



**Waterbody Permanence
Assessment - Prairie Gateway
(Shepard Industrial Lands) Area
Structure Plan**

February 9, 2024

Prepared for:
Shepard Development Company
Rocky View County
City of Calgary

Prepared by:
Stantec Consulting Ltd.

Project Number:
116536040

Limitations and Sign-off

This document entitled Waterbody Permanence Assessment - Prairie Gateway (Shepard Industrial Lands) Area Structure Plan was prepared by Stantec Consulting Ltd. ("Stantec") for the account of Shepard Development Company (the "Client"). This document will be submitted to Alberta Environment and Protected Areas (EPA) to support a request for review of Crown ownership under Section 3 of the Public Lands Act. In connection therewith, this document may be reviewed and used by EPA participating in the review process in the normal course of its duties. Except as set forth in the previous sentence, any reliance on this document by any other party or use of it for any other purpose is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The information and conclusions in the document are based on the conditions existing at the time the document was published and does not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by the Client or others, unless expressly stated otherwise in the document. Any use which another party makes of this document is the responsibility and risk of such party. Such party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other party as a result of decisions made or actions taken based on this document.

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1 Overview

A review of waterbody permanence to support the determination of Crown land under Section 3 of the *Public Lands Act* was undertaken for seventeen wetlands intersected by the proposed Shepard Industrial Area Structure Plan (ASP). This assessment was prepared following the *Guide for Assessing Permanence of Wetland Basins* (Alberta Environment and Parks 2016).

The wetlands included in this assessment are in Rocky View County, Alberta. The Project occurs in the Grassland Natural Region and Foothills Fescue Natural Subregion (Natural Regions Committee 2006).

The ASP boundary encompasses approximately 907 hectares (ha) of agricultural and industrial use land. This report includes the assessment of seventeen wetlands found within the ASP boundary. Twelve wetlands were identified as semi-permanent graminoid marshes (MGIV) (WL4, 23, 33, 27, 92, 150, 154, 179, 190, 202, 204, and 205); four were identified as seasonal graminoid marshes (MGIII) (WL62, 64, 65 and 88) and one wetland was identified as semi-permanent shallow open water (WAIV) (WL1) (Figure 1). Four MGIII were included in this assessment as historical imagery indicates fluctuating water permanence in portions of the wetlands. Information on how the wetlands were classified is provided below in Section 2.0.



W:\Clients\Shepard_Development_Corp\Shepard_Industrial_ASP\Figures\116536040_003_Historical_Overview.mxd Revised: 2024-02-08 By: dcspry



- Area Structure Plan (ASP) Boundary
- Wetland Class**
- Graminoid Marsh - Seasonal (MGIII)
 - Graminoid Marsh - Semi-permanent (MGIV)
 - Shallow Open Water - Semi-permanent (WAIV)
- ++ Railway
- Municipal Boundary
- Quarter Section



0 250 500 metres
(At original document size of 11x17)
1:18,500

Notes

- Coordinate System: NAD 1983 3TM 114
- Data Sources: Stantec Consulting Ltd, Government of Alberta, City of Calgary
- Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

The City of Calgary



Project Location

SE Calgary
Alberta

Prepared by DSPRY on 2024-02-07
TR by KFOUQUETTE on 2024-02-07
IR Review by MCHISHOLM on 2024-02-07

Client/Project

Shepard Development Group
Water Permanence Assessment - Prairie Gateway
(Shepard Industrial Lands) Area Structure Plan

116536040_003

Figure No.

1

Title

Waterbody Permanence Assessment -
Prairie Gateway (Shepard Industrial
Lands) Area Structure Plan

2 Assessment Methods

Wetlands within the ASP boundary were classified by reviewing current and historic air photos. Historical aerial photographs were reviewed for the presence of standing water, and areas lacking water, but with evidence of past standing water (i.e., bare ground, presence of salt or carbonates, patchy vegetation). The extent of these potential wetlands was mapped, and a class was assigned based on image texture, colour, and water permanence following the *Albert Wetland Identification and Delineation Directive* (Government of Alberta 2015) using classifications of the *Alberta Wetland Classification System* (AWCS; ESRD 2015). The overall wetland type was determined by the vegetation zone representing the deepest and most permanent water, occupying at least 25% of the total wetland or waterbody area. No field surveys have been conducted for the wetlands covered in this assessment.

2.1 Historical Aerial Photographs

Historical aerial photographs selected and reviewed for this assessment include 1950, 1966, 1974, 1981, 1989, 2003, 2007, 2011, 2018, 2022 (Appendix A). No historical aerial photographs were available between years 1990 – 2000.

The results section includes the precipitation year and precipitation month analysis based on Palmer Drought Severity Index (PDSI) information. PDSI information from Agriculture and Agri-Food Canada (AAFC 2023) was used to select historical air photos that correspond to dry, wet, and near normal conditions (Figure 2).

The closest weather station with the required PDSI data was the Calgary Int'l CS (3031094) (AAFC 2023).

The PDSI is divided into several classes ranging from 4.0 (extremely wet) to -4.0 (extremely dry), with measurements around 0 being near normal conditions. PDSI values are calculated using moisture state data from both the current and previous months and incorporate precipitation, evapotranspiration, and soil storage and loss (Palmer 1965).



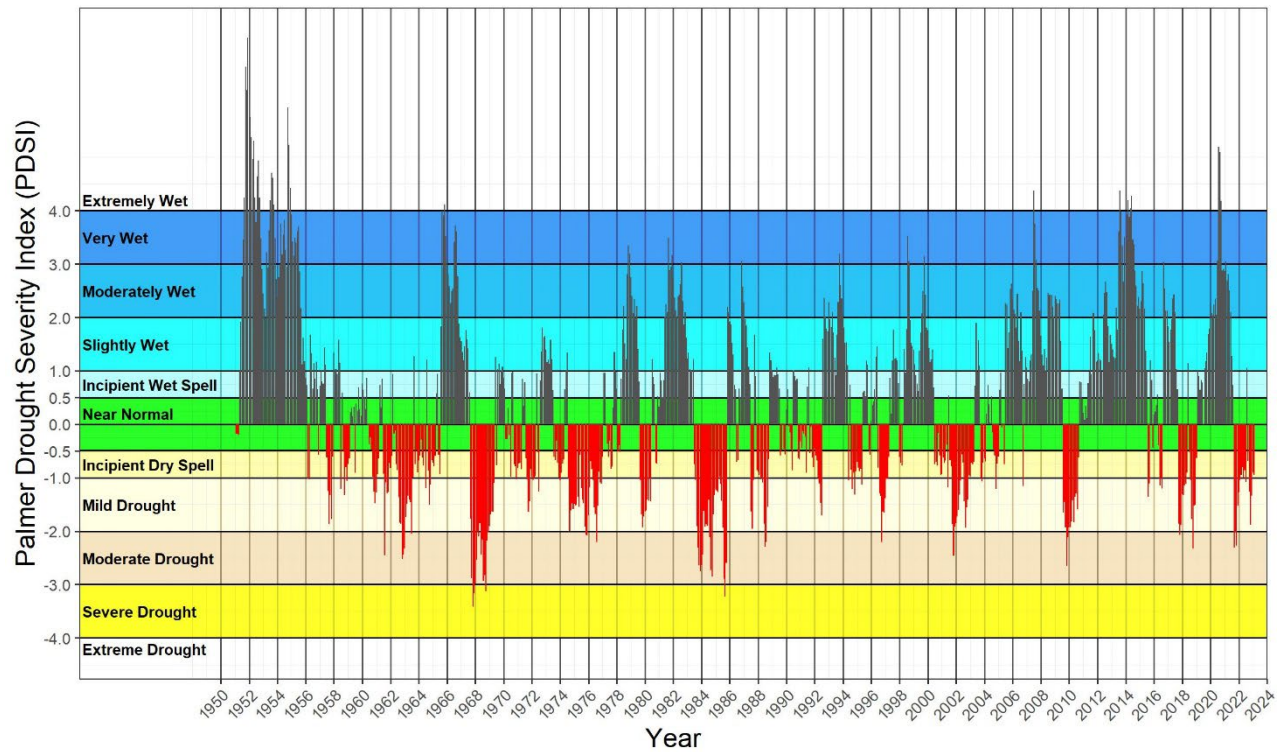


Figure 2 Palmer Drought Severity Index for Calgary Int'l CS (station ID 3031094), Alberta
1951-2023



3 Results

Twelve semi-permanent graminoid marshes, four seasonal graminoid marshes and one semi-permanent shallow open water wetlands were identified based on open water presence observed in historical aerial photograph records examined (Appendix A).

There have been some historical agricultural and industrial modifications to the land within the ASP boundary. WL4 has been bisected by a road, though the wetland on either side of the road remains in recent (2022) imagery. A dugout was created within the extent of WL92, appearing initially in the 1989 imagery. The southern extent of WL202 has been impacted by a rail line, dating back to before the oldest available (1950) imagery. Historical aerial photographs indicate the land surrounding all seventeen wetlands has been used for agricultural purposes since at least 1950

A Crown claimability determination is requested for the ten wetlands assessed.



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Table 1 Historical Aerial Photograph Interpretation

Wetland ID	Photograph date (YYYY-MM-DD)	Season1	Precipitation Year Analysis2	Precipitation Month Analysis3	Open Water Visible or Consistent Wetland Vegetation Signature4	Assessment of Duration of Inundation or Saturation in Top 29 cm
WL1	1950-05-12	Spring	N/A	N/A	W	Semi-permanent
	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	
	1974-06-13	Spring	Near normal (PDSI -0.49)	Slightly wet (PDSI 1.34) Incipient wet spell (PDSI 1.00)	W	
	1981-11-10	Winter	Moderately wet (PDSI 2.06)	Very wet (PDSI 3.16) Moderately wet (PDSI 2.94)	W	
	1989-unknown	N/A	Near normal (PDSI 0.14)	N/A	W	
	2003-10-01	Fall	Near normal (PDSI 0.13)	Mild Drought (PDSI -1.07) Incipient dry spell (PDSI -0.99)	W	
	2007-10-13 to 14	Fall	Moderately wet (PDSI 2.23)	Moderately wet (PDSI 2.51) Moderately wet (PDSI 2.55)	W	
	2011-09-27 to 30	Fall	Slightly wet (PDSI 1.10)	Moderately wet (PDSI 2.09) Moderately wet (PDSI 2.09)	W	
	2018-05-13 to 15	Spring	Near normal (PDSI -0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	W	
	2022-07-11 to 08-01	Summer	Near normal (PDSI -0.37)	Slightly wet (PDSI 1.06) Near normal (PDSI -0.5)	W	
WL4	1950-05-12	Spring	N/A	N/A	W	Semi-permanent
	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	
	1974-06-13	Spring	Near normal (PDSI -0.49)	Slightly wet (PDSI 1.34) Incipient wet spell (PDSI 1.00)	W	



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	2018-05-13 to 15	Spring	Near normal (PDSI -0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	W	
	2022-07-11 to 08-01	Summer	Near normal (PDSI -0.37)	Slightly wet (PDSI 1.06) Near normal (PDSI -0.5)	W	
WL23	1950-05-12	Spring	N/A	N/A	W	
	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	
	1974-06-13	Spring	Near normal (PDSI -0.49)	Slightly wet (PDSI 1.34) Incipient wet spell (PDSI 1.00)	W	
	1981-11-10	Winter	Moderately wet PDSI 2.06)	Very wet (PDSI 3.16) Moderately wet (PDSI 2.94)	DV	
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	2011-09-27 to 30	Fall	Slightly wet (PDSI 1.10)	Moderately wet (PDSI 2.09) Moderately wet (PDSI 2.09)	W	
	2018-05-13 to 15	Spring	Near normal (PDSI -0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	W	
	2022-07-11 to 08-01	Summer	Near normal (PDSI -0.37)	Slightly wet (PDSI 1.06) Near normal (PDSI -0.5)	W	
WL27	1950-05-12	Spring	N/A	N/A	W	Semi-permanent
	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	
	1974-06-13	Spring	Near normal (PDSI -0.49)	Slightly wet (PDSI 1.34) Incipient wet spell (PDSI 1.00)	W	
	1981-11-10	Winter	Moderately wet (PDSI 2.06)	Very wet (PDSI 3.16) Moderately wet (PDSI 2.94)	DV	
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	2011-09-27 to 30	Fall	Slightly wet (PDSI 1.10)	Moderately wet (PDSI 2.09) Moderately wet (PDSI 2.09)	W	
	2018-05-13 to 15	Spring	Near normal (PDSI -0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	W	



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	2022-07-11 to 08-01	Summer	Near normal (PDSI - 0.37)	Slightly wet (PDSI 1.06) Near normal (PDSI -0.5)	W	
WL33	1950-05-12	Spring	N/A	N/A	W	
	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	
	1974-06-13	Spring	Near normal (PDSI - 0.49)	Slightly wet (PDSI 1.34) Incipient wet spell (PDSI 1.00)	W	
	1981-11-10	Winter	Moderately wet (PDSI 2.06)	Very wet (PDSI 3.16) Moderately wet (PDSI 2.94)	W	
	1989-unknown	N/A	Near normal (PDSI 0.14)	N/A	DV	
	2003-10-01	Fall	Near normal (PDSI 0.13)	Mild Drought (PDSI -1.07) Incipient dry spell (PDSI - 0.99)	DV	
	2007-10-13 to 14	Fall	Moderately wet (PDSI 2.23)	Moderately wet (PDSI 2.51) Moderately wet (PDSI 2.55)	W	
	2011-09-27 to 30	Fall	Slightly wet (PDSI 1.10)	Moderately wet (PDSI 2.09) Moderately wet (PDSI 2.09)	W	
	2018-05-13 to 15	Spring	Near normal (PDSI - 0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	DV	
	2022-07-11 to 08-01	Summer	Near normal (PDSI - 0.37)	Slightly wet (PDSI 1.06) Near normal (PDSI -0.5)	W	
WL62	1950-05-12	Spring	N/A	N/A	DV	Seasonal
	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	



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	1981-11-10	Winter	Moderately wet (PDSI 2.06)	Very wet (PDSI 3.16) Moderately wet (PDSI 2.94)	DVI	
	1989-unknown	N/A	Near normal (PDSI 0.14)	N/A	DVI	
	2003-10-01	Fall	Near normal (PDSI 0.13)	Mild Drought (PDSI -1.07) Incipient dry spell (PDSI - 0.99)	DV	
	2007-10-13 to 14	Fall	Moderately wet (PDSI 2.23)	Moderately wet (PDSI 2.51) Moderately wet (PDSI 2.55)	DVI	
	2011-09-27 to 30	Fall	Slightly wet (PDSI 1.10)	Moderately wet (PDSI 2.09) Moderately wet (PDSI 2.09)	DV	
	2018-05-13 to 15	Spring	Near normal (PDSI - 0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	W	
	2022-07-11 to 08-01	Summer	Near normal (PDSI - 0.37)	Slightly wet (PDSI 1.06) Near normal (PDSI -0.5)	DV	
WL64	1950-05-12	Spring	N/A	N/A	DV	Seasonal
	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	
	1974-06-13	Spring	Near normal (PDSI - 0.49)	Slightly wet (PDSI 1.34) Incipient wet spell (PDSI 1.00)	DV	
	1981-11-10	Winter	Moderately wet (PDSI 2.06)	Very wet (PDSI 3.16) Moderately wet (PDSI 2.94)	DVI	



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	2011-09-27 to 30	Fall	Slightly wet (PDSI 1.10)	Moderately wet (PDSI 2.09) Moderately wet (PDSI 2.09)	DV	
	2018-05-13 to 15	Spring	Near normal (PDSI - 0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	W	
	2022-07-11 to 08- 01	Summer	Near normal (PDSI - 0.37)	Slightly wet (PDSI 1.06) Near normal (PDSI -0.5)	DV	
WL65	1950-05-12	Spring	N/A	N/A	DV	Seasonal
	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	
	1974-06-13	Spring	Near normal (PDSI - 0.49)	Slightly wet (PDSI 1.34) Incipient wet spell (PDSI 1.00)	W	
	1981-11-10	Winter	Moderately wet (PDSI 2.06)	Very wet (PDSI 3.16) Moderately wet (PDSI 2.94)	DVI	
	1989-unknown	N/A	Near normal (PDSI 0.14)	N/A	DVI	
	2003-10-01	Fall	Near normal (PDSI 0.13)	Mild Drought (PDSI -1.07) Incipient dry spell (PDSI - 0.99)	W	
	2007-10-13 to 14	Fall	Moderately wet (PDSI 2.23)	Moderately wet (PDSI 2.51) Moderately wet (PDSI 2.55)	DVI	



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	2018-05-13 to 15	Spring	Near normal (PDSI - 0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	W	
	2022-07-11 to 08- 01	Summer	Near normal (PDSI - 0.37)	Slightly wet (PDSI 1.06) Near normal (PDSI -0.5)	W	
WL88	1950-05-12	Spring	N/A	N/A	W	Seasonal
	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	
	1974-06-13	Spring	Near normal (PDSI - 0.49)	Slightly wet (PDSI 1.34) Incipient wet spell (PDSI 1.00)	W	
	1981-11-10	Winter	Moderately wet (PDSI 2.06)	Very wet (PDSI 3.16) Moderately wet (PDSI 2.94)	W	
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	2018-05-13 to 15	Spring	Near normal (PDSI - 0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	W	
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WL92	1950-05-12	Spring	N/A	N/A	W	Semi-permanent
	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	
	1974-06-13	Spring	Near normal (PDSI - 0.49)	Slightly wet (PDSI 1.34) Incipient wet spell (PDSI 1.00)	W	
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	1989-unknown	N/A	Near normal (PDSI 0.14)	N/A	DV	
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	2011-09-27 to 30	Fall	Slightly wet (PDSI 1.10)	Moderately wet (PDSI 2.09) Moderately wet (PDSI 2.09)	W	
	2018-05-13 to 15	Spring	Near normal (PDSI - 0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	W	
	2022-07-11 to 08- 01	Summer	Near normal (PDSI - 0.37)	Slightly wet (PDSI 1.06) Near normal (PDSI -0.5)	W	
WL150	1950-05-12	Spring	N/A	N/A	W	Semi-permanent
	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	
	1974-06-13	Spring	Near normal (PDSI - 0.49)	Slightly wet (PDSI 1.34) Incipient wet spell (PDSI 1.00)	W	



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	1989-unknown	N/A	Near normal (PDSI 0.14)	N/A	DVI	
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	2011-09-27 to 30	Fall	Slightly wet (PDSI 1.10)	Moderately wet (PDSI 2.09) Moderately wet (PDSI 2.09)	W	
	2018-05-13 to 15	Spring	Near normal (PDSI -0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	W	
	2022-07-11 to 08-01	Summer	Near normal (PDSI -0.37)	Slightly wet (PDSI 1.06) Near normal (PDSI -0.5)	W	
WL154	1950-05-12	Spring	N/A	N/A	W	Semi-permanent
	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	
	1974-06-13	Spring	Near normal (PDSI -0.49)	Slightly wet (PDSI 1.34) Incipient wet spell (PDSI 1.00)	W	
	1981-11-10	Winter	Moderately wet (PDSI 2.06)	Very wet (PDSI 3.16) Moderately wet (PDSI 2.94)	W	
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				Incipient dry spell (PDSI - 0.99)		
	2007-10-13 to 14	Fall	Moderately wet (PDSI 2.23)	Moderately wet (PDSI 2.51) Moderately wet (PDSI 2.55)	W	
	2011-09-27 to 30	Fall	Slightly wet (PDSI 1.10)	Moderately wet (PDSI 2.09) Moderately wet (PDSI 2.09)	W	
	2018-05-13 to 15	Spring	Near normal (PDSI - 0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	W	
	2022-07-11 to 08-01	Summer	Near normal (PDSI - 0.37)	Slightly wet (PDSI 1.06) Near normal (PDSI -0.5)	W	
WL179	1950-05-12	Spring	N/A	N/A	W	Semi-permanent
	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	
	1974-06-13	Spring	Near normal (PDSI - 0.49)	Slightly wet (PDSI 1.34) Incipient wet spell (PDSI 1.00)	W	
	1981-11-10	Winter	Moderately wet (PDSI 2.06)	Very wet (PDSI 3.16) Moderately wet (PDSI 2.94)	DV	
	1989-unknown	N/A	Near normal (PDSI 0.14)	N/A	DV	
	2003-10-01	Fall	Near normal (PDSI 0.13)	Mild Drought (PDSI -1.07) Incipient dry spell (PDSI - 0.99)	DV	
	2007-10-13 to 14	Fall	Moderately wet (PDSI 2.23)	Moderately wet (PDSI 2.51) Moderately wet (PDSI 2.55)	W	
	2011-09-27 to 30	Fall	Slightly wet (PDSI 1.10)	Moderately wet (PDSI 2.09) Moderately wet (PDSI 2.09)	W	



Waterbody Permanence Assessment - Prairie Gateway (Shepard Industrial Lands) Area Structure Plan

Table of Contents

February 9, 2024

Wetland ID	Photograph date (YYYY-MM-DD)	Season1	Precipitation Year Analysis2	Precipitation Month Analysis3	Open Water Visible or Consistent Wetland Vegetation Signature4	Assessment of Duration of Inundation or Saturation in Top 29 cm
	2018-05-13 to 15	Spring	Near normal (PDSI - 0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	W	
	2022-07-11 to 08-01	Summer	Near normal (PDSI - 0.37)	Slightly wet (PDSI 1.06) Near normal (PDSI -0.5)	W	
WL190	1950-05-12	Spring	N/A	N/A	W	Semi-permanent
	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	
	1974-06-13	Spring	Near normal (PDSI - 0.49)	Slightly wet (PDSI 1.34) Incipient wet spell (PDSI 1.00)	W	
	1981-11-10	Winter	Moderately wet (PDSI 2.06)	Very wet (PDSI 3.16) Moderately wet (PDSI 2.94)	W	
	1989-unknown	N/A	Near normal (PDSI 0.14)	N/A	DV	
	2003-10-01	Fall	Near normal (PDSI 0.13)	Mild Drought (PDSI -1.07) Incipient dry spell (PDSI - 0.99)	W	
	2007-10-13 to 14	Fall	Moderately wet (PDSI 2.23)	Moderately wet (PDSI 2.51) Moderately wet (PDSI 2.55)	W	
	2011-09-27 to 30	Fall	Slightly wet (PDSI 1.10)	Moderately wet (PDSI 2.09) Moderately wet (PDSI 2.09)	W	
	2018-05-13 to 15	Spring	Near normal (PDSI - 0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	W	
	2022-07-11 to 08-01	Summer	Near normal (PDSI - 0.37)	Slightly wet (PDSI 1.06) Near normal (PDSI -0.5)	W	
WL202	1950-05-12	Spring	N/A	N/A	W	Semi-permanent



Waterbody Permanence Assessment - Prairie Gateway (Shepard Industrial Lands) Area Structure Plan

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February 9, 2024

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	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	
	1974-06-13	Spring	Near normal (PDSI - 0.49)	Slightly wet (PDSI 1.34) Incipient wet spell (PDSI 1.00)	W	
	1981-11-10	Winter	Moderately wet (PDSI 2.06)	Very wet (PDSI 3.16) Moderately wet (PDSI 2.94)	W	
	1989-unknown	N/A	Near normal (PDSI 0.14)	N/A	DV	
	2003-10-01	Fall	Near normal (PDSI 0.13)	Mild Drought (PDSI -1.07) Incipient dry spell (PDSI - 0.99)	DV	
	2007-10-13 to 14	Fall	Moderately wet (PDSI 2.23)	Moderately wet (PDSI 2.51) Moderately wet (PDSI 2.55)	W	
	2011-09-27 to 30	Fall	Slightly wet (PDSI 1.10)	Moderately wet (PDSI 2.09) Moderately wet (PDSI 2.09)	W	
	2018-05-13 to 15	Spring	Near normal (PDSI - 0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	W	
	2022-07-11 to 08- 01	Summer	Near normal (PDSI - 0.37)	Slightly wet (PDSI 1.06) Near normal (PDSI -0.5)	W	
WL204	1950-05-12	Spring	N/A	N/A	W	Semi-permanent
	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	
	1974-06-13	Spring	Near normal (PDSI - 0.49)	Slightly wet (PDSI 1.34) Incipient wet spell (PDSI 1.00)	W	



Waterbody Permanence Assessment - Prairie Gateway (Shepard Industrial Lands) Area Structure Plan

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February 9, 2024

Wetland ID	Photograph date (YYYY-MM-DD)	Season1	Precipitation Year Analysis2	Precipitation Month Analysis3	Open Water Visible or Consistent Wetland Vegetation Signature4	Assessment of Duration of Inundation or Saturation in Top 29 cm
	1981-11-10	Winter	Moderately wet (PDSI 2.06)	Very wet (PDSI 3.16) Moderately wet (PDSI 2.94)	W	
	1989-unknown	N/A	Near normal (PDSI 0.14)	N/A	DVI	
	2003-10-01	Fall	Near normal (PDSI 0.13)	Mild Drought (PDSI -1.07) Incipient dry spell (PDSI -0.99)	DV	
	2007-10-13 to 14	Fall	Moderately wet (PDSI 2.23)	Moderately wet (PDSI 2.51) Moderately wet (PDSI 2.55)	W	
	2011-09-27 to 30	Fall	Slightly wet (PDSI 1.10)	Moderately wet (PDSI 2.09) Moderately wet (PDSI 2.09)	W	
	2018-05-13 to 15	Spring	Near normal (PDSI -0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	W	
	2022-07-11 to 08-01	Summer	Near normal (PDSI -0.37)	Slightly wet (PDSI 1.06) Near normal (PDSI -0.5)	W	
WL205	1950-05-12	Spring	N/A	N/A	W	Semi-permanent
	1966-08-09	Summer	Slightly wet (PDSI 1.75)	Very wet (PDSI 3.61) Very wet (PDSI 3.72)	W	
	1974-06-13	Spring	Near normal (PDSI -0.49)	Slightly wet (PDSI 1.34) Incipient wet spell (PDSI 1.00)	DV	
	1981-11-10	Winter	Moderately wet (PDSI 2.06)	Very wet (PDSI 3.16) Moderately wet (PDSI 2.94)	W	
	1989-unknown	N/A	Near normal (PDSI 0.14)	N/A	DVI	
	2003-10-01	Fall	Near normal (PDSI 0.13)	Mild Drought (PDSI -1.07)	DV	



Waterbody Permanence Assessment - Prairie Gateway (Shepard Industrial Lands) Area Structure Plan

Table of Contents

February 9, 2024

Wetland ID	Photograph date (YYYY-MM-DD)	Season1	Precipitation Year Analysis2	Precipitation Month Analysis3	Open Water Visible or Consistent Wetland Vegetation Signature4	Assessment of Duration of Inundation or Saturation in Top 29 cm
				Incipient dry spell (PDSI - 0.99)		
	2007-10-13 to 14	Fall	Moderately wet (PDSI 2.23)	Moderately wet (PDSI 2.51) Moderately wet (PDSI 2.55)	W	
	2011-09-27 to 30	Fall	Slightly wet (PDSI 1.10)	Moderately wet (PDSI 2.09) Moderately wet (PDSI 2.09)	W	
	2018-05-13 to 15	Spring	Near normal (PDSI - 0.16)	Slightly wet (PDSI 1.14) Near normal (PDSI 0.19)	W	
	2022-07-11 to 08-01	Summer	Near normal (PDSI - 0.37)	Slightly wet (PDSI 1.06) Near normal (PDSI -0.5)	W	
NOTES: 1 Season: Spring is May to July 1; Summer is July to September 1; Fall is September to November 1. Month range for seasons was defined based on mean monthly temperature trends for the Grassland Natural Subregion (Natural Regions Committee 2006). 2 AAFC 2023. 3031094 Calgary Int'l CS Weather Station. 3 PDSI conditions of month of photograph, (followed by preceding month PDSI category in bold). 4 W = Water present/inundated; D = Dry, not vegetated; DV = Dry, vegetation, consistent with wetland or ephemeral waterbody classification; DVI = Dry, vegetation indistinguishable from surrounding uplands, adopted from AEP (2016). N/A = No data available.						



4 References

- Alberta Environment and Parks (AEP). 2014 (updated 2016). Guide for Assessing Permanence of Wetland Basins. Available at: Guide for assessing permanence of wetland basins - Open Government (alberta.ca)
- Alberta Environment and Sustainable Resource Development (ESRD). 2015. Alberta Wetland Classification System. Water Policy Branch, Policy and Planning Division, Edmonton, AB.
- Government of Alberta (GOA). 2015. Alberta Wetland Identification and Delineation Directive. Water Policy Branch, Alberta Environment and Parks. Edmonton, Alberta.
- Natural Regions Committee. 2006. Regions and Subregions of Alberta. Compiled by D.J. Downing and W.W. Pettapiece. Government of Alberta. Pub. No. T/852. Available online: https://www.albertaparks.ca/media/2942026/nrsrcomplete_may_06.pdf.
- Palmer, W. C. 1965. Meteorological Drought. U.S. Weather Bureau Res. Paper No. 45.



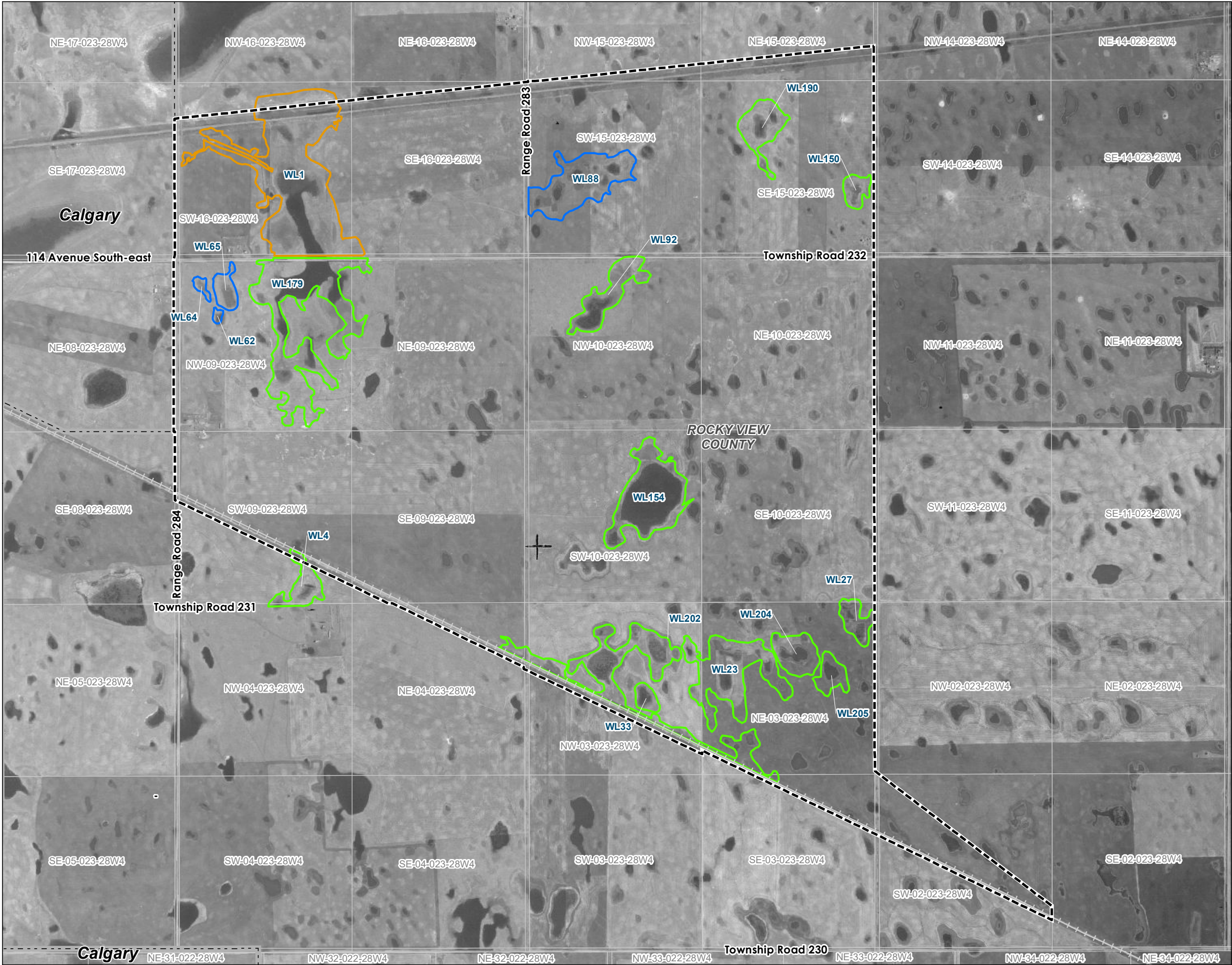
Appendices



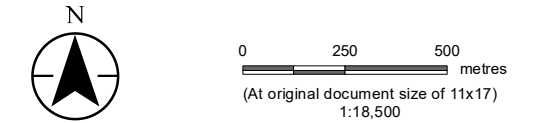
Appendix A Historical Aerial Photographs



W:\Clients\Shepard_Development_Corp\Shepard_Industrial_ASP\Figures\116536040_004_Historical_Images.mxd Revised: 2024-02-08 By: dspry



- Area Structure Plan (ASP) Boundary
- Wetland Class**
- Graminoid Marsh - Seasonal (MGIII)
 - Graminoid Marsh - Semi-permanent (MGIV)
 - Shallow Open Water - Semi-permanent (WAIV)
- ++ Railway
- Municipal Boundary
- Quarter Section



Notes

- Coordinate System: NAD 1983 3TM 114
- Data Sources: Stantec Consulting Ltd, Government of Alberta, City of Calgary
- Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



Project Location

SE Calgary
Alberta

Prepared by DSPRY on 2024-02-07
TR by KFOUQUETTE on 2024-02-07
IR Review by MCHISHOLM on 2024-02-07

Client/Project

Shepard Development Group
Water Permanence Assessment - Prairie Gateway
(Shepard Industrial Lands) Area Structure Plan

116536040_004

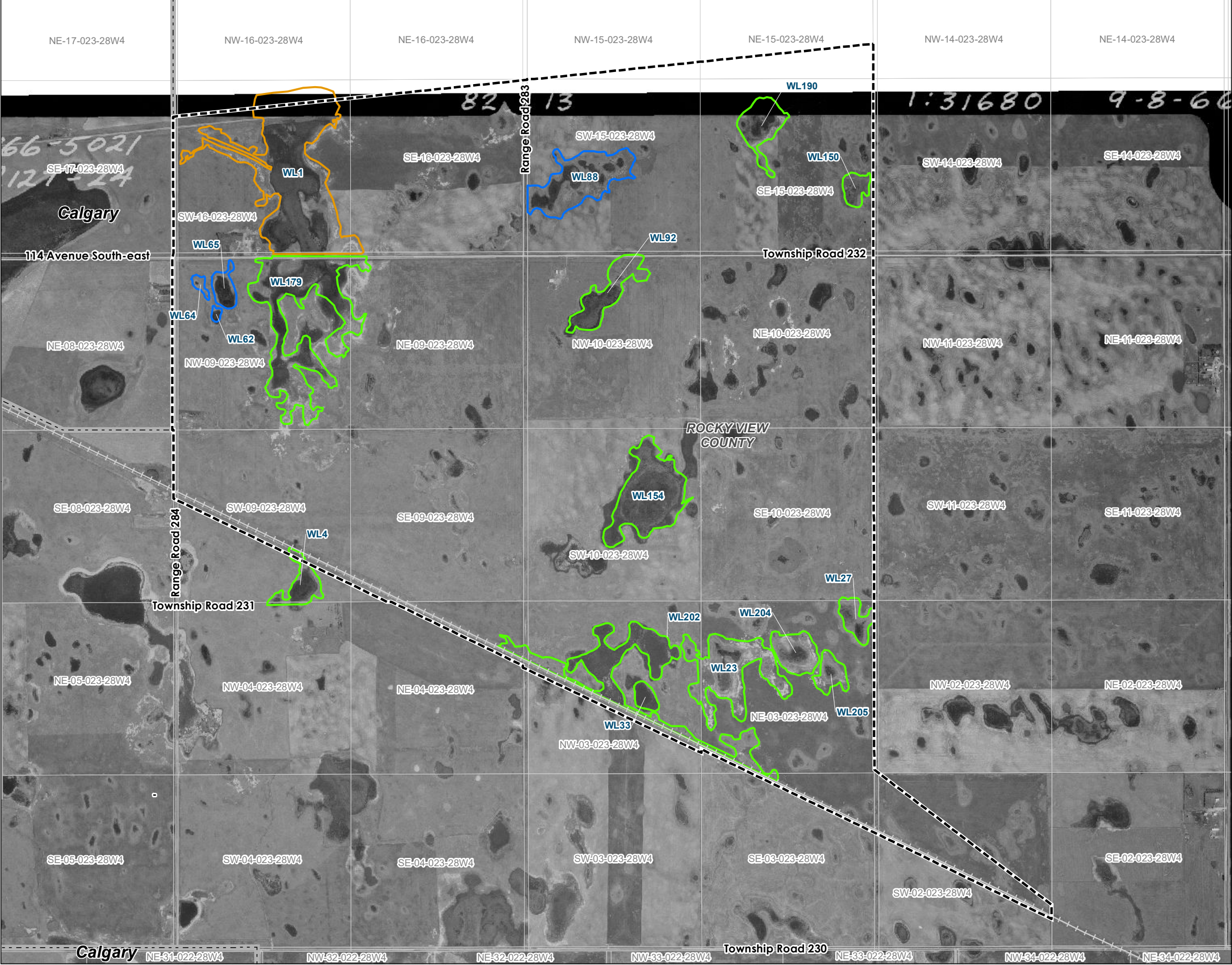
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May 12, 1950

Title

Historical Aerial Photograph

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Area Structure Plan (ASP) Boundary

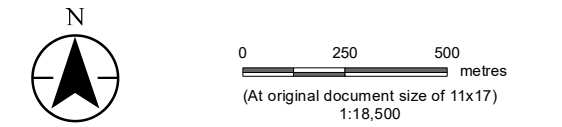
Wetland Class

- Graminoid Marsh - Seasonal (MGIII)
- Graminoid Marsh - Semi-permanent (MGIV)
- Shallow Open Water - Semi-permanent (WAIV)

Railway

Municipal Boundary

Quarter Section



Notes

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3. Background: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



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Figure No.

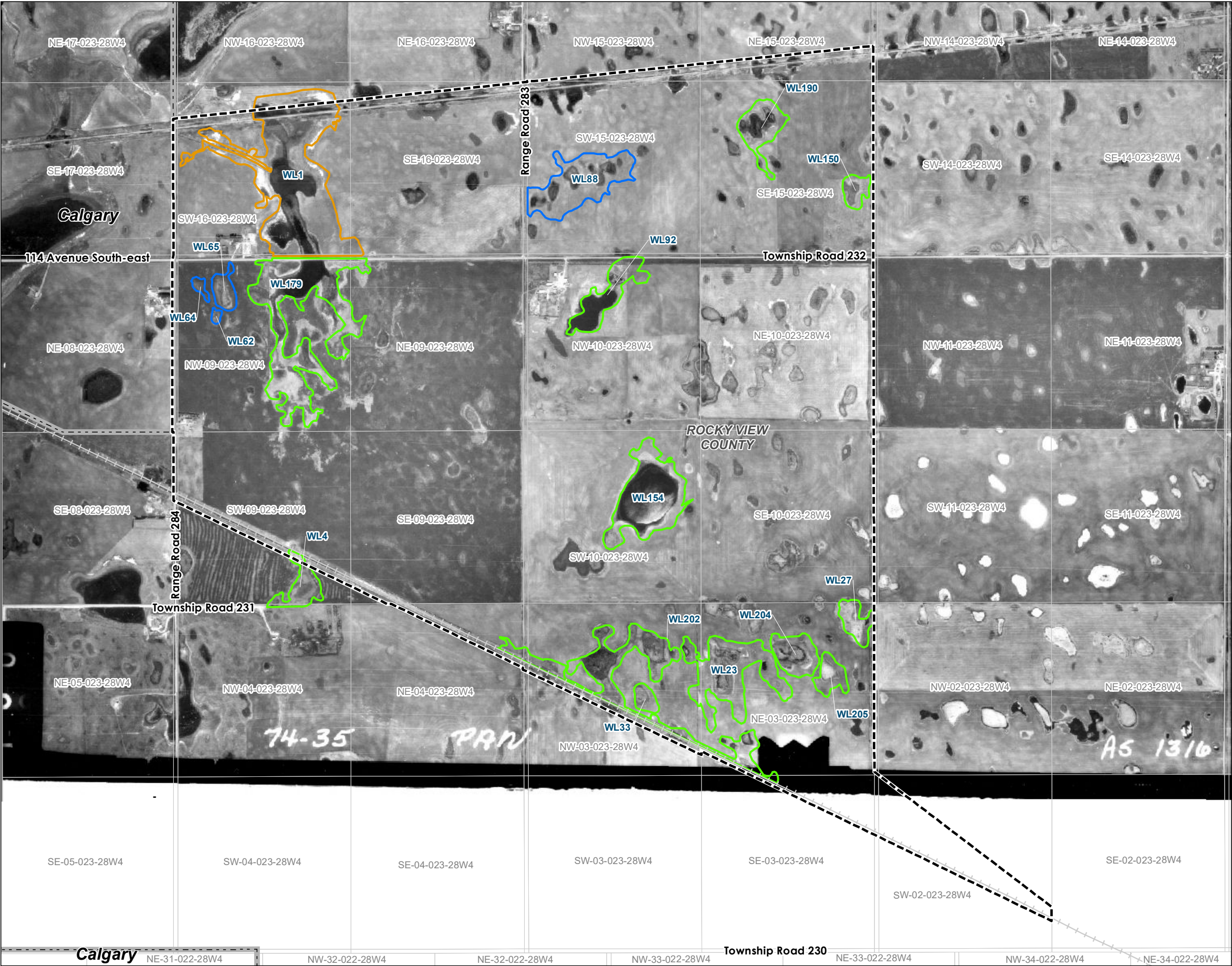
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Title

August 9, 1966

Historical Aerial Photograph

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- Area Structure Plan (ASP) Boundary
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- ++ Railway
- Municipal Boundary
- Quarter Section



0 250 500 metres
(At original document size of 11x17)
1:18,500

Notes

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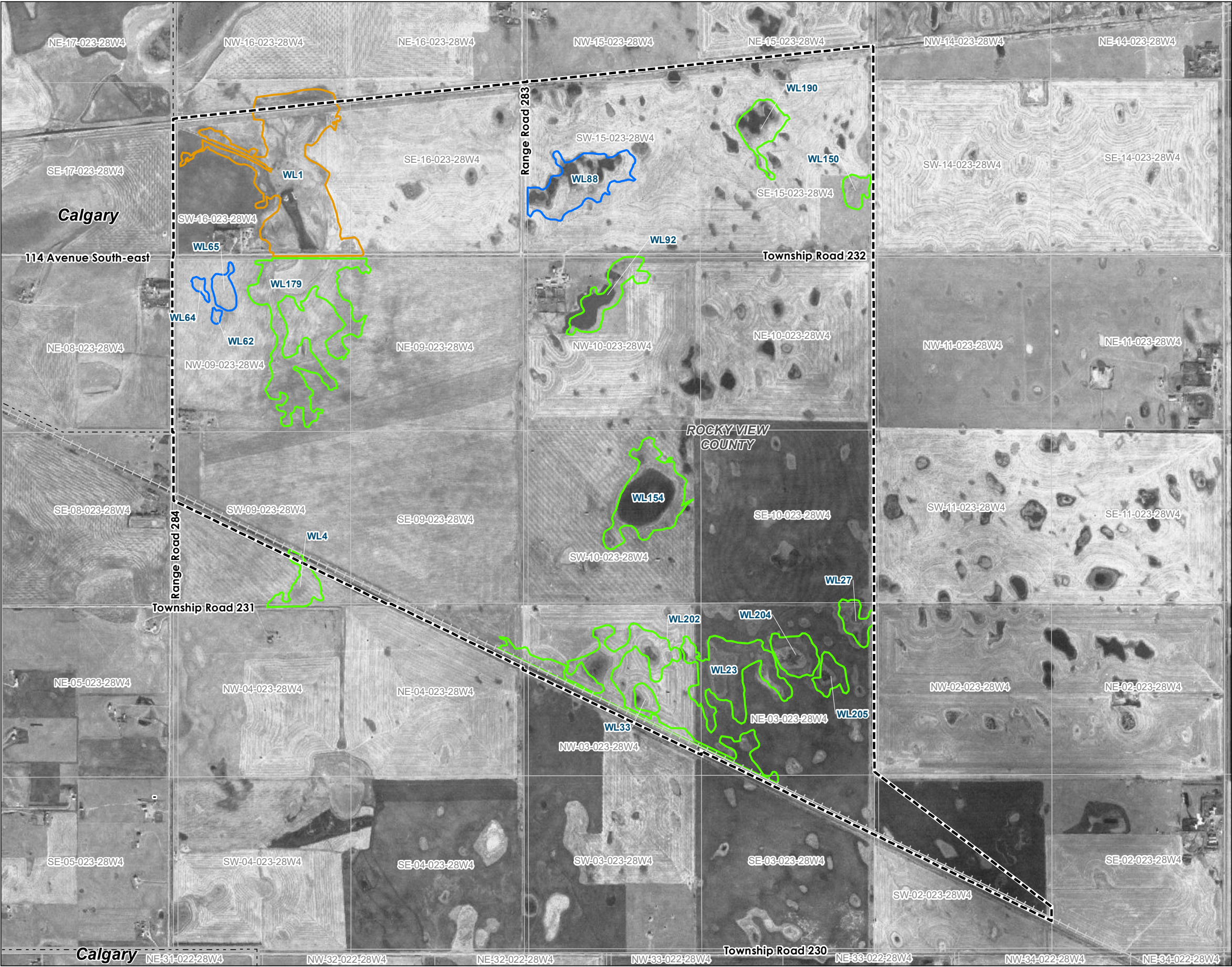
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June 12/13, 1974

Title

Historical Aerial Photograph

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Area Structure Plan (ASP) Boundary

Wetland Class

Graminoid Marsh - Seasonal (MGIII)

Graminoid Marsh - Semi-permanent (MGIV)

Shallow Open Water - Semi-permanent (WAIV)

Railway

Municipal Boundary

Quarter Section

0250500

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(At original document size of 11x17)

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Notes
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2. Data Sources: Stantec Consulting Ltd, Government of Alberta, City of Calgary
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IR Review by MCHISHOLM on 2024-02-07

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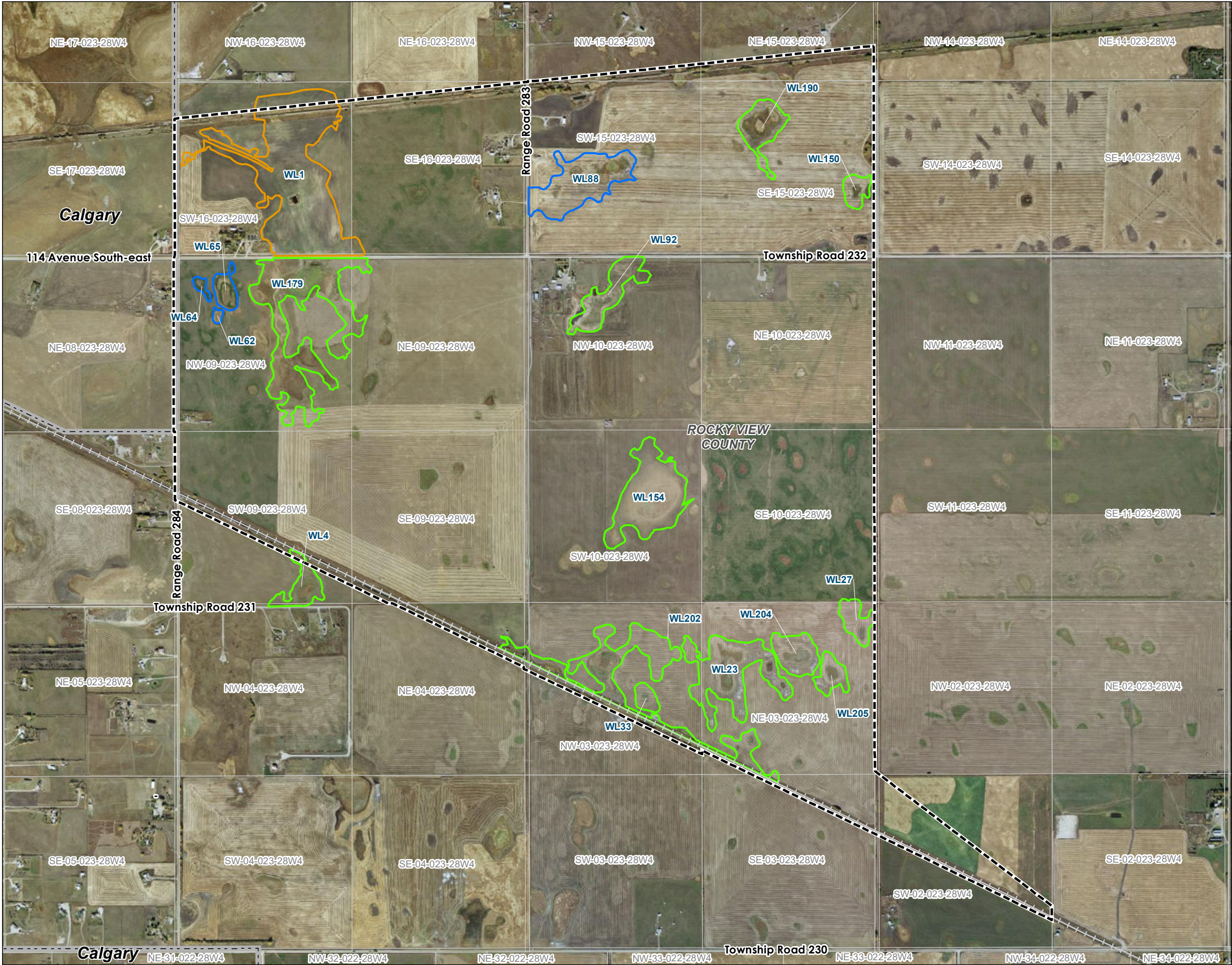
Figure No.

November 10, 1981

Title

Historical Aerial Photograph

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- Area Structure Plan (ASP) Boundary**
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Shepard Development Group
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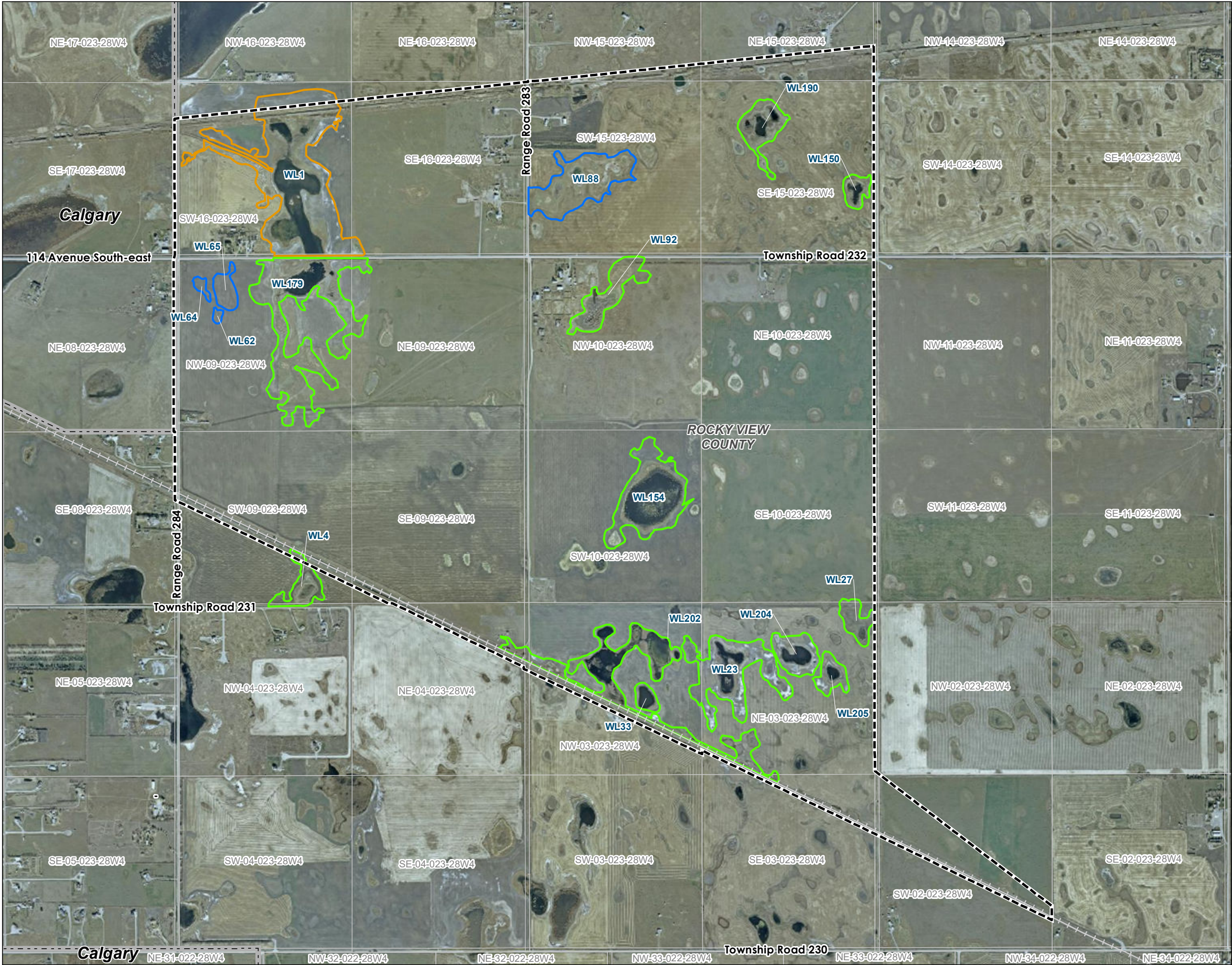
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October 1, 2003

Title

Historical Aerial Photograph

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- Area Structure Plan (ASP) Boundary
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(At original document size of 11x17)
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- Notes**
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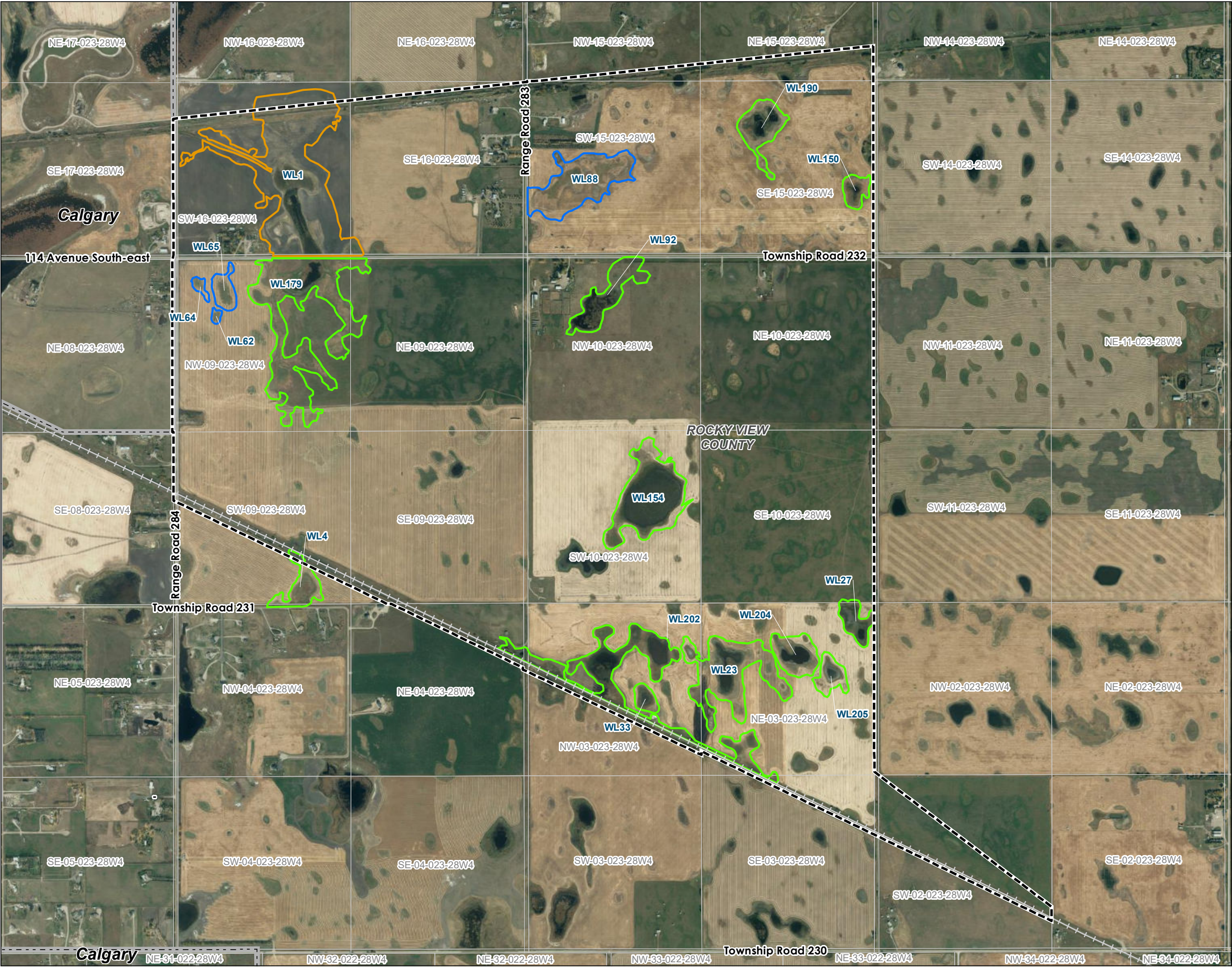
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Figure No.
October 13-14, 2007

Title
Historical Aerial Photograph

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- Area Structure Plan (ASP) Boundary
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0 250 500 metres
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SE Calgary
Alberta

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IR Review by MCHISHOLM on 2024-02-07

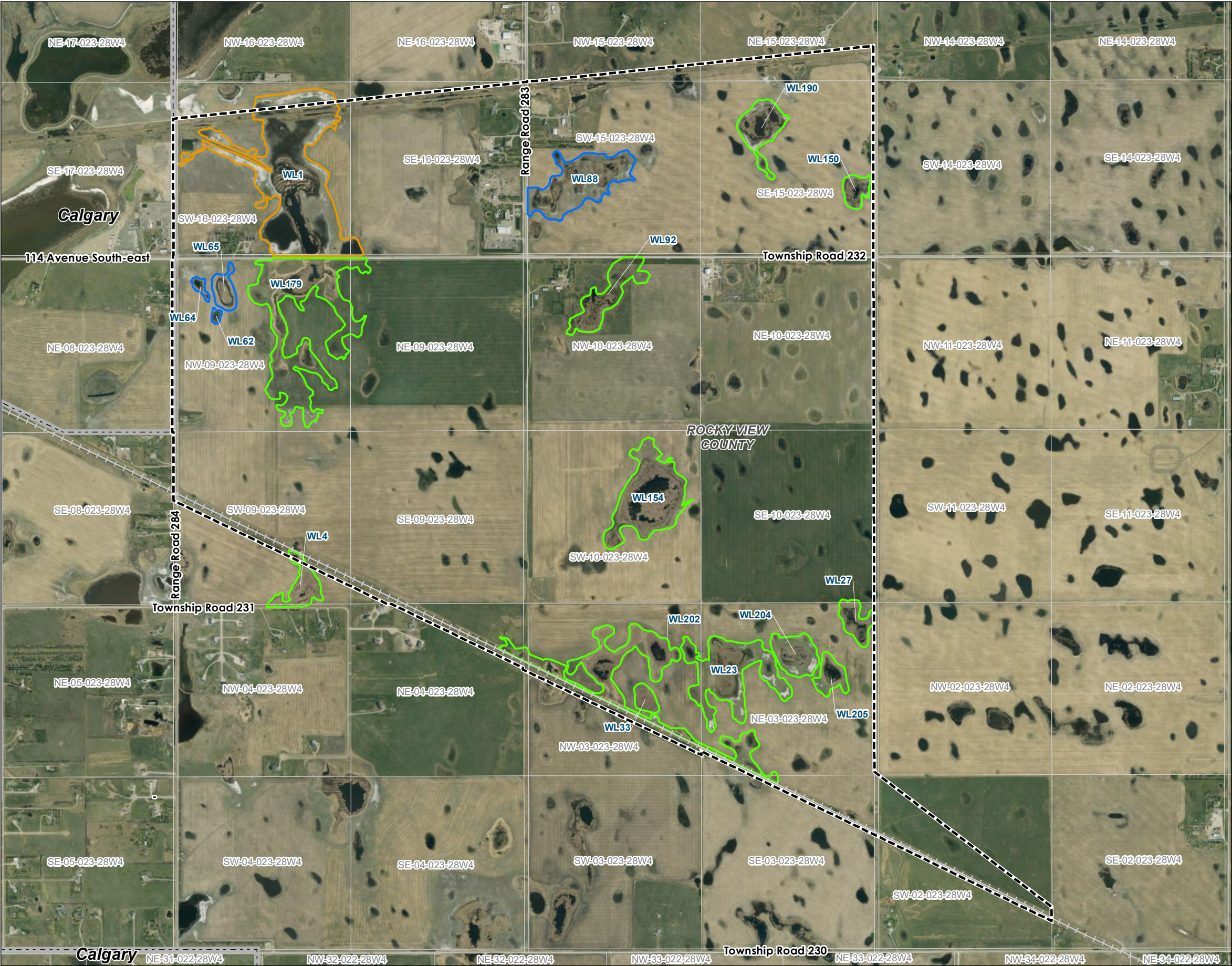
Client/Project
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(Shepard Industrial Lands) Area Structure Plan

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Figure No.
September 27-30, 2011

Title
Historical Aerial Photograph

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Area Structure Plan (ASP) Boundary

Wetland Class

Graminoid Marsh - Seasonal (MGIII)

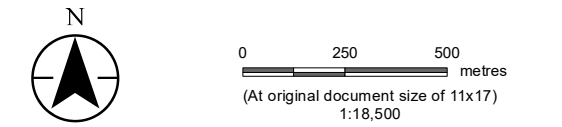
Graminoid Marsh - Semi-permanent (MGIV)

Shallow Open Water - Semi-permanent (WAIV)

Railway

Municipal Boundary

Quarter Section



Notes
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SE Calgary

Alberta

Prepared by DSPRY on 2024-02-07

TR by KFOUQUETTE on 2024-02-07

IR Review by MCHISHOLM on 2024-02-07

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Water Permanence Assessment - Prairie Gateway

(Shepard Industrial Lands) Area Structure Plan

Figure No.

May 13-15, 2018

Title

Historical Aerial Photograph

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- Area Structure Plan (ASP) Boundary
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(At original document size of 11x17)
1:18,500

- Notes**
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SE Calgary
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(Shepard Industrial Lands) Area Structure Plan

116536040_004

Figure No.
July 11-12/15, August 1, 2022

Title
Historical Aerial Photograph