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**Re: Environmental Assessment for the Proposed Town of Penhold Public Works Yard
in NW 6-37-27 W4M**

Introduction

Ghostpine Environmental Services Ltd. (Ghostpine) is pleased to provide Tagish Engineering Ltd. (Tagish) with an Environmental Assessment (EA) for a proposed Public Works Yard and access road located in NW 6-37-27 W4M within Red Deer County. The proposed Public Works Yard will cover 8.094 hectare (ha) and the proposed access road will cover 0.453 ha. The assessment proposed project area was based on a sketch provided to Ghostpine on January 19, 2021 (Appendix A: Figures 1, 2, and 3).

The EA consisted of a desktop review and a field survey. The desktop review provided preliminary information regarding the potential environmental sensitivities (including wetlands) within the proposed project area. A field survey was completed to confirm wetland and drainage boundaries and classifications and identify any potential wildlife or vegetation species of concern.

The results of the desktop review and field survey will be sufficient to prepare applications for approval under the *Water Act*, or other Acts, should they be required; however, this report does not constitute a regulatory application. Potential regulatory requirements for this proposed project area are included in this report.

Environmental Assessment

Desktop Review

Preliminary background searches have been conducted to identify the current environmental setting and potential issues within the project area. A summary of the information sources and key environmental sensitivities reviewed are identified in Table 1.

The desktop review was conducted for the project area and a 100 m area surrounding the project area. The purpose of the desktop review was to identify potential environmental issues relating to the proposed project and identify data gaps requiring a field survey.

The desktop review analyzed the following features including, but not limited to, soils and terrain, hydrology, vegetation, fish and associated habitat, wildlife and associated habitat, as well as historical and cultural resources. Aerial photography, topographical mapping, and government datasets, including Alberta's Fish and Wildlife Management Information System (FWMIS), Alberta Conservation Information Management System (ACIMS), Wildlife Sensitivity Mapping, and Alberta Merged Wetland Inventory were evaluated to determine if sensitive habitats or species of management concern had been previously recorded in the project area.

A pre-field desktop delineation of potential wetlands within the project area was conducted, as per the *Alberta Wetland Policy*. This process included a time series of photographs (ten years total) that represent the climate-driven trends of wetland hydrology and vegetation in wetter, moderate, and drier conditions.

The desktop review identified the boundaries and classifications of any potential wetlands and other waterbodies or drainages found within the project area or up to 100 m surrounding the project boundary. The location and boundaries of the desktop delineated wetlands are provided in Appendix A: Figure 2. In total, six wetlands were identified, including four which are potentially affected by the proposed project area and access road:

- DW01 – potential semi-permanent marsh (within proposed project area)
- DW02 – potential semi-permanent marsh (within proposed project area)
- DW03 – potential temporary marsh (within proposed project area)
- DW04 – potential temporary marsh (within 100m of the proposed project area)
- DW05 – potential semi-permanent marsh (within proposed project area)
- DW06 – potential temporary marsh (within 100m of the proposed project area)

The desktop-based wetland classifications were preliminary, based on the range of variability observed among the observed features on 10 years of imagery from 1950 to 2018. The potential wetlands had visible boundaries determined by a change in observed vegetation and basin topography from the surrounding land areas and showed evidence of deep water cover in several of the years, leading to the classifications of semi-permanent marshes for three of the potential wetlands. The imagery also showed that in some years (presumably drier), the wetland areas were cultivated throughout and did not appear to hold surface water.

One small permanent watercourse and two potential ephemeral drainages were also found within and surrounding the proposed project area (Appendix A: Figure 2):

- DD01, Waskasoo Creek – occurs to the east of the project area, within a modified section of channel. Historical imagery shows that over time the watercourse was realigned, and older meandering sections of the creek have been removed.
- DD02 – potential ephemeral drainage (within proposed project area)
- DD03 – potential ephemeral drainage (within proposed project area)

The Town of Penhold Municipal Development Plan (Town of Penhold, 2019) identified two zones surrounding Waskasoo Creek: a narrow floodway and a flood fringe. The project is situated adjacent to the floodway in the northeast corner of the project site and overlaps part of the flood fringe. Development within the flood fringe needs to be designed to avoid impacting the continuity of the floodway.

Field Survey

A field survey was completed on May 20, 2021, to ground-truth and delineate wetlands, drainages, and watercourses identified in the desktop review. The field survey also recorded slopes, wildlife niche sites (e.g., dens, nests, etc.), potential for fish habitat, rare plants, weeds, vegetation/land use, and existing disturbances. In addition, measurements of wetland function, based on the Alberta Wetland Rapid Evaluation Tool – Actual (ABWRET-A), were recorded for each wetland potentially affected by the proposed project footprint. The weather was overcast with temperature at 2.8 °C and wind recorded at 2.1 km/hr. A summary of environmental features identified during the field survey is included in Table 1.



Field classification and delineation for each desktop delineated wetland are provided in Appendix A, Figure 3. Specific observations were as follows:

- DW01, initially classified as a semi-permanent marsh, was identified in the field as wetland LC_20210520_028 and classified as a seasonal marsh (Appendix A: Figure 3). It contained standing water of about 10 cm in depth with thatch and grasses underneath the water (Appendix B: Plate 2). Historical photos indicate it is only in recent years that the wetland has contained deep water (Appendix A: Figure 2), and that the wetland has been cultivated in the several past years.
- DW02, initially classified as a semi-permanent marsh, was identified in the field as LC_20210520_041 and classified as a temporary marsh wetland (Appendix A: Figure 3). Its actual size was determined to be smaller than the desktop delineated area, as the general topography appeared to be modified, rising south of the fence line (Appendix B: Plate 1). This wetland was also cultivated in past years.
- DW03, initially classified as a temporary marsh, did not have any indicators of saturated soils or wetland plants present. It was field delineated as ephemeral waterbody LC_20210520_049. This ephemeral waterbody has been cultivated (Appendix B: Plate 4)
- DW04, initially classified as a temporary marsh, also had no indicators of saturated soils or wetland vegetation present. It was field delineated as ephemeral waterbody LC_20210520_053. This feature is located outside of the project footprint and is not anticipated to be impacted by the proposed development.
- DW05, initially classified as a semi-permanent marsh was field classified as ephemeral waterbody LC_20210520_054. This feature was located adjacent to the proposed access road but was not accessible as it fell outside of project land access. A small portion that was located outside of the fence line was assessed and did not contain any wetland soil indicators. There was also a lack of wetland vegetation.
- DW06 was located outside of the project footprint. It was not assessed as land access was not available and it could not be observed from the fence line. Therefore, this feature was not field classified or delineated.

Recorded ABWRET-A data for the two confirmed onsite wetlands (LC_20210520_041 and LC_20210520_028) was entered onto the Alberta Environment and Parks (AEP) Wetlands ABWRET-A spreadsheet but has not been sent to AEP for processing. These data will be saved if needed for a future Water Act application for wetland disturbances.

Among drainages and watercourses, the following observation were made:

- DD01, the small permanent watercourse (Waskasoo Creek) outside of the project boundary, was field confirmed (JP_20210520_029).
- DD02, was confirmed to be present as ephemeral drainage LC_20210520_511. This feature was not well defined in the field and appeared to follow the topography of the landscape. Soil samples indicated loamy soils (upland) were present with no wetland indicators present.
- DD03 was confirmed to be present as ephemeral drainage LC_20210520_521. This feature was also not well defined in the field and appeared to follow the topography of the landscape. Soil samples indicated loamy soils (upland) were present with no wetland indicators present.
- An anthropogenic ditch, LC_20210520_045, was identified in the southeast side of the project area. It occurs along the project's south boundary (Appendix B: Plate 3; Appendix A: Figure 3). The ditch continues east to Waskasoo Creek.



A grassland breeding bird survey was completed as well as a survey for raptor nests. Three stick nests were found along Waskasoo Creek which appeared to be occupied by crows (Appendix A: Figure 3). Another small stick nest was found along Range Road 280 during the 1000-meter raptor nest survey but appeared to be unoccupied at the time of the survey and was well outside of the project boundary (not shown on field mapping).

No sensitive or endangered species were documented during the survey. Among unlisted species, visual observations included a Swainson's hawk, mallard duck breeding pair, blue winged teal, American crow breeding pair, Canada geese, clay coloured sparrow, and Bonaparte's gulls; in addition, there were auditory observations of Baird's sparrows. All treed areas immediately surrounding the project area, including a scan up to 1000 m away from the site along Range Road 280 were searched for presence of stick nests. No potential raptor nests were observed during this survey.



Table 1 Environmental Assessment of the proposed Public Works Yard located in NW 6-37-27 W4M

Potential Environmental Concern	Desktop Review	Field Survey
White Area or Green Area	White Area	---
Municipality/County/Special Area	Project occurs within the outskirts of the Town of Penhold (the Town), which is located within Red Deer County.	---
Land Ownership	Private	---
Land Use	Agriculture	The property site is cultivated for agricultural use
Municipal Planning Documents Pertinent to the Proposed Project	Town of Penhold Municipal Development Plan ^(a) <ul style="list-style-type: none"> • Mapping in this plan indicates the project occurs within the flood fringe of Waskasoo Creek and is adjacent to the floodway Land Use Bylaw Community Standards Bylaw Traffic Bylaw Town of Penhold and Red Deer County – Intermunicipal Development Plan	---
Natural Region^(b)	Central Parkland (Parkland)	---
Central Parkland Vegetation Inventory^(c)	Anthropogenic modified land occurs throughout the project area	Most of the area is cultivated with little native vegetation remaining. Wetlands contained dock, wheat grass, sedges, silver weed, bulrush, and cattails. Introduced species include Kentucky bluegrass, dandelions, and Canada thistle.
Wildlife Sensitivity Ranges^(d)	Sensitive Raptors: Bald Eagle, Prairie Falcon Sharp-tailed Grouse Other Sensitive and Endangered Species: Parkland	The wildlife habitat potential noted in the desktop assessment was confirmed during the site visit. Sharp-tailed grouse activity is unlikely in the area due to regular anthropogenic disturbances.
Fisheries and Wildlife Management Information Systems previously recorded within 1 km^(e)	Terrestrial: bobolink, common yellowthroat and sora Aquatic: no species found in search extent	A nest survey was performed within a perimeter of 340 m north of the project area, along Waskasoo Creek to the east and the fence line to the south, as land access permitted. Range Road 280 was surveyed north and south for 1000 m from the project site for further nests, especially raptor nests. Stick nests were found along the creek and appeared to be occupied by crows. Another stick nest was also seen along Range Road 280 but appeared unoccupied. There was no indication of any raptor nests, though a Swainson's hawk individual was seen in the area.



Potential Environmental Concern	Desktop Review	Field Survey
		A Breeding Bird Survey was conducted from 10:39-11:30 a.m., and wildlife observations were recorded. The weather was cool (2.8°C), with overcast skies and mild winds of 2.1 km/hr. Species at Risk wildlife species, or their den/nest/niche sites were not observed. Visual observations included: Swainson's hawk, mallard duck breeding pair, blue winged teal, American crow breeding pair, Canada geese, clay coloured sparrow, and Bonaparte's gulls. Auditory observations were made of Baird's sparrows.
Rare Plants/Alberta Conservation Information Management System^(f)	Previous observations of Marsh Gentian (<i>Gentiana fremontii</i>) were identified in the vicinity of the project area (observed May 27, 1989).	Rare plants were not observed in the project area during the field survey; however, vegetation identification was limited due to previous ground disturbances, and it was early in the growing season. It is unlikely rare plants would be found in the area due to previous disturbances.
Approximate number of wetlands (based on aerial imagery reviewed and the Alberta Merged Wetland Inventory [AMWI])^(g)	Two potential semi-permanent marshes are traversed by the proposed project area (Appendix A: Figure 3 – DW01 and DW02), as well as a potential temporary marsh (Appendix A: Figure 3 – DW03). One additional potential semi-permanent marsh is traversed by the proposed access road (Appendix A: Figure 3 – DW05) and two other potential temporary marshes were identified within 100 m of the proposed project area (Appendix A: Figure 3 – DW04 and DW06) based on a review of aerial imagery and AMWI.	<p>The following desktop delineated wetlands were ground truthed:</p> <ul style="list-style-type: none"> • DW01: Field classified as a seasonal marsh wetland. Standing water was present as well as wetland soil and vegetation indicators. It does not have a defined basin. There is a ditch (See "Drainage Ditches" in this table, below) along the field delineated southern boundary of this wetland and a culvert installed in the southwest corner. The field delineated wetland boundary is smaller than the desktop delineated boundary due to the wetland ending at the ditch rather than continuing to the south (Appendix A: Figure 2, Appendix B: Plate 2: LC_20210520_028). • DW02: Field classified as a temporary marsh wetland due to a lack of standing water or saturated soils as well as the presence of more upland vegetation. Previously disturbed by cultivation, it no longer appears to go beyond the fence line as the topography rises to the south. There was also a large debris pile south of the fence adjacent to where the wetland had been desktop delineated (Appendix A: Figure 2, Appendix B: Plate 1: LC_20210520_041). • DW03, DW04 and DW05 were determined to be ephemeral waterbodies based on lack of soil and wetland vegetation indicators. DW03 and DW04 were ploughed (Appendix A: Figure 2, Appendix B: Plate 3: LC_20210520_049). • DW06 was not assessed as land access was not available.



Potential Environmental Concern	Desktop Review	Field Survey
Wetland Ownership	<p>According to Section 3(1) of the <i>Public Lands Act</i>, the title to the bed and banks of all permanent and naturally occurring water is vested in the Crown in Right of Alberta (owned by the Crown; Government of Alberta [GOA] 2000a). Claimable wetlands typically include those classified as semi-permanent to permanent marshes/shallow open water wetlands and selected seasonal wetlands that occur in a deeper basin that may support permanent water.</p> <p>Based on the desktop review, three potential semi-permanent marshes within the project area (Appendix A: Figure 3: DW01, DW02 and DW05) have the potential to be claimed as Crown land under Section 3(1) of the <i>Public Lands Act</i>.</p> <p>A Wetland Permanence Assessment will be required prior to any proposed activities occurring within these waterbodies. Should the Crown claim the bed and banks of any of these wetlands, additional approvals and/or purchase agreements with the Crown may be required.</p>	<p>Based on in-field assessments, none of the wetlands are likely to be Crown claimable. Temporary marshes, such as LC_20200520_041 are not crown claimable; however, Seasonal marshes, including LC_20210520_028, may be Crown claimable in some situations, such as when the wetland has permanence characteristics such as a deep basin which can support high water levels. Historical evidence of this site suggests the water level was deeper in recent years, but field evidence shows it does not have a defined basin and contains thatch and grasses in its deepest part. This suggests this wetland is not likely to be claimable, although an assessment may still be completed if desired.</p>
Watershed	Red Deer River and Sylvan Lake	---
Springs^(h)	Not identified in project area	Springs were not identified in the field.
Approximate number of watercourses (based on aerial imagery)	<p>Two potential ephemeral drainages (Appendix A: Figure 3: DD02 and DD03) are located within the project area.</p> <p>One small permanent watercourse (Waskasoo Creek) is found within 100 m of the project area. Waskasoo Creek is a Class C watercourse with a Restricted Access Period from April 16 to June 30. It was noted during the desktop assessment that Waskasoo Creek has been modified from its natural course east of the project area.</p>	<p>The desktop delineated drainages (DD02 and DD03) were low areas as indicated by the topography. These features lacked wetland soil and vegetation indicators. The source of drainage water is likely ephemeral waterbody LC_20210520_049. These were confirmed as ephemeral drainages LC_20210520_511 and LC_20210520_521.</p> <p>A portion of Waskasoo Creek, where access was available, was delineated along the outside boundary to confirm the edge of the watercourse in relation to the project area. See Appendix A: Figure 2 – JP_20210520_029).</p>
Drainage Ditches	No drainage ditches were observed within the project area.	A drainage ditch was found to the south of LC_20210520_028 as well as a culvert. The ditch runs east to Waskasoo Creek.
Integrated Resources Plans/Higher Level Plans	Not identified in the project area.	---



Potential Environmental Concern	Desktop Review	Field Survey
Environmentally Significant Areas (ESA)^(l)	According to Provincial ESA mapping, the project area is not located within an ESA.	---
Parks, Natural Areas, Ecological Reserves, and/or Recreation Areas^(l)	Not identified in project area	---
Listing of Historic Resources^(k)	<p>Not traversed</p> <p>Historical Resources Act approval is not required, although Section 31 of the Historical Resources Act applies. Section 31 requires that anyone who discovers an historic resource, such as an archaeological, palaeontological, historic structure, or Aboriginal Traditional Use site during development activities must cease work and notify the Ministry of Culture, Multiculturalism and Status of Women immediately for further direction on the most appropriate action.</p>	---
Soils/Agricultural Regions of Alberta Soil Inventory Database^(l)	<p>The entire project area is located within soil polygon 13338, which comprises the following soil types:</p> <p>EAPE10/U1h</p> <ul style="list-style-type: none"> • Penhold soil (30%) <ul style="list-style-type: none"> – Orthic black chernozem – Well drained – Medium textured; loam, silt loam and very fine sandy loam – Undulating, high relief <p>EAT</p> <ul style="list-style-type: none"> • Evarts soil (30%) <ul style="list-style-type: none"> – Eluviated black chernozem – Well drained – Fine textured; clay, silty clay, and sandy clay 	<p>Upland and wetland soils were sampled to a depth of 30 cm to confirm delineated areas as wetlands. Upland soils were sampled around the wetlands, the ephemeral water bodies, as well as the two drainages.</p> <p>LC_20210520_028 – seasonal marsh contained a silty clay from 0 to 20 cm with the colour matrix 10YR 3/1 and slight mottling indicating a wetland soil.</p> <p>LC_20210520_041 – temporary marsh contained a silty clay from 0 to 11 cm with a soil matrix colour of 10YR 2/1 which contained some mottling. From 11 to 30 cm a clay-based soil with the colour matrix of 10YR 4/1 and mottles with a matrix colour of 10YR 5/6 m indicating a wetland soil were observed indicating this is a wetland soil.</p> <p>Upland soils and soils sampled in the ephemeral water bodies and drainages consisted of loam (10YR 2/1) and clay loam (10YR 5/3) with no other wetland indicators such as gleying or mottling.</p> <p>Soil colours were determined with the Munsell Colour System.</p>



Potential Environmental Concern	Desktop Review	Field Survey
	<p>MYK</p> <ul style="list-style-type: none"> • Mynarski soil (30%) <ul style="list-style-type: none"> – Black solodized solonetz – Well drained – Moderately fine textured; sand clay loam, clay loam, and silty clay loam <p>ZGW</p> <ul style="list-style-type: none"> • Miscellaneous gleysol (10%) <ul style="list-style-type: none"> – Orthic humic gleysol – Poorly drained – Variable texture 	
Sand and Gravel Deposits	Not identified in project area	---
Slopes/General Topography	Generally level terrain	Generally level terrain. The topography rises to the south of LC_20210520_028 and LC_20210520_041 from the fence line.
Roads	Project area bounded by Range Road 280 to the west. Rural residential driveways/access roads located around the project area.	Range Road 280 adjacent to the project site is not paved.
Railways	Not identified in project area	Confirmed in field (as not present)
Trails/Pathways	Not identified in project area	Confirmed in field (as not present)
Known or Potential Contamination^(m)	Not identified in project area. The nearest past reported spill (Appendix A; Figure 1) is located approximately 350 m southeast of the project site.	---

(a) (Town of Penhold, 2019)

(b) (Natural Regions Committee, 2006)

(c) (Alberta Environment and Parks, 2012)

(d) (Alberta Environment and Parks, 2016)

(e) (Alberta Environment and Parks, 2020)

(f) (Alberta Environment and Parks, 2020)

(g) (Alberta Environment and Parks, 2019)

(h) (Borneuf, 1983)

(i) (Alberta Tourism, Parks and Recreation, 2014)

(j) (Alberta Tourism, Parks and Recreation, 2013)

(k) (Alberta Ministry of Culture, Multiculturalism and Status of Women, 2021)

(l) (Agriculture and Agri-Food Canada., 2016)

(m) (Alberta Environment and Parks, 2021)



Regulatory Requirements

The following Sections are provided for planning purposes only and may not be an exhaustive list. The exact regulatory requirements will be determined based on the scope/footprint/construction activities required as part of the proposed development.

Municipal Permits/Approvals

Municipal permits and approvals (e.g., development permits, building permits, etc.) will be required, to ensure that all development is undertaken in accordance with the Land Use Bylaw and the Municipal Government Act (Town of Penhold, 2018). The proposed project currently sits on land designated as Urban Reserve by the Town of Penhold (2018).

Storm Water Management

Municipal permits and approvals may be required for stormwater management on the parcel. Approval and/or registration under the *Environmental Protection and Enhancement Act* may also be required. Should the proposed development plans involve using on-site wetlands for storm water management, additional approvals under the *Water Act* will also be required. Note that the use of natural wetlands for stormwater management is not a preferred option by AEP.

Wetland Permanence Assessment

According to Section 3(1) of the *Public Lands Act*, the title to the bed and banks of all permanent and naturally occurring water is vested in the Crown in Right of Alberta (owned by the Crown) (Government of Alberta, 2000). As such, should any waterbody, including wetlands, within the project area appear to be permanent (or potentially permanent) and naturally occurring, a review by a qualified biologist is required. Should this review determine that wetlands are likely to be claimed as Crown land, a submission to the Water Boundaries group at AEP, to confirm ownership of the wetland(s), will be required. The Water Boundaries group will review the wetland permanence assessment and decide on ownership of the waterbody. Should the Water Boundaries group determine that the waterbody is Crown land, additional regulatory requirements will apply. A purchase agreement would also be required to purchase the area of the wetland back from the Crown, if the wetland area were to be included in any permanent land development.

Desktop assessment identified three potential semi-permanent marshes which would normally be subjected to a permanence review to assess if they are claimable by the Crown. Following completion of the field survey, no wetlands were identified as having a high likelihood of being permanent. LC_20210520_028 was determined to be a seasonal marsh and LC_20210520_041 a temporary marsh, while LC_20210520_054 was determined to be an ephemeral waterbody. On occasion, seasonal wetlands may be claimable if they maintain characteristics of permanence and if natural in occurrence. If desired, the seasonal marsh LC_20200520_028 could be addressed in permanence review for submission to AEP to confirm it is not claimable.

Water Act Application and Wetland Assessment and Impact Report

The *Wetland Mitigation Hierarchy*, as described in the *Alberta Wetland Policy*, outlines the steps required for mitigation of negative impacts on wetlands. The mitigation hierarchy states that the primary and preferred action is to avoid impacts to wetlands, where possible. If avoidance is not possible, minimization of impacts is required. As a final resort, where avoidance is not possible and where minimization efforts are not possible or prove to be ineffective, wetland replacement is required.



Should a minimization of impacts approach be selected, an appropriate setback to protect the wetlands may be desirable. The setback, following guidance in the document *Stepping Back from the Water* (Government of Alberta, 2012) would be designed to protect the wetlands' functions from development. Typically, flat areas on agricultural soils require a minimum setback of 20 m.

Should avoidance and/or minimization not be possible or desirable, an application for approval under the *Water Act* is required for all permanent impacts to waterbodies (including wetlands, waterbodies, and ephemeral drainages). Please be advised, AEP requires that fieldwork for *Water Act* applications be completed during the growing season (approximately May to September) to comply with the *Alberta Wetland Policy* (Wetland Policy Project Team, 2008).

A Wetland Assessment and Impact Report will be required to supplement the *Water Act* application for any permanent impacts to wetlands. The report will include the results of the on-site biophysical assessment or specific on-site wetland assessment, including wetland classification, wetland delineation, dominant vegetation plots, wildlife species present, and an ABWRET-A assessment, as well as a review of historical aerial photographs to determine existing and historical land use surrounding each wetland.

Under the *Alberta Wetland Policy*, compensation is required for any net wetland loss. Compensation for wetland loss is determined based on the location in Alberta and the ABWRET-A assessment. Field data for each wetland is collected and is submitted to AEP for review. AEP reviews the submitted data, and provides a Relative Wetland Value, which specifies a compensation ratio ranging from 1:1 to 8:1. This ratio, when multiplied by the area of the wetland loss and the current cost per hectare for wetland restoration (a function of the location of the site via the mapped Relative Wetland Value Assessment Unit [RWVAU]) determines the compensation payment required for wetland losses. Costs for wetland replacement are payable directly to the Government of Alberta. Note that the project area occurs within RWVAU 1, which currently has an *in-lieu* restoration rate of \$19,100 per hectare.

Unauthorized Wetland Disturbances

Existing disturbances to wetlands may be out of compliance with the *Water Act* and Alberta Wetland Policy if an approval to disturb wetlands was not completed prior to the occurrence of the disturbances. Activities such as clearing, draining, infilling, excavating, or construction of infrastructure may result in unauthorized disturbances. Unauthorized wetland disturbances need to be self-reported to AEP and if an investigation determines that the disturbance is in contravention of the *Water Act*, AEP will typically require the impacts to be rectified prior to additional approvals being issued for the same project area.

During field work for this project, the presence of a drainage ditch and culvert on the southern edge of the project boundary was observed to cross desktop delineated wetland DW01. A buried pipe leading to a culvert that flows into the drainage ditch may also cross desktop delineated wetland DW02. The field delineation of the two wetlands as LC_20210520_028 (formerly DW01) and LC_20200520_041 (formerly DW02) now ends at the southern fence or ditch line, and land south of the fence appears to be raised higher than the wetland basins. There is also a debris pile within the boundary of desktop delineated DW02 south of the project boundary. It is possible that the drainage ditch and culvert are acting as a drain to reduce the water levels in these two wetlands.

It is recommended that a self-disclosure to AEP be made by contacting 1-800-222-6514 or by emailing erc.environment@gov.ab.ca to report and discuss this possible non-compliance. Legal land location, details of the non-compliance, the contact information of the potential responsible party, and current contact information of the proponent should be provided.



Limitation of Liability

Methods and results in this report are based on Ghostpine's adherence to municipal, provincial, and federal regulations in place on the date issued. Inter- and intra-regulatory agency interpretation of rules and regulations have been accounted for as much as reasonably possible.

During the preparation of this report and associated services, Ghostpine relied upon the full disclosure and accuracy of all applicable information by Tagish on the past, present, and proposed conditions of this site. This report is based upon the information provided by Tagish, information collected during desktop and/or field investigations, and information gathered from regulatory bodies and agencies. The information provided by parties other than Ghostpine is believed to be accurate but cannot be guaranteed. The work was conducted by Ghostpine in accordance with the scope of work prepared for this project, including verbal or written requests from Tagish. No other warranty, expressed or implied, is made.

All spatial data presented in this report (text or figures) was collected by a hand-held GPS unit, which typically has a 5 to 7 m margin of error. This known margin of error may be subject to further variance or discrepancy under certain field conditions or the time of day. A verified survey is recommended where any distances are required for regulatory compliance or conformance.

Ghostpine has exercised reasonable care and due diligence in the preparation of this report. The services have been performed in a manner consistent with other professionals currently practicing under similar conditions in the jurisdiction in which the services were provided.

It must be noted that the environmental assessment, as per the established scope of work of any site, is based on observations made at a specific moment in time; therefore, the conclusions and recommendations set out in this report are time sensitive. The report is based solely on the conditions that existed at the time of the investigation. The conclusions and recommendations set out in this report are based on the specific observations and testing at the subject site. Conditions across the site may vary which would affect the conclusions and recommendations made in the report. No detailed assessment on a given property or site can wholly eliminate the uncertainty regarding the potential for unrecognized conditions in connection with that particular property or site.

This report and the assessments and recommendations described within are intended for the sole use of Tagish and their agents. Other representations or warranties regarding surface, subsurface, biotic, abiotic, and documentation of said condition in the form of report, or regulatory submission not referenced, are not provided. Any unauthorized use of this report is at the sole risk of the user. The document may not be manipulated, edited, or amended without the expressed written consent and understanding of Ghostpine.

Tagish may rely on this completed report for specific application to this project, based on project area discussed and conditions present at the time of the field assessment.



Conclusion

This EA has been prepared based on the routing provided to Ghostpine by Tagish on January 19, 2021. Changes in project footprint or proposed construction activities may result in changes to the environmental setting and regulatory requirements as discussed in this report.

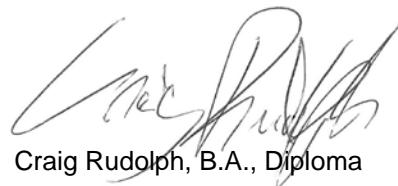
Ghostpine wishes to thank Tagish for allowing us to provide this EA. With our expertise and support, Ghostpine is uniquely positioned to meet and exceed all expectations of this project.

If you have any questions, or require additional information, please do not hesitate to contact me by phone at 403-291-9238 or by email at amy@ghostpine.com.

Yours truly,

GHOSTPINE ENVIRONMENTAL SERVICES LTD.

Prepared by:



Craig Rudolph, B.A., Diploma
Environmental Scientist

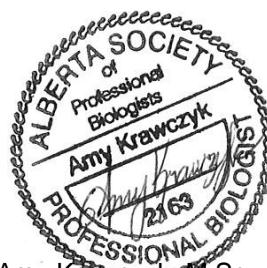


Lisa Cahoon, M.Sc., B.I.T.
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Reviewed by:



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Senior Environmental Planner



REFERENCES

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APPENDIX A

FIGURES



**Red Deer River Corridor
Integrated Management
Plan**

Rge. 28 W4M

Rge. 27 W4M

N

ACIMS: Marsh Gentian (*Gentiana fremontii*)
S3 - OBS-DATE: 1989-05-27

2

12

7

8

Twp. 37

Twp. 36

32

31

30

Penhold

Waskasoo Creek



SCALE: 1:30,000	Drafted: JNB	Date: June 1, 2021
250 0 250 500 m	Approved: XXX	Revision: 0
	Route Source: Date: Dec 21, 2020	
	Survey	Revision: 0

Data Sources:
ESRI World Topographic Map
ATS Grid: AltaLIS 2007.

*Alberta Merged Wetland Inventory
**AbaData 2.0

Please contact Ghostpine Environmental Services Ltd. for all other sources.

Although we have no reason to doubt the accuracy and completeness
of the data used to generate this product, users should be aware
that errors in the data may be present.



Legend

- [Yellow Box] Public Works Yard
- [Green Line] Access Road
- [Black Line] Sand & Gravel Deposit Boundary
- [Purple Line] Subregional Integrated Resource Management Plan Boundary
- [Brown Line] Class C, RAP: April 16 to June 30
- [Yellow Box] Town of Penhold
- [Orange Box] HBC Lands
- [Pink Box] Complaint**
- [Blue Box] Spill**
- [Green Box with ACIMS icon] ACIMS
- [Light Green Box] Marsh*

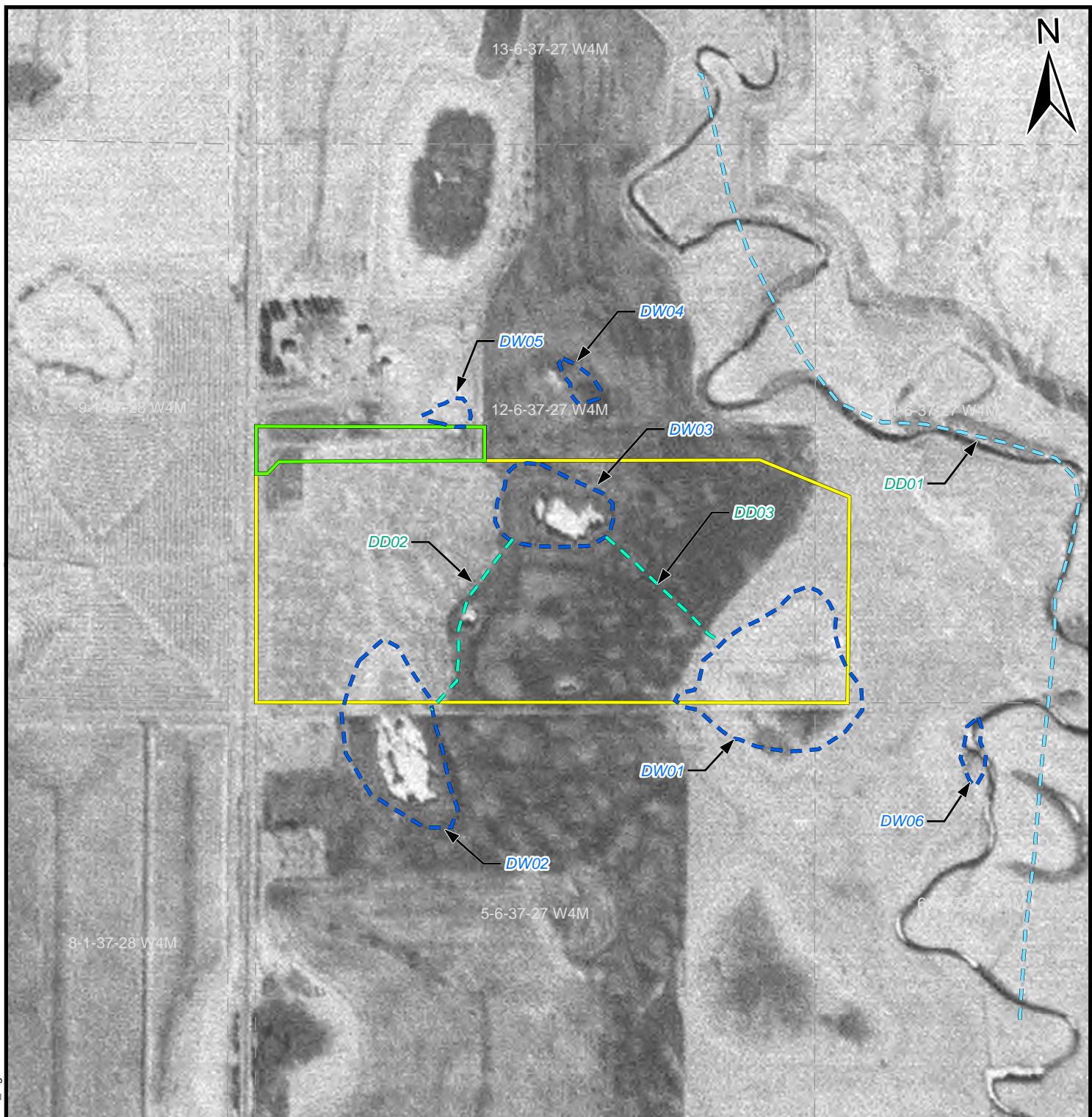
**TAGISH
ENGINEERING**

**Regional Location of the
Proposed Town of Penhold
Public Works Yard in
NW 6-37-27 W4M**

June 2021

REF.: 5646-200-3
(Presite)

Figure 1



Map Location: Y:\01_GIS\Project\005600_Proj\5646_GIS\5646_Presite_Fig02.mxd

SCALE: 1:4,000	Drafted: NG	Date: June 1, 2021
	Approved: XXX	Revision: 1
Route Source: Survey	Date: Dec 21, 2020	
25 0 25 50	Survey	Revision: 0

Data Sources:
Imagery Source: ESRI. Date: 2018/01/15
Aerial Photography from the Air Photo Distribution Office,
Alberta Environment and Parks (Under Crown copyright).
Date of Imagery: 1950, 1966, 1969, 1975, 1977, 1983, 1998, 2002, & 2007.
ATS Grid: AltaLIS 2007.

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Legend

- | | | | |
|--|--------------------|--|-------------|
| | Public Works Yard | | Access Road |
| <hr/> | | | |
| Best-Fit Desktop Delineations*: | | | |
| <hr/> | | | |
| | Ephemeral Drainage | | |
| | Watercourse | | |
| | Wetland | | |

*Approximate location based on historical aerial imagery review.



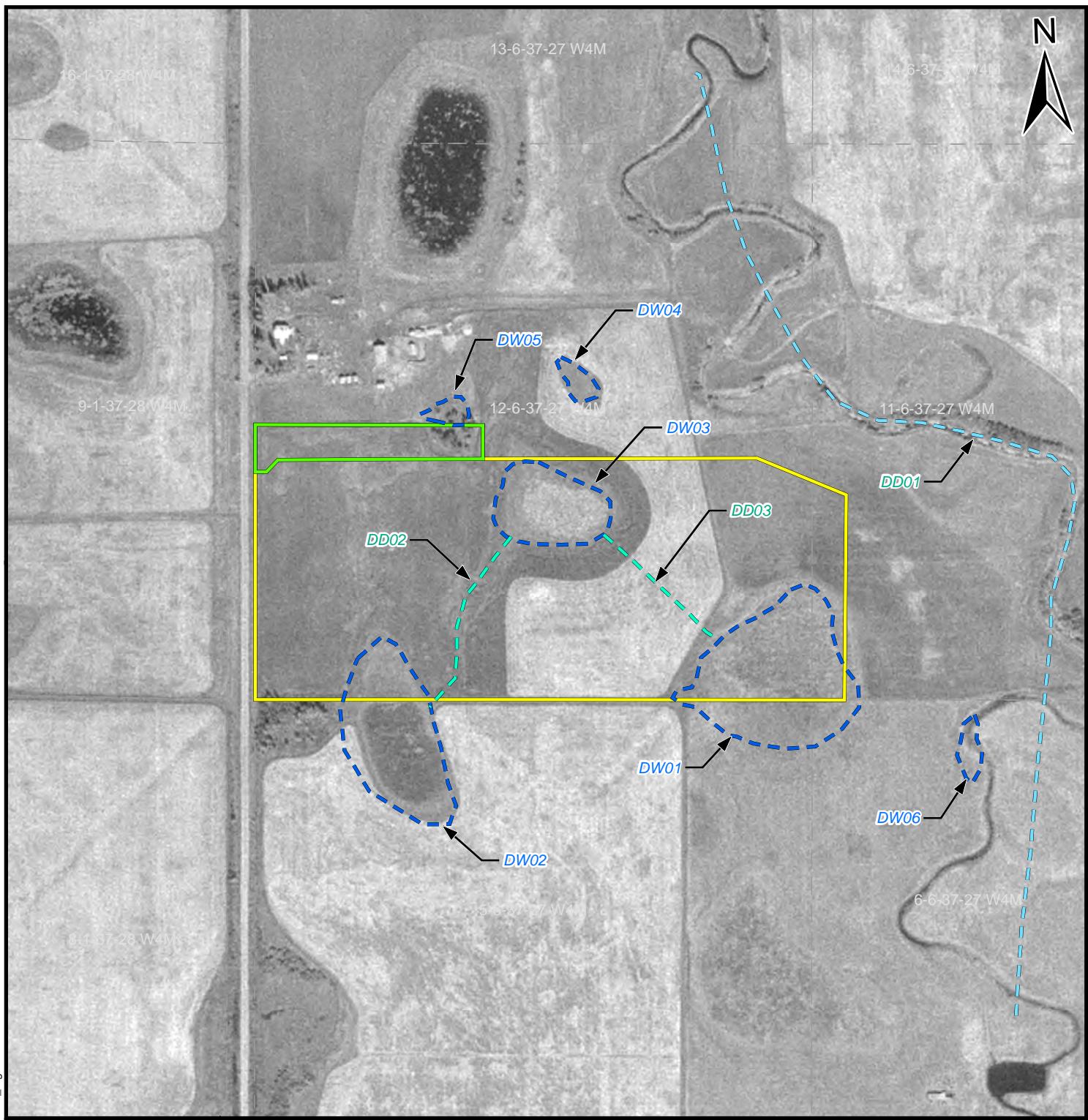
**Historical Imagery Review
for the Proposed Town of
Penhold Public Works
Yard in NW 6-37-27 W4M**

September 30, 1950

June 2021

REF.: 5646-200-3
(Presite)

Figure 2-A



Map Location: Y:\01_GIS\Project\005600_Proj\5646_GIS5646_Presite_Fig02.mxd

SCALE: 1:4,000

25 0 25 50 m

Drafted: NG Date: June 1, 2021
Approved: XXX Revision: 1
Route Source: Date: Dec 21, 2020
Survey Revision: 0

Data Sources:
Imagery Source: ESRI, Dte: 2018/01/15
Aerial Photography from the Air Photo Distribution Office,
Alberta Environment and Parks (under Crown copyright).
Date of Imagery: 1950, 1966, 1969, 1975, 1977, 1983, 1998, 2002, & 2007.
ATS Grid: AltaLIS 2007.

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Routing:

Public Works Yard Access Road

Best-Fit Desktop Delineations*:

Ephemeral Drainage

Watercourse

Wetland



**Historical Imagery Review
for the Proposed Town of
Penhold Public Works
Yard in NW 6-37-27 W4M**

August 21, 1966

June 2021

REF.: 5646-200-3
(Presite)

Figure 2-B

*Approximate location based on historical aerial imagery review.



Map Location: Y:\01_GIS\Project\005600_Proj\5646_GIS5646_Presite_Fig02.mxd

SCALE: 1:4,000	Drafted: NG Date: June 1, 2021
m	Approved: XXX Revision: 1
25 0 25 50	Route Source: Date: Dec 21, 2020
Survey Revision: 0	

Data Sources:
Imagery Source: ESRI. Dte: 2018/01/15
Aerial Photography from the Air Photo Distribution Office,
Alberta Environment and Parks (under Crown copyright).
Date of Imagery: 1950, 1966, 1969, 1975, 1977, 1983, 1998, 2002, & 2007.
ATS Grid: AltaLIS 2007.

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Legend

- | | | | |
|---------------------------------|--------------------|--|-------------|
| | Public Works Yard | | Access Road |
| <hr/> | | | |
| Best-Fit Desktop Delineations*: | | | |
| <hr/> | | | |
| | Ephemeral Drainage | | Watercourse |
| <hr/> | | | |
| | Wetland | | |

*Approximate location based on historical aerial imagery review.



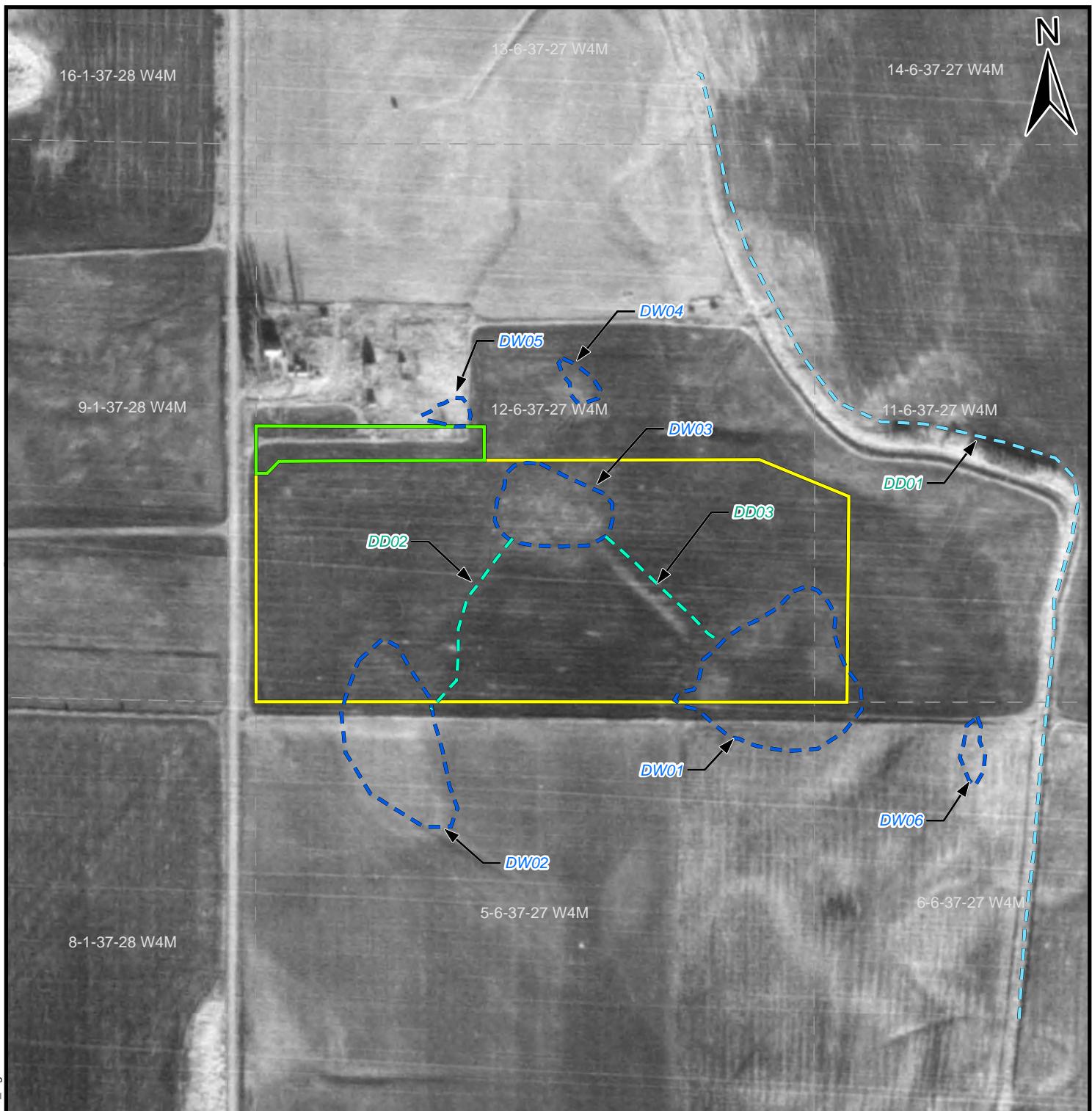
**Historical Imagery Review
for the Proposed Town of
Penhold Public Works
Yard in NW 6-37-27 W4M**

July 2, 1969

June 2021

REF.: 5646-200-3
(Presite)

Figure 2-C



Map Location: Y:\01_GIS\Project\005600_Proj\5646_GIS5646_Presite_Fig02.mxd

SCALE: 1:4,000	Drafted: NG Date: June 1, 2021
m	Approved: XXX Revision: 1
25 0 25 50	Route Source: Date: Dec 21, 2020 Survey Revision: 0

Data Sources:
Imagery Source: ESRI, Dte: 2018/01/15
Aerial Photography from the Air Photo Distribution Office,
Alberta Environment and Parks (under Crown copyright).
Date of Imagery: 1950, 1966, 1969, 1975, 1977, 1983, 1998, 2002, & 2007.
ATS Grid: AltaLIS 2007.

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Legend

- | | | | |
|---------------------------------|--------------------|--|-------------|
| | Public Works Yard | | Access Road |
| <hr/> | | | |
| Best-Fit Desktop Delineations*: | | | |
| | Ephemeral Drainage | | |
| | Watercourse | | |
| | Wetland | | |

*Approximate location based on historical aerial imagery review.

**TAGISH
ENGINEERING**

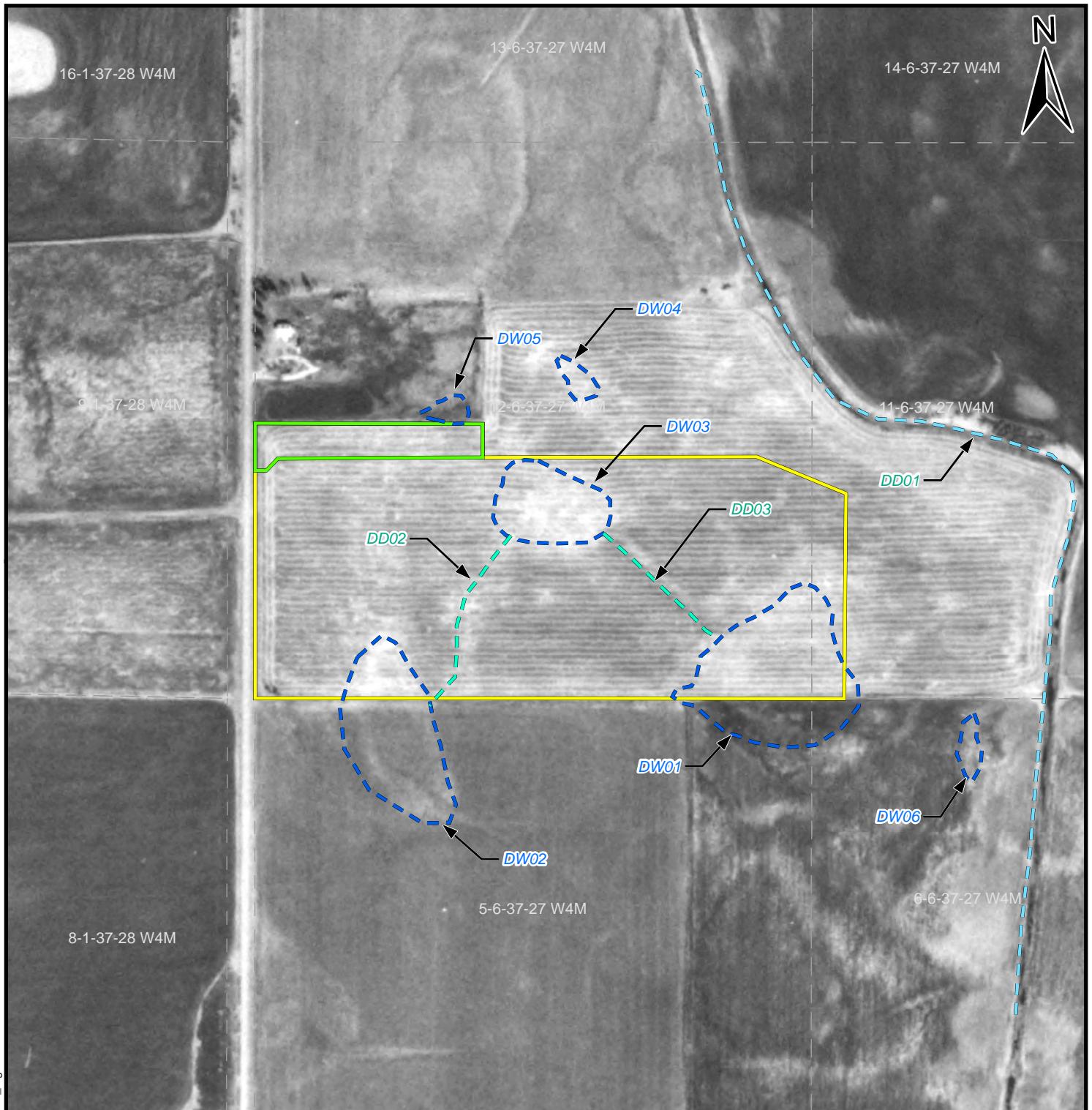
**Historical Imagery Review
for the Proposed Town of
Penhold Public Works
Yard in NW 6-37-27 W4M**

November 17, 1975

June 2021

REF.: 5646-200-3
(Presite)

Figure 2-D



Map Location: Y:\01_GIS\Project\005600_Proj\5646_GIS5646_Presite_Fig02.mxd

SCALE: 1:4,000	Drafted: NG Date: June 1, 2021
m	Approved: XXX Revision: 1
25 0 25 50	Route Source: Date: Dec 21, 2020
	Survey Revision: 0

Data Sources:
Imagery Source: ESRI. Dte: 2018/01/15
Aerial Photography from the Air Photo Distribution Office,
Alberta Environment and Parks (Under Crown copyright).
Date of Imagery: 1950, 1966, 1969, 1975, 1977, 1983, 1998, 2002, & 2007.
ATS Grid: AltaLIS 2007.

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Legend

- | | | | |
|--|--------------------|--|-------------|
| | Public Works Yard | | Access Road |
| <hr/> | | | |
| Best-Fit Desktop Delineations*: | | | |
| | Ephemeral Drainage | | |
| | Watercourse | | |
| | Wetland | | |

*Approximate location based on historical aerial imagery review.



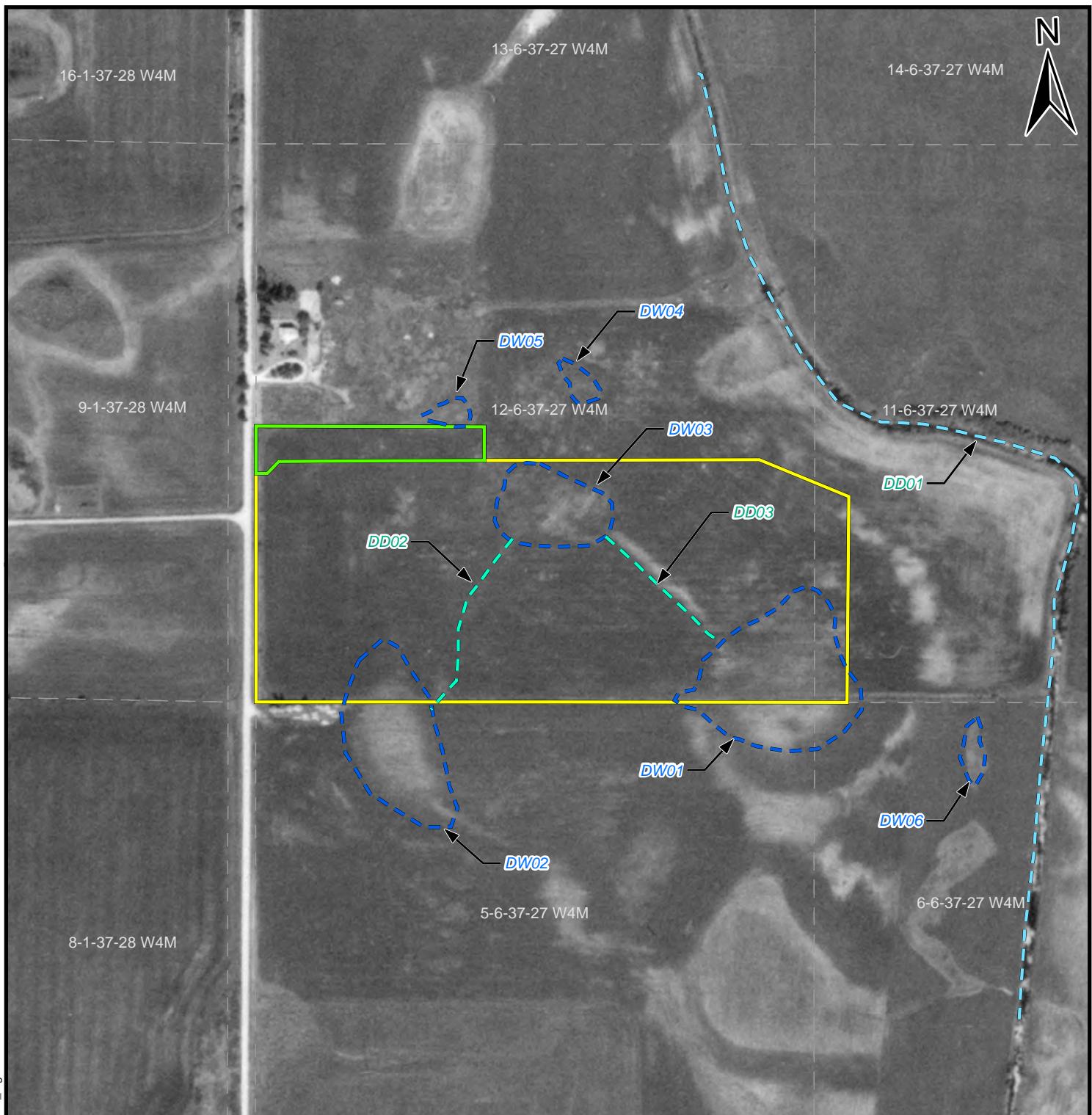
**Historical Imagery Review
for the Proposed Town of
Penhold Public Works
Yard in NW 6-37-27 W4M**

April 26, 1977

June 2021

REF.: 5646-200-3
(Presite)

Figure 2-E



Map Location: Y:\01_GIS\Project\00_5600_Proj\5646_GIS5646_Presite_Fig02.mxd

SCALE: 1:4,000	Drafted: NG Date: June 1, 2021
m	Approved: XXX Revision: 1
25 0 25 50	Route Source: Date: Dec 21, 2020
	Survey Revision: 0

Data Sources:
Imagery Source: ESRI, Dte: 2018/01/15
Aerial Photography from the Air Photo Distribution Office,
Alberta Environment and Parks (Under Crown copyright).
Date of Imagery: 1950, 1966, 1969, 1975, 1977, 1983, 1998, 2002, & 2007.
ATS Grid: AltaLIS 2007.

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Legend

Public Works Yard Access Road

Best-Fit Desktop Delineations*:

Ephemeral Drainage

Watercourse

Wetland



**Historical Imagery Review
for the Proposed Town of
Penhold Public Works
Yard in NW 6-37-27 W4M**

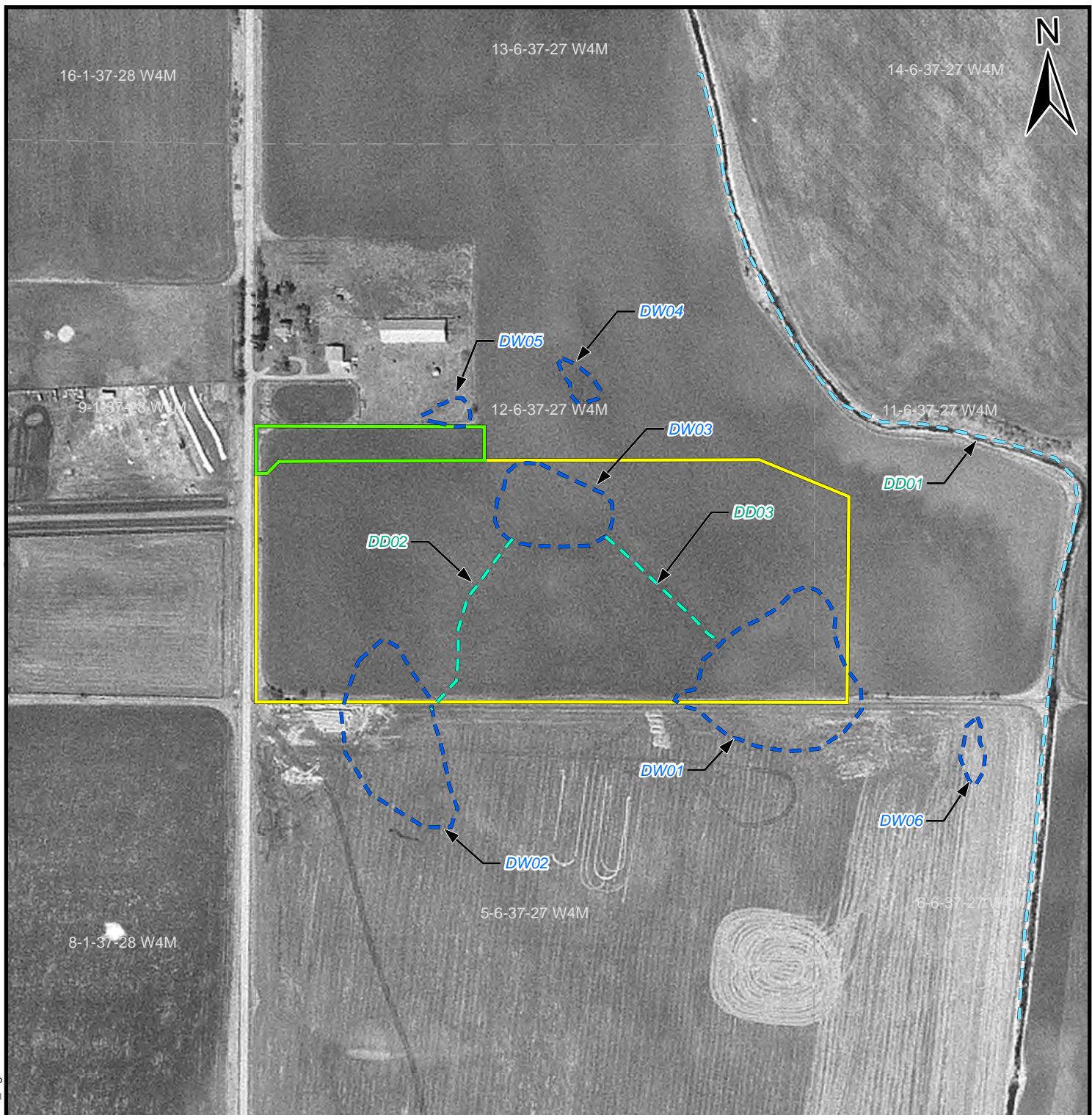
July 18, 1983

June 2021

REF.: 5646-200-3
(Presite)

Figure 2-F

*Approximate location based on historical aerial imagery review.



Map Location: Y:\01_GIS\Project\005600_Proj\5646_GIS5646_Presite_Fig02.mxd

SCALE: 1:4,000	Drafted: NG Date: June 1, 2021
25 0 25 50	Approved: XXX Revision: 1
Survey	Date: Dec 21, 2020
	Revision: 0

Data Sources:
Imagery Source: ESRI, Dte: 2018/01/15
Aerial Photography from the Air Photo Distribution Office,
Alberta Environment and Parks (under Crown copyright).
Date of Imagery: 1950, 1966, 1969, 1975, 1977, 1983, 1998, 2002, & 2007.
ATS Grid: AltaLIS 2007.

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Legend

- | | |
|--|-------------|
| Public Works Yard | Access Road |
| Best-Fit Desktop Delineations*: | |
| Ephemeral Drainage | |
| Watercourse | |
| Wetland | |

*Approximate location based on historical aerial imagery review.

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**Historical Imagery Review
for the Proposed Town of
Penhold Public Works
Yard in NW 6-37-27 W4M**

May 4, 1998

June 2021

REF.: 5646-200-3
(Presite)

Figure 2-G



Map Location: Y:\01_GIS\Project\005600_Proj\5646_GIS5646_Presite_Fig02.mxd

SCALE: 1:4,000	Drafted: NG Date: June 1, 2021
	Approved: XXX Revision: 1
Survey Source: Date: Dec 21, 2020	Route Source: Revision: 0

Data Sources:
Imagery Source: ESRI, Dte: 2018/01/15
Aerial Photography from the Air Photo Distribution Office,
Alberta Environment and Parks (Under Crown copyright).
Date of Imagery: 1950, 1966, 1969, 1975, 1977, 1983, 1998, 2002, & 2007.
ATS Grid: AltaLIS 2007.

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Legend

Public Works Yard Access Road

Best-Fit Desktop Delineations*:

Ephemeral Drainage

Watercourse

Wetland

**TAGISH
ENGINEERING**

**Historical Imagery Review
for the Proposed Town of
Penhold Public Works
Yard in NW 6-37-27 W4M**

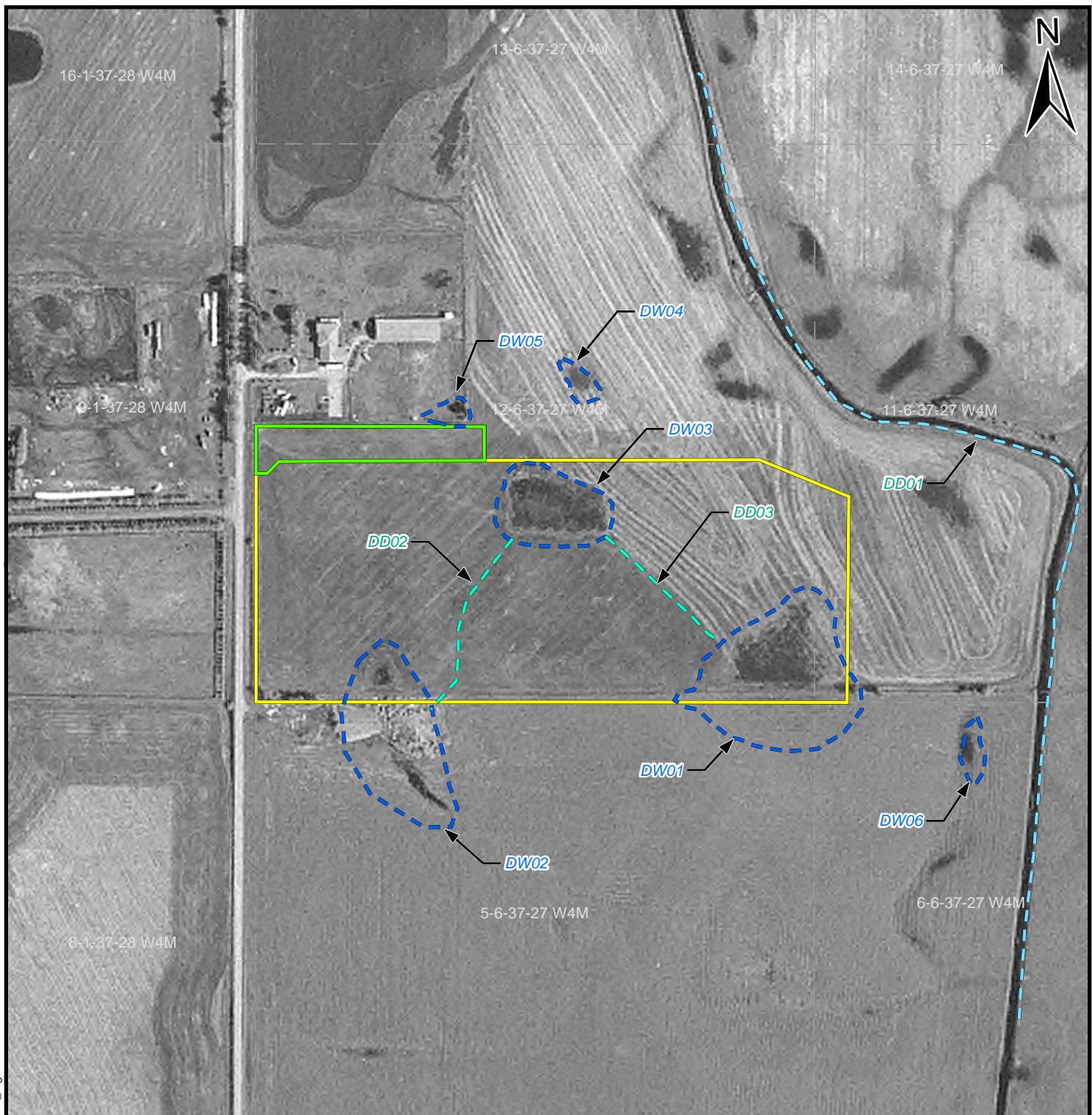
August 17, 2002

June 2021

REF.: 5646-200-3
(Presite)

Figure 2-H

*Approximate location based on historical aerial imagery review.



Map Location: Y:\01_GIS\Project005600_Proj\5646_GIS5646_Presite_Fig02.mxd

SCALE: 1:4,000	Drafted: NG Date: June 1, 2021
m	Approved: XXX Revision: 1
25 0 25 50	Route Source: Date: Dec 21, 2020 Survey Revision: 0

Data Sources:
Imagery Source: ESRI, Dte: 2018/01/15
Aerial Photography from the Air Photo Distribution Office,
Alberta Environment and Parks (under Crown copyright).
Date of Imagery: 1950, 1966, 1969, 1975, 1977, 1983, 1998, 2002, & 2007.
ATS Grid: AltaLIS 2007.

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that errors in the data may be present.



Legend

- | | | | |
|---------------------------------|--------------------|-------|-------------|
| | Public Works Yard | | Access Road |
| <hr/> | | | |
| Best-Fit Desktop Delineations*: | | | |
| | Ephemeral Drainage | | Watercourse |
| | Wetland | <hr/> | |

*Approximate location based on historical aerial imagery review.

**TAGISH
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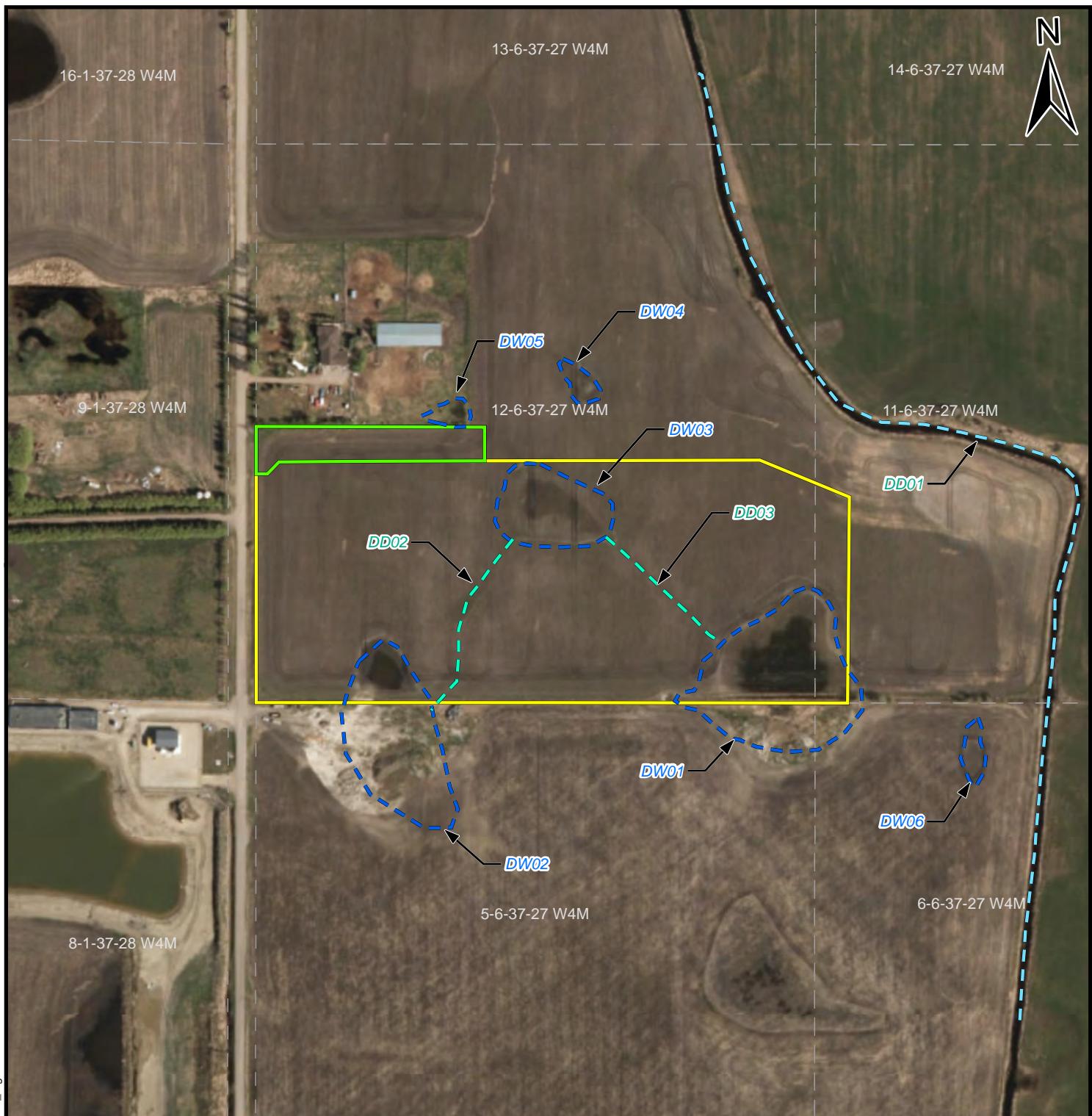
**Historical Imagery Review
for the Proposed Town of
Penhold Public Works
Yard in NW 6-37-27 W4M**

June 1, 2007

June 2021

REF.: 5646-200-3
(Presite)

Figure 2-I



Map Location: Y:\01_GIS\Project005600_Proj\5646_GIS5646_Presite_Fig02.mxd

SCALE: 1:4,000	Drafted: NG Date: June 1, 2021
m	Approved: XXX Revision: 1
25 0 25 50	Route Source: Date: Dec 21, 2020 Survey Revision: 0

Data Sources:
Imagery Source: ESRI, Dte: 2018/01/15
Aerial Photography from the Air Photo Distribution Office, Alberta Environment and Parks (under Crown copyright).
Date of Imagery: 1950, 1966, 1969, 1975, 1977, 1983, 1998, 2002, & 2007.
ATS Grid: AltaLIS 2007.

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Legend

Public Works Yard Access Road

Best-Fit Desktop Delineations*:

- Ephemeral Drainage
- Watercourse
- Wetland

TAGISH
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**Historical Imagery Review
for the Proposed Town of
Penhold Public Works
Yard in NW 6-37-27 W4M**

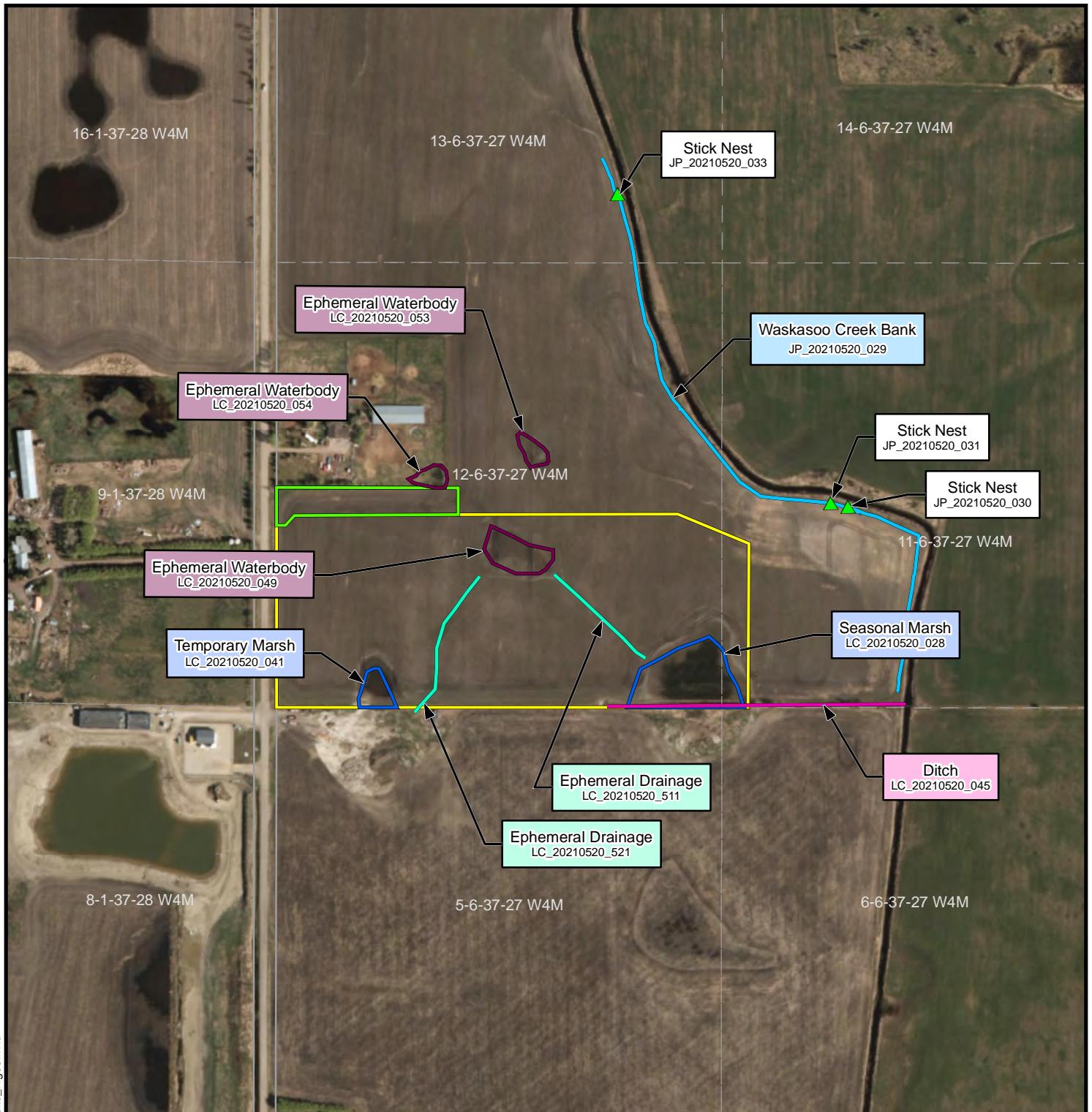
January 15, 2018

June 2021

REF.: 5646-200-3
(Presite)

Figure 2-J

*Approximate location based on historical aerial imagery review.



Map Location: Y:\01_GIS\Project00_5600_Proj5646_GIS\5646_Proj5646_Presite_Fig03.mxd

SCALE: 1:5,000	Drafted: JNB	Date: June 4, 2021
40 0 40 80 m	Approved: XXX	Revision: 1
Route Source: Date: Dec 21, 2020		
Survey Revision: 0		

Data Sources:
Imagery Source: ESRI. Dte: 2018/01/15
ATS Grid: AltaLIS 2007.

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Legend

Public Works Yard Access Road

Biophysical Issues*:

- Biophysical Issue
- Ditch
- Waskasoo Creek Bank
- Ephemeral Waterbody
- Wetland Boundary
- Ephemeral Drainage

*Approximate location based on field survey.

TAGISH
ENGINEERING

**Field Results for the
Proposed Town of
Penhold Public Works
Yard in NW 6-37-27 W4M**

June 2021

REF.: 5646-200-3
(Presite)

Figure 3

APPENDIX B

PHOTO PLATES



Plate 1

Date: May 20, 2021

Location of Photo: NW 6-37-27
W4M

Photo Direction: Southeast

Description: Wetland DW02
(temporary marsh) showing
increasing slope to the right and
the edge of a debris pile adjacent
to where the wetland was desktop
delineated (Appendix A: Figure 2:
LC_20210520_041)



Plate 2

Date: May 20, 2021

Location of Photo: NW 6-37-27
W4M

Photo Direction: East-southeast

Description: Wetland DW01, a
seasonal marsh containing
standing water (Appendix A:
Figure 2: LC_20210520_028).



Plate 3

Date: May 20, 2021

Location of Photo: NW 6-37-27
W4M

Photo Direction: West-southwest

Description: Ditch and culvert
along fence line at south end of
wetland DW01 (Appendix A:
Figure 2: LC_20210520_045)



Plate 4

Date: May 20, 2021

Location of Photo: NW 6-37-27
W4M

Photo Direction: Southeast

Description: Example of an
ephemeral water body (DW03)
which has been ploughed
(Appendix A: Figure 2:
LC_20210520_049)

