitation departure graph is presented in Figure 2. A summary of imagery and climate data used is presented in Table 1.

Paragon also reviewed available topographic and base hydrology information to evaluate drainage patterns and to assess potential wetland connectivity useful to wetland identification, classification, and delineation. *Map Viewer* from GeoDiscover Alberta (GOA 2023) was also used to review the *Alberta Merged Wetland Inventory* and *Alberta Wetland Rapid Evaluation Tool – Estimate of Relative Wetland Value by Section Index* (ABWRET-E) layers that cover the Project Area.

**Table 1 Imagery and Climate Data Summary**

Aerial Photograph		Photo ID (Roll, Line and Photo)	Scale	Precipitation			
Year	Month (Season)			Period Trend <sup>1</sup>	Annual Total (mm) <sup>2</sup>	Deviation from Average (mm) <sup>3</sup>	Cumulative Deviation from Average (mm) <sup>4</sup>
1950	May (Spring)	AS-0136, Line 5308, Photo 58	1:40,000	Below Average: In a wetting period	297.7	-181.1	-181.1
1967	Aug (Summer)	AS-0979, Line 5311, Photo 42	1:31,680	Below Average: Near the end of a drying period	383.4	-95.4	-178.3
1973	July (Summer)	AS-1248, Line 11, Photo 256	1:31,680	Above Average: Near the start of a wetting period	580.0	101.2	-185.5
1987	Jun (Spring)	AS-3590, Line 47, Photo 37	1:30,000	Below Average: In the middle of a wetting period	468.2	-10.6	442.3
1994	Sep (Summer)	RMNL6, Photo 105	1:20,000	Above Average: Near the end of a wetting period	654.0	175.2	851.4
2007	Apr (Spring)	AS-5404B, Line 5E, Photo 230	1:20,000	Below Average: Near the start of a drying period	404.8	-74.0	991.4
2015	Sep (Summer)	DS-2015219, Photo 434	1:12,000	Below Average: In the middle of a drying period	312.7	-166.1	507.0
2022	Sep (Summer)	N/A	N/A	Below Average: At the end of the most recent drying period	368.1	-110.7	0
Notes: <sup>1</sup> Drying or wetting period trend interpreted from the cumulative precipitation departure graph (Figure 2). <sup>2</sup> Data from Alberta Agriculture and Forestry (2020). <sup>3</sup> Deviation from average calculated as the Annual Total Precipitation minus Period Average (478.8 mm between 1950 and 2022). <sup>4</sup> Deviation added from the current year to the previous year's cumulative value. N/A indicates "not applicable".							

## 3 RESULTS

### 3.1 Historical Aerial Photograph Assessment

Prior to 2015, the main land use within the Project Area has been cultivated cropland (Figures 3 through 8). During this period, a wetland (or portions thereof) has been present every year assessed within the Project Area (1950 to 2007). The wetland's extent (boundary) and connectivity have changed over time, which is primarily attributed to low or high annual precipitation variation through drier and wetter periods, and has often been observed historically to extend north, east, and south of the Project Area. The portion of the wetland within, north and east of the Project Area always appears to be graminoid dominant (i.e., graminoid marsh [MG]) while the portion of the wetland to the south has developed pockets of trees (i.e., wooded deciduous swamp [SWd]) within graminoid marsh areas.

Land use appeared to change in 2015 with the development of a road network entering the Project Area from Range Road 262 at the northwest corner and then splitting into two directions (Figure 9); one road heading northeast and further north into the current land where GraceLife Church is currently located and one road heading south towards a building (presumed to be a garage or shop). The upland and wetland area east of the road and garage in the Project Area appears to be cropped and/or mowed while the area west of the road and garage no longer appears to be a wetland and seems to be mowed only (no longer agricultural use). A small portion of the wetland remains in the property to the north and connectivity to the Project Area is still maintained to the south (Figure 9).

By 2022, the church building and parking space around it has been developed to the north of the Project Area where wetland presence or connectivity is no longer seen (Figure 10). To the southeast of the Project Area, a dugout and RV park have been created within the historic wetland boundary that are no longer part of the current wetland boundary (Figure 10).

Additional observations of land use and visible wetland boundary locations from aerial photograph review within and around the Project Area is presented under Figures 3 through 10 below.

### 3.2 Current Wetland Condition

Even though there are no wetlands shown to occur in the *Alberta Wetland Merged Inventory* layer, and with being at the end of the most recent drying period and below average precipitation recorded in 2022, a large wetland dominated by graminoid marsh communities is currently visible within the Project Area that appears to be connected to the properties to the east and south (Figure 10). While it is surrounded by a low-prairie zone plant community typical of a Class I or ephemeral wetland [MG I], the wettest portion of the wetland appears to have at least a wet-meadow zone making the classification of the overall wetland fit within a Class II or temporary wetland [MG II] (Figure 11) within the Project Area. Temporary wetlands fill in with standing water after snowmelt or storm events with shallow water lasting only a few weeks after spring snowmelt or for several days after heavy rainstorms. Temporary wetlands often can be cultivated in the spring and seeded in normal to dry years; however, they may be flooded in wetter years long enough to establish wetland or aquatic processes. Annual weed species abundance can also be common in these wetlands due to high levels of disturbance.

The total wetland area currently associated with the Project Area is about 2.00 ha. Overall, graminoid marsh communities represent 83 % of the entire wetland with ephemeral (MG I) and temporary wetland communities (MG II) accounting for 23 % and 60 %, respectively (Figure 11, Table 2). The remaining 17 % of the wetland is made up of deciduous wooded swamp (SWd) (Figure 11, Table 2). Wetland classification (class, form, and type) is derived from the *Alberta Wetland Classification System* (GOA 2015b).

An estimated relative wetland value of “D” was noted for all wetlands within Section 35-051-26-W4M described in GeoDiscover Alberta (GOA 2023). Based on five key criteria, a value of “D” is the lowest rating category applied to Alberta Wetlands.

**Table 2 Wetland Community Distribution Within and Surrounding the Project Area**

Wetland Community Name	Wetland Map Unit (Class/Form/Type)	Area (ha)	Proportion of Entire Wetland (%)
Ephemeral Graminoid Marsh	MG I	0.47	23
Temporary Graminoid Marsh	MG II	1.20	60
Wooded Deciduous Swamp	SWd	0.33	17
<b>Total</b>		<b>2.00</b>	<b>100</b>

#### 4 REFERENCES

- Alberta Agriculture and Forestry. 2020. *Interpolated Weather Data Since 1901 for Alberta Townships*. Available at: <http://agriculture.alberta.ca/acis/township-data-viewer.jsp>. Accessed September 2023.
- Government of Alberta (GOA). 2015a. *Alberta Wetland Identification and Delineation Directive*. Water Policy Branch. Edmonton, Alberta.
- GOA. 2015b. *Alberta Wetland Classification System*. Policy and Planning Division, Water Policy Branch. Edmonton, Alberta.
- GOA. 2023. GeoDiscover Alberta Map Viewer. Available at: <https://geodiscover.alberta.ca/geoportal/#homePanel>. Accessed September 2023.

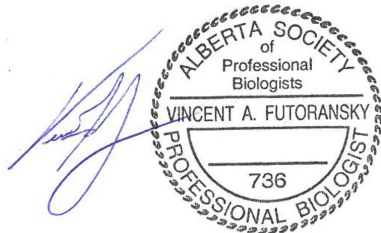
#### 5 SUMMARY AND CLOSING

A temporary (Class II) wetland, including ephemeral (Class I) wetland and wooded deciduous swamp (SWd) communities, is present in and around the Project Area with an estimated extent of 2.00 ha. The information summarized in this report along with the associated digital wetland boundary file (formatted to provincial standards for submissions) can be used in site planning and/or applications under the *Water Act*. The temporary (Class II) wetland identified would be subject to authorization under the *Water Act* and wetland replacement considerations would be required under the Alberta Wetland Policy. Please note that commencing an activity that has the potential to impact a wetland without first obtaining a *Water Act* authorization would be considered a contravention.

We trust that this information meets your immediate requirements. Should you require any clarification or have any questions about the content provided in this summary or want additional assistance with navigating the Alberta Wetland Policy, please do not hesitate to contact the undersigned at (780) 434-0400.

Sincerely,

**PARAGON SOIL AND ENVIRONMENTAL CONSULTING INC.**



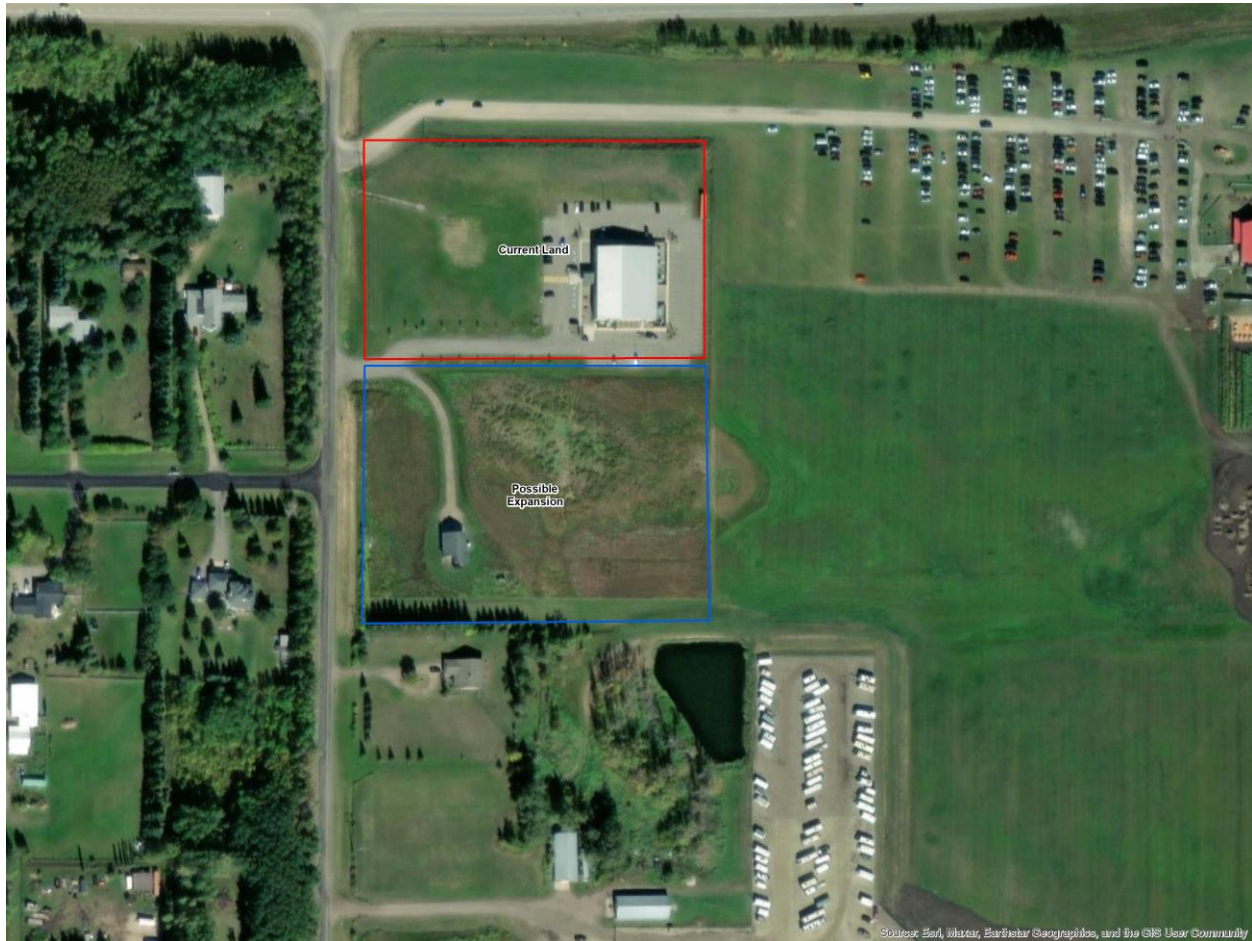
**PER**

Vincent Futoransky, B.Sc., P.Biol., R.P.Bio.

*Senior Ecologist, Vegetation and Wetlands Practice Lead, Authenticating Wetland Professional*

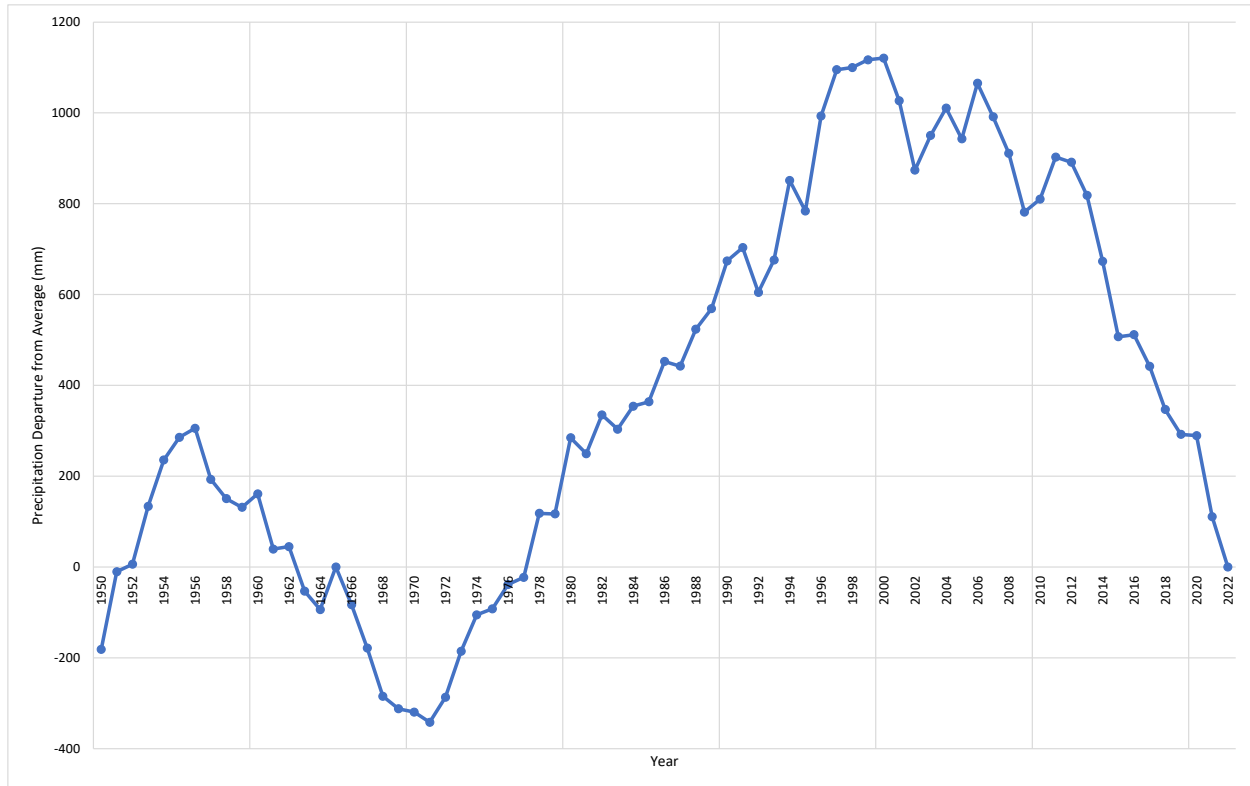
## **6 FIGURES**

- Figure 1 Project Area
- Figure 2 Cumulative Precipitation Departure Graph for T051 R26 W4M (1950-2022)
- Figure 3 Project Area and Wetland Boundaries with 1950 Imagery
- Figure 4 Project Area and Wetland Boundaries with 1967 Imagery
- Figure 5 Project Area and Wetland Boundaries with 1973 Imagery
- Figure 6 Project Area and Wetland Boundaries with 1987 Imagery
- Figure 7 Project Area and Wetland Boundaries with 1994 Imagery
- Figure 8 Project Area and Wetland Boundaries with 2007 Imagery
- Figure 9 Project Area and Wetland Boundaries with 2015 Imagery
- Figure 10 Project Area and Wetland Boundaries with 2022 (Current) Imagery
- Figure 11 Project Area and Wetland Classification with 2022 (Current) Imagery



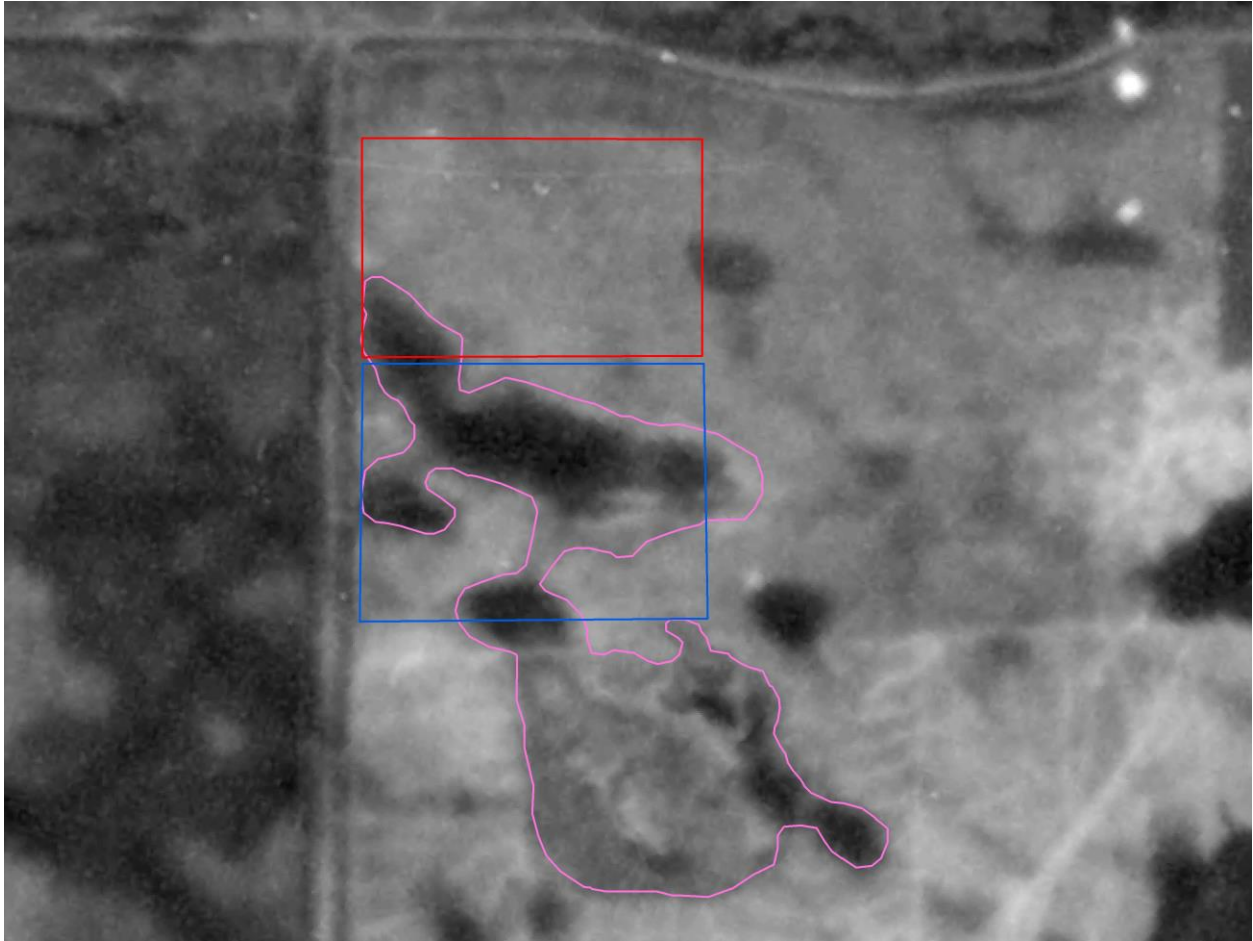
**Figure 1      Project Area**

The general location of the current land where the GraceLife Church is located (red line) is shown in relation to the possible expansion area and area of interest (blue line) for this project (Project Area); both of which are east of Range Road 262 and south of Highway 627 in Parkland County, Alberta.



**Figure 2 Cumulative Precipitation Departure Graph for T051 R26 W4M (1950-2022)**





**Figure 3 Project Area and Wetland Boundaries with 1950 Imagery**

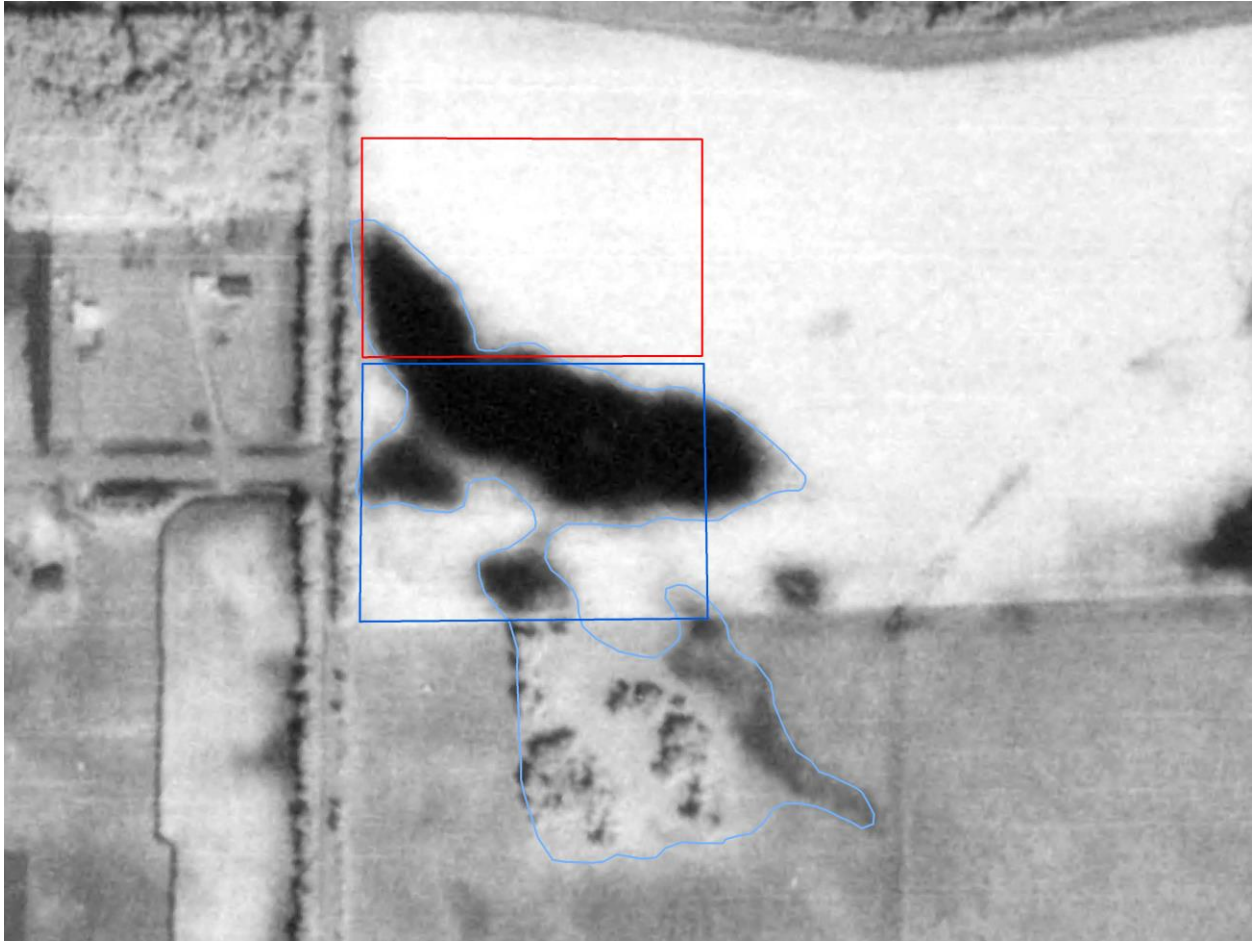
The land use within the Project Area appears to be cultivated cropland with a large proportion of wetland that is also cropped. The wetland boundary extends north, east, and south of the current Project Area location and appears to be predominantly graminoid.





**Figure 4 Project Area and Wetland Boundaries with 1967 Imagery**

Near the end of a drying period, a marginal decrease in proportion of wetland is observed. The visible wetland portions appear to be cropped and less connected. Trees are now noticeable along the western property edge and are growing within portions of the wetland to the south of the Project Area connected to a graminoid wetland within the Project Area.



**Figure 5 Project Area and Wetland Boundaries with 1973 Imagery**

Near the start of a wetting period in an above average year for precipitation where a large wetland extent like that of 1950 is observed. The wetland portion within the Project Area appears to be cultivated, cropped, and connected to portions north, east, and south of the Project Area. Trees continue to grow in portions of the wetland to the south forming the beginnings of a wooded swamp.



**Figure 6 Project Area and Wetland Boundaries with 1987 Imagery**

During a wet period with near average precipitation, the wetland boundary does not appear to be too much different from 1973. The wetland portion within the Project area appears to be cultivated, cropped, and connected with portions that extend north, east, and south of the Project area. While the wetland in the Project Area appears to remain graminoid based, wetland types to the south appear to be both graminoid and wooded.





**Figure 7 Project Area and Wetland Boundaries with 1994 Imagery**

Land use within the Project Area is cultivated and cropped with wetland presence and extents less visible than previous years. The photo was taken at the end of summer (August) but within a wetter period in a year with above average precipitation. Connections north of the Project Area are still visible but less so to the east and south.



**Figure 8 Project Area and Wetland Boundaries with 2007 Imagery**

Near the start of a drying period with below average annual precipitation, wetlands are more difficult to see within the Project Area, but are still visible within the crop. Connections to the north, east, and south are still visible. Deciduous trees in the portion of the wetland south of the Project Area do not appear to have leaves yet (spring photo) but soil moisture is visible confirming wetland presence.

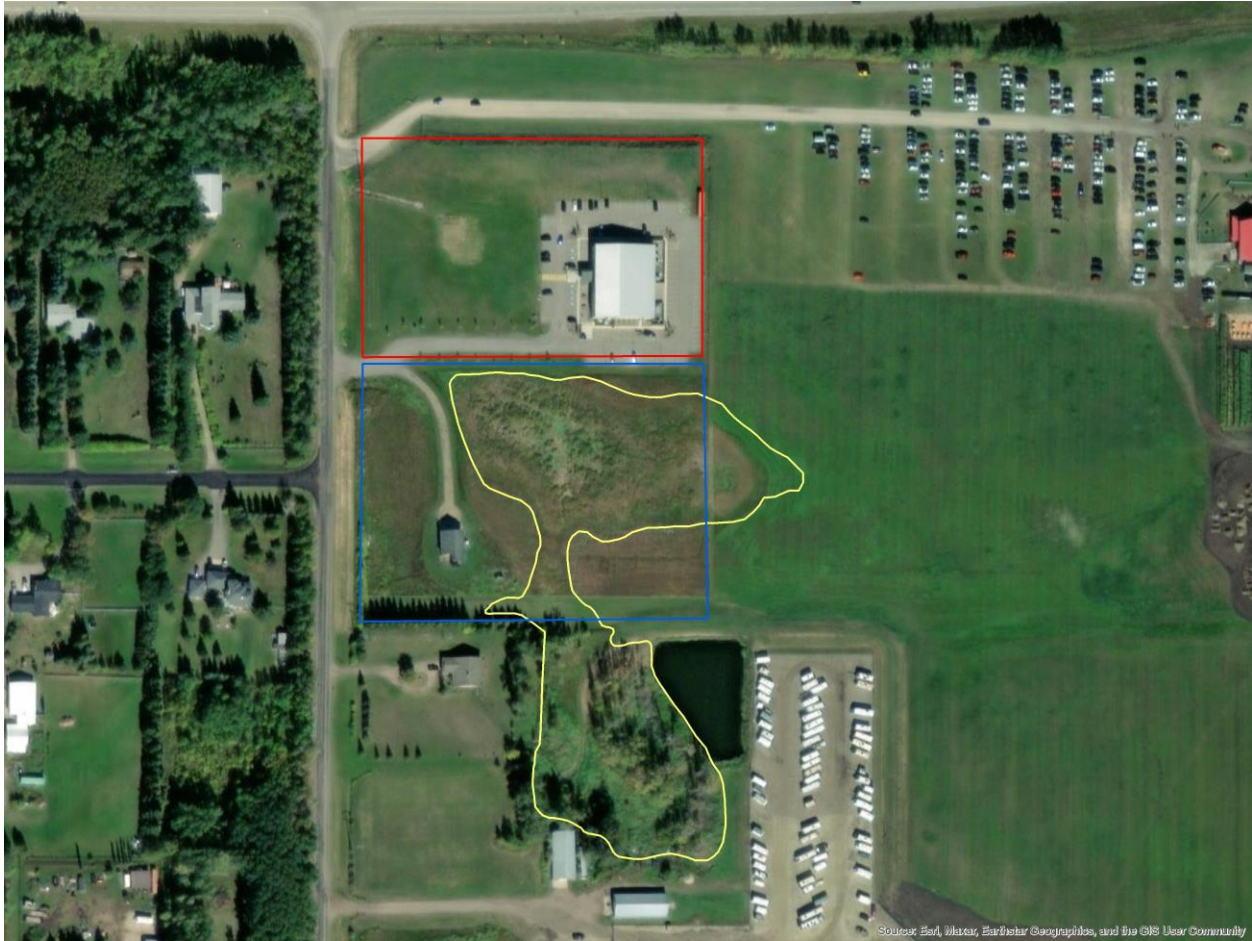




**Figure 9 Project Area and Wetland Boundaries with 2015 Imagery**

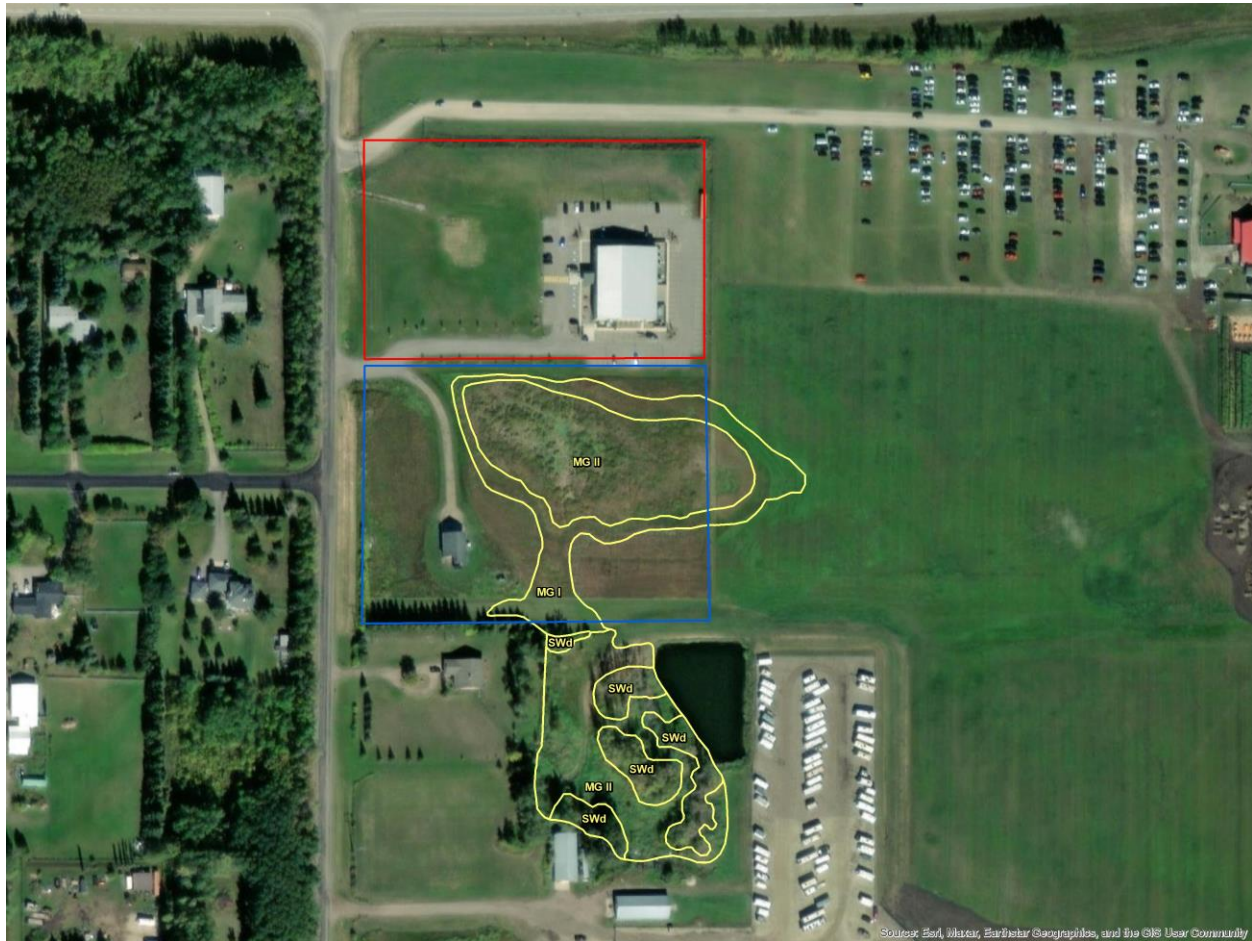
Land use within the Project Area appears to be primarily agricultural, but there are now visible signs of development present with the addition of roads and a building (garage/shop) on the property. The wetland within the Project Area is still visible but is fragmented and appears to be cropped and/or mowed. While the historic wetland portions to the north and west seem to have been disconnected by the roads, portions of the existing wetland connecting east and south remain. All wetland areas within the Project Area still appear to be graminoid based with graminoid and wooded communities present to the south.





**Figure 10 Project Area and Wetland Boundaries with 2022 (Current) Imagery**

A large graminoid marsh is currently visible within the Project Area that appears to be connected to properties to the east and south. The GraceLife Church is now clearly visible in the property to the north of the Project Area and roads in/out of the church and the building (garage/shop) in the southwest corner of the Project Area are likely preventing connectivity to historic wetland areas the north and west of its current position. A dugout and RV park have been built to the southeast of the Project Area that are also not longer part of the current wetland boundary.



**Figure 11 Project Area and Wetland Classification with 2022 (Current) Imagery**

Map units within the current wetland extent are as follows:

- Marsh [M], Graminoid [G], Ephemeral [I] = MG I
- Marsh [M], Graminoid [G], Temporary [II] = MG II
- Swamp [S], Wooded [W], Deciduous (d) = SWd