

**CAPITAL POWER CORPORATION**

**Alberta Utilities Commission Application  
Halkirk 2 Wind Power Project**

**APRIL 2017**

## TABLE OF CONTENTS

<b><u>SECTION</u></b>	<b><u>PAGE</u></b>
PP.1	Identify the sections of the <i>Hydro and Electric Energy Act</i> under which the application is made. ....1
PP.2	Identify any other acts (e.g., <i>Environmental Protection and Enhancement Act</i> , <i>Water Act</i> and <i>Wildlife Act</i> ) that may affect the project. ....1
PP.3	State the approvals that are being applied for from the Commission, and provide a draft of the approval being requested. ....1
PP.4	Provide a list of existing approvals for facilities directly affected by this project, if any. ....2
PP.5	Provide details and outcome of consultation with local jurisdictions (e.g., municipal districts, counties).....2
PP.6	Provide a list of parties that may be affected by the project, confirm that these parties have no concerns regarding the application, and indicate which other agreements are necessary to carry out the project. ....2
PP.7	For wind power plants, provide a copy of approval from Transport Canada for any structures 20 metres or taller and an evaluation for NAV Canada. ....3
PP.8	For wind power plants, provide a copy of an assessment from Environment Canada regarding the potential for interference with weather radars. For assessments in which Environment Canada has identified the potential for significant interference with weather radar, also provide a copy of a mitigation agreement to be concluded with Environment Canada prior to operation of the wind power plant. No wind power plant will be permitted within a five-kilometre radius, or as otherwise agreed to by Environment Canada, of a federal weather radar station due to the significant interference to Environment Canada’s ability to accurately forecast the weather. ....3
PP.9	Provide a copy of the approval from Alberta Transportation if a wind power plant that is within 300 metres of a numbered highway is being applied for. ....3
PP.10	Confirm that an application to AEP has been made, if applicable, and list all other government departments and agencies from which approval is required. For all power plant applications, a local AEP wildlife biologist must be consulted, unless the project is located within an urban area without nearby wildlife habitat. The Commission requires a sign-off from AEP prior to processing any new wind power or solar power applications. ....3
PP.11	With respect to new facilities or alterations, that may have historical, archaeological or paleontological impacts, confirm that a Historical Resources Act approval has been obtained or is being applied for. If a historical impact assessment is required, briefly describe any historical, archaeological or paleontological sites close to the power plant site. Please ensure that any summary provided protects the confidential location of any historical, archaeological or paleontological resources. ....4
PP.12	Provide the ISO assigned asset identification code, if available. ....4
PP.13	Provide the legal description of the proposed power plant site (legal subdivision [LSD], Section, Township, Range, Meridian and/or Plan, Block, Lot, municipal address for urban parcels) and connection point, if applicable. ....4

PP.14	For wind power plant applications, provide the longitude and latitude coordinates for the centre of each structure supporting a wind-powered generator. If, after approval is granted, the location of any supporting structure has to be relocated more than 50 metres from the coordinates stated in the application, the power plant proponent must reapply to the Commission for approval to relocate the structure prior to construction. For movement of less than 50 metres, the applicant is not required to reapply unless there is an adverse impact on the permissible sound level or wildlife setback distances. ....	9
PP.15	Describe the number of generating units and the total capability (kilovolt-ampere [kVA], or megavolt-ampere [MVA]) for the project. ....	11
PP.16	Describe the existing environmental and land use conditions in the local study area, and discuss potential siting and land use issues. Also, describe the regional setting of the development including regional land use plans in force (e.g., the Lower Athabasca Regional Plan). If applicable, include maps showing important environmental features and sensitive areas in the local study area. ....	12
PP.17	At a level of detail commensurate with the size and type of potential effect(s) of the project, complete and submit an environmental evaluation of the project and provide a sign-off from AEP addressing the environmental aspects of the project that AEP is satisfied with. An environmental evaluation describes and predicts a project's effects on the environment before the project is actually carried out, and the measures to avoid or mitigate the project's predicted adverse environmental effects and any monitoring proposed to evaluate the efficacy of those measures. The purpose of an environmental evaluation is to ensure that enough information is provided by the applicant to inform the public and government agencies about the applicant's understanding of the consequences of its project, and to help the AUC determine if the project is in the public interest. The environmental evaluation should be conducted or overseen by an individual or individuals who possess appropriate environmental experience related to the type and scale of development. An environmental evaluation should: ....	13
PP.18	If the project site occurs within the plan boundaries of a regional land use plan in force:.....	14
PP.19	Describe the participant involvement information. (See Appendix A – Participant involvement program requirements). ....	14
PP.20	List all occupants, residents and landowners on lands within the appropriate notification radius as determined using Appendix A1– Participant involvement program guidelines, as well as other interested persons that were consulted as part of the participant involvement program. If there are populated areas just outside the minimum notification distance, applicants should consider including those areas in the participant involvement program. ....	15
PP.21	Supply a list of mailing addresses, with corresponding land locations and two sets of printed mailing labels of those parties mentioned in PP20, above.....	15
PP.22	Identify any persons who expressed concerns about the project and the specifics of their concerns.....	15
PP.23	Summarize discussions held with potentially directly and adversely affected persons.....	15
PP.24	If potentially directly and adversely affected persons raised any concerns, describe how these concerns were dealt with or are being dealt with.....	15
PP.25	For those potentially directly and adversely affected persons identified above, include a confirmation of resolution of the concerns, if applicable.....	15

---

PP.26	If the power plant is to be located within oil and gas facility, confirm the power plant will comply with the standards outlined in sections 8.090 of the <i>Oil and Gas Conservation Rules</i> .....	16
PP.27	Provide a noise impact assessment (NIA), in accordance with the current AUC Rule 012. ....	16
PP.28	For an application where no changes to the major components of the power generating equipment are contemplated after filing the application, provide details of the power generating equipment and associated facilities, such as make, model and nominal capability. ....	16
PP.29	For an application where vendors which are to supply the major components of the power generating equipment have not been selected, provide the nominal capability of the applied-for power plant and the design and maximum operating parameters, and characteristics specified for the power generating equipment and associated facilities. ....	18
PP.30	Present the estimated power plant heat rates, efficiency of the power plant and details of the cooling system for the power plant. ....	18
PP.31	State the fuel requirements of the power plant, including type, source, method of handling, transportation, process storage and environmental effects. ....	18
PP.32	Provide a legible plant site drawing showing all major equipment components.....	18
PP.33	Provide a legible map showing the power plant site boundaries and land ownership, including any residences and dwellings within the appropriate notification radius as determined using Appendix A1– Participant involvement program guidelines, as well as any additional energy-related facilities within the project area. ....	20
PP.34	Provide a legible map of the project area suitable for use in a public notice.....	23
PP.35	Supply the expected in-service dates, and describe ramifications if the approval date cannot be met. ....	25
PP.36	Indicate the plant’s emission rates, in kilograms per megawatt-hour (kg/MWh) of nitrogen oxides (NO <sub>x</sub> ), sulphur dioxide (SO <sub>2</sub> ), and primary particulate matter, and state whether the emissions will comply with the current Alberta Air Emission Standards for Electricity Generation and any other emission standards or guidelines that are applicable to the proposed project. ....	25
PP.37	State whether the proposed plant will comply with the Alberta Ambient Air Quality Objectives and Guidelines and any other standards or guidelines that are applicable to the proposed project for ground-level concentrations of pollutants. ....	25
PP.38	Provide the federal environmental assessment or provincial environmental impact assessment as an appendix to the application, if one was required by a federal or provincial authority. The applicant must obtain approval from AEP for thermal power plant facilities greater than one megawatt in total capability at one site. An environmental impact assessment is mandatory for thermal power plant facilities that use non-gaseous fuel and are greater than 100 megawatts in total capability; an environmental impact assessment may be required for other power plant facilities regardless of total capability. When an environmental impact assessment is not mandatory, AEP will determine if it is necessary, based on the specific nature of the project. The applicant should consult with the Commission and AEP in the initial stages of preparing its application to determine the level of detail required. ....	26
PP.39	If the power plant is to be connected to the transmission system of the Alberta Interconnected Electric System, irrespective of voltage level, provide the following information: .....	26

---



PP.40	If the power plant is to be connected at distribution voltage level to the Alberta Interconnected Electric System (generally less than 69 kV), the applicant must provide a statement from the distribution facility owner indicating that it is willing to connect the generating facilities. ....27
PP.41	For a municipality or a subsidiary of a municipality to hold an interest in a generating unit, documentation confirming compliance with Section 95 of the <i>Electric Utilities Act</i> is required. ....27
PP.42	For a wind power plant application, provide legible maps and/or air photo mosaics upon which the proposed collector power line route or routes have been imposed and showing the residences, landowner names, and major land use and resource features (e.g., vegetation, topography, soil type, existing land use, existing rights-of-way, and superficial and mineable resources). ....27

### **LIST OF TABLES**

Table 2-1	Authorizations and Approvals Required for the Halkirk 2 Wind Power Project ..... 1
Table 14-1	Wind Turbine Coordinates for the Project ..... 9
Table 28-1	Vestas V110 2.0-Megawatt Turbine Technical Specifications ..... 17
Table 35-1	Construction Schedule..... 25

### **LIST OF FIGURES**

Figure 32-1	Site Layout ..... 19
Figure 33-1	Consultation and Notification Landowners ..... 21
Figure 33-2	Existing Energy-Related Facilities ..... 22
Figure 34-1	Project Area Map for Public Notice ..... 24
Figure 42-1	Proposed Collector System ..... 28

### **LIST OF ATTACHMENTS**

Attachment A	Draft Approval
Attachment B	Letter from the County of Paintearth
Attachment C	Participant Involvement Program
Attachment D	Transport Canada Application
Attachment E	Nav Canada Application
Attachment F	Environment Canada Weather Radar Assessment
Attachment G	Alberta Transportation Application
Attachment H	Environmental Evaluation
Attachment I	Post-Construction Monitoring and Mitigation Plan
Attachment J	Environment Evaluation Addendum
Attachment K	Alberta Environment and Parks Referral Letter
Attachment L	Historical Resource Act Clearance
Attachment M	Noise Impact Assessment
Attachment N	Functional Specifications

## LIST OF ABBREVIATIONS

ACT	Alberta Culture and Tourism
AEP	Alberta Environment and Parks
AESO	Alberta Electric System Operator
AUC	Alberta Utilities Commission
ESAs	Environmentally Significant Areas
HEEA	<i>Hydro and Electric Energy Act</i>
HRA	<i>Historical Resources Act</i>
NIA	Noise Impact Assessment
NO <sub>x</sub>	nitrogen oxides
O&M	Operation and Maintenance
PIP	Participation Involvement Program
SCADA	supervisory control and data acquisition
SO <sub>2</sub>	sulphur dioxide
SoJ	Statement of Justification

## LIST OF MEASUREMENT UNITS

kg/MWh	kilograms per megawatt-hour
km	kilometres
KV	kilovolt
kVA	kilovolt-ampere
m	metres
MVA	megavolt-ampere
MW	megawatt
V	volts

**PP.1 Identify the sections of the *Hydro and Electric Energy Act* under which the application is made.**

Capital Power hereby applies to the Alberta Utilities Commission (AUC) for approval to construct and operate the Halkirk 2 Wind Power Project (the Project) pursuant to Section 11 of the *Hydro and Electric Energy Act* (HEEA: RSA 2000, c. H-16). This application is made subject to all applicable provisions of the *HEEA* and *Alberta Utilities Commission Act* (SA 2007, c. A-37.2), and any regulations, orders, or Commission rules made pursuant to those Acts. This application has been prepared in accordance with *AUC Rule 007: Applications for Power Plants, Substations, Transmission Lines, Industrial System Designations and Hydro Developments* (2016).

**PP.2 Identify any other acts (e.g., *Environmental Protection and Enhancement Act*, *Water Act* and *Wildlife Act*) that may affect the project.**

Capital Power anticipates that the Project will require authorizations or approvals under the Acts and Regulations described in Table 2-1.

**Table 2-1 Authorizations and Approvals Required for the Halkirk 2 Wind Power Project**

Regulator	Act or Regulation	Application	Status
<b>Federal</b>			
Transport Canada	<i>Canadian Aviation Regulations</i> SOR/96-443	Aeronautical Assessment Form for Obstruction and Lighting	Submitted to Transport Canada on February 15, 2017
NAV Canada	<i>Canadian Aviation Regulations</i> SOR/96-443	Land Use Proposal	Submitted to NAV Canada February 16, 2017
Environment Canada	–	Request for assessment of potential interference with weather radar	Response from Environment Canada received February 17, 2017, indicating no strong objection to the Project.
National Defence Canada	–	Request for assessment of potential interference with defence radar	Submitted to National Defence Canada on February 23, 2017
<b>Provincial</b>			
Alberta Environment and Parks (AEP)	<i>Water Act</i>	<i>Water Act</i> Application and Wetland Impact Assessment Report	Submission to AEP expected in Q3 2017.
Alberta Culture and Tourism (ACT)	<i>Historical Resources Act (HRA)</i>	Statement of Justification (SoJ)	HRA clearance received February 8, 2017 (HRA number 4941-06-0008-002)
Ministry of Transportation	<i>Highways Development and Protection Act</i>	Roadside Development Application	Received Roadside Development Permits for turbines within setback of Highway 861 from Ministry of Transportation on March 24, 2017.
<b>Municipal</b>			
County of Paintearth	County of Paintearth Land Use Bylaw 593-09	Development Permit Application	Submission to the County of Paintearth expected in Q2 2017

**PP.3 State the approvals that are being applied for from the Commission, and provide a draft of the approval being requested.**

Capital Power is applying to the AUC pursuant to Section 11 of the *HEEA* to construct and operate the Project, a nominal nameplate capacity 148 MW wind power project located approximately

5 kilometres (km) north of the existing Halkirk Wind Power Facility in the County of Paintearth, Alberta. A copy of the draft approval is provided in Attachment A. A separate application will be submitted, pursuant to Section 14 of the *HEEA*, for a permit to construct and a licence to operate a substation.

**PP.4 Provide a list of existing approvals for facilities directly affected by this project, if any.**

Not applicable. The Project is not expected to directly affect any existing facilities.

**PP.5 Provide details and outcome of consultation with local jurisdictions (e.g., municipal districts, counties).**

Since late 2015, Capital Power has been in regular contact with the County of Paintearth relating to development permitting for the Project, including ongoing communications with the County of Paintearth Development Officer and Chief Administrative Officer. This includes engagement with the County of Paintearth during its process to update its Land Use Bylaws (June 2016) related to wind energy conversion systems.

The County of Paintearth has been cooperative and helpful regarding Capital Power's processes related to Project development. The County of Paintearth has worked with the company, answered questions, provided guidance, shared lessons learned on their involvement with previous wind projects and facilitated processes related to the Project's requirements. Attached is a letter from the County of Paintearth detailing its contact with Capital Power to-date (Attachment C).

A summary of email correspondence, phone conversations, and Council presentations between Capital Power and the County of Paintearth representatives (and Council members) is provided in Section 4.3 of the Attachment C.

**PP.6 Provide a list of parties that may be affected by the project, confirm that these parties have no concerns regarding the application, and indicate which other agreements are necessary to carry out the project.**

Information on Capital Power's efforts to notify and engage various parties potentially affected by the Project is provided in Section 4.0 of the Participation Involvement Program (PIP) Report (Attachment C). This includes a description of concerns raised by the parties and how these concerns were addressed by Capital Power.

**Discussions with ATCO Electric**

Since January 2016, Capital Power has consulted with ATCO Electric on the following matters and considerations:

- Tincobra 972S substation setback and existing 9L16 transmission line;
- Point-to-point communication between Tincobra 972S and Cordel 755S substations;
- ATCO Electric's plans to potentially twin the Eastern Alberta Transmission Line; and
- Coordination of a new line between the Goldeye 620S and Tincobra 972S substations.

A summary of consultation between Capital Power and ATCO Electric is provided in Attachment C (Section 4.4 and Appendix C-13: CP Contact with ATCO Electric [Summary Table]).

The transmission line and any proposed changes to the existing substation are subject to a separate application to the AUC by ATCO Electric, the intended Transmission Facility Operator. The transmission infrastructure, including any potential environmental effects, is outside of the scope of this Power Plant Application because it is directly assigned by the Alberta Electric System Operator (AESO) to ATCO Electric for planning, construction, and operation.

**PP.7 For wind power plants, provide a copy of approval from Transport Canada for any structures 20 metres or taller and an evaluation for NAV Canada.**

The Aeronautical Assessment Form for Obstruction Marking and Lighting, submitted to Transport Canada on February 15, 2017 and the Land Use Application submitted to NAV Canada on February 16, 2017, are provided in Attachment D and Attachment E. A copy of the approval from Transport Canada and the evaluation from NAV Canada will be provided to the AUC, once Capital Power has received them.

**PP.8 For wind power plants, provide a copy of an assessment from Environment Canada regarding the potential for interference with weather radars. For assessments in which Environment Canada has identified the potential for significant interference with weather radar, also provide a copy of a mitigation agreement to be concluded with Environment Canada prior to operation of the wind power plant. No wind power plant will be permitted within a five-kilometre radius, or as otherwise agreed to by Environment Canada, of a federal weather radar station due to the significant interference to Environment Canada's ability to accurately forecast the weather.**

A copy of the Environment Canada assessment is provided in Attachment F.

**PP.9 Provide a copy of the approval from Alberta Transportation if a wind power plant that is within 300 metres of a numbered highway is being applied for.**

A copy of the Alberta Transportation approval is provided in Attachment G.

**PP.10 Confirm that an application to AEP has been made, if applicable, and list all other government departments and agencies from which approval is required. For all power plant applications, a local AEP wildlife biologist must be consulted, unless the project is located within an urban area without nearby wildlife habitat. The Commission requires a sign-off from AEP prior to processing any new wind power or solar power applications.**

An Environmental Evaluation Report (Attachment H) and Post-Construction Monitoring and Mitigation Plan (Attachment I) for the Project were submitted to AEP, on February 23, 2017. Capital Power met with AEP on March 14, to discuss the project design, the results of the Environmental Evaluation Report and the Post-Construction Monitoring and Mitigation Plan. AEP regional biologist requested clarification on predicted adverse effects to native prairie and wetlands and further information on the

acoustic bat monitoring data. This information was provided in an Addendum to the Environmental Evaluation Report on March 29, 2017 (Attachment J), and AEP provided a Renewable Energy Referral Report (sign-off) for the project on April 13, 2017 (Attachment K).

**PP.11 With respect to new facilities or alterations, that may have historical, archaeological or paleontological impacts, confirm that a Historical Resources Act approval has been obtained or is being applied for. If a historical impact assessment is required, briefly describe any historical, archaeological or paleontological sites close to the power plant site. Please ensure that any summary provided protects the confidential location of any historical, archaeological or paleontological resources.**

A SoJ was prepared for the Project and submitted to ACT on January 6, 2017. On February 8, 2017, ACT provided *Historical Resources Act* clearance (HRA Number 4941-16-0008-002). A copy of the approval from ACT Tourism is provided in Attachment L.

**PP.12 Provide the ISO assigned asset identification code, if available.**

The ISO assigned asset identification code for the Project is HAL2.

**PP.13 Provide the legal description of the proposed power plant site (legal subdivision [LSD], Section, Township, Range, Meridian and/or Plan, Block, Lot, municipal address for urban parcels) and connection point, if applicable.**

The legal description of the Project Area is provided in Table 13-1. The substation will be located in the northeast quarter section of Section 35, Township 39, Range 15 and west of the fourth meridian (NE 35-39-15 W4M; UTM: 428790 E, 5806451 N, NAD 83, Zone 12). A separate AUC Rule 007 Facility Application for the associated substation for the Project will be submitted to the AUC for its review.

**Table 13-1 Legal Land Description of the Project Area**

Quarter	Section	Township	Range	Meridian
NE	31	39	13	4
NW	31	39	13	4
SE	31	39	13	4
SW	31	39	13	4
NE	25	39	14	4
NW	25	39	14	4
SE	25	39	14	4
SW	25	39	14	4
NE	26	39	14	4
NW	26	39	14	4
SE	26	39	14	4

**Table 13-1 Legal Land Description of the Project Area**

Quarter	Section	Township	Range	Meridian
SW	26	39	14	4
NE	27	39	14	4
NW	27	39	14	4
SE	27	39	14	4
SW	27	39	14	4
NE	28	39	14	4
NW	28	39	14	4
SE	28	39	14	4
SW	28	39	14	4
NE	29	39	14	4
NW	29	39	14	4
SE	29	39	14	4
NE	30	39	14	4
NW	30	39	14	4
SE	30	39	14	4
SW	30	39	14	4
NE	31	39	14	4
NW	31	39	14	4
SE	31	39	14	4
SW	31	39	14	4
NE	32	39	14	4
NW	32	39	14	4
SE	32	39	14	4
SW	32	39	14	4
NE	33	39	14	4
NW	33	39	14	4
SE	33	39	14	4
SW	33	39	14	4
NE	34	39	14	4
NW	34	39	14	4
SE	34	39	14	4
SW	34	39	14	4
NE	35	39	14	4
NW	35	39	14	4
SE	35	39	14	4
SW	35	39	14	4

**Table 13-1 Legal Land Description of the Project Area**

Quarter	Section	Township	Range	Meridian
NE	36	39	14	4
NW	36	39	14	4
SE	36	39	14	4
SW	36	39	14	4
NE	25	39	15	4
NW	25	39	15	4
SE	25	39	15	4
SW	25	39	15	4
NE	26	39	15	4
NW	26	39	15	4
SE	26	39	15	4
SW	26	39	15	4
NE	33	39	15	4
SE	33	39	15	4
NE	34	39	15	4
NW	34	39	15	4
SE	34	39	15	4
SW	34	39	15	4
NE	35	39	15	4
NW	35	39	15	4
SE	35	39	15	4
SW	35	39	15	4
NE	36	39	15	4
NW	36	39	15	4
SE	36	39	15	4
SW	36	39	15	4
NE	6	40	13	4
NW	6	40	13	4
SE	6	40	13	4
SW	6	40	13	4
NE	1	40	14	4
NW	1	40	14	4
SE	1	40	14	4
SW	1	40	14	4
NE	2	40	14	4
NW	2	40	14	4



**Table 13-1 Legal Land Description of the Project Area**

Quarter	Section	Township	Range	Meridian
SE	2	40	14	4
SW	2	40	14	4
NE	3	40	14	4
NW	3	40	14	4
SE	3	40	14	4
SW	3	40	14	4
NE	4	40	14	4
NW	4	40	14	4
SE	4	40	14	4
SW	4	40	14	4
NE	5	40	14	4
NW	5	40	14	4
SE	5	40	14	4
SW	5	40	14	4
NE	6	40	14	4
NW	6	40	14	4
SE	6	40	14	4
SW	6	40	14	4
NE	7	40	14	4
NW	7	40	14	4
SE	7	40	14	4
SW	7	40	14	4
NE	8	40	14	4
NW	8	40	14	4
SE	8	40	14	4
SW	8	40	14	4
NE	9	40	14	4
NW	9	40	14	4
SE	9	40	14	4
SW	9	40	14	4
NE	10	40	14	4
NW	10	40	14	4
SE	10	40	14	4
SW	10	40	14	4
NE	11	40	14	4
NW	11	40	14	4

**Table 13-1 Legal Land Description of the Project Area**

Quarter	Section	Township	Range	Meridian
SE	11	40	14	4
SW	11	40	14	4
NE	12	40	14	4
NW	12	40	14	4
SE	12	40	14	4
SW	12	40	14	4
NW	14	40	14	4
NE	15	40	14	4
NW	15	40	14	4
SE	15	40	14	4
SW	15	40	14	4
NE	16	40	14	4
SE	16	40	14	4
SW	16	40	14	4
SE	17	40	14	4
SW	17	40	14	4
SE	18	40	14	4
SW	18	40	14	4
NE	1	40	15	4
NW	1	40	15	4
SE	1	40	15	4
SW	1	40	15	4
NE	2	40	15	4
NW	2	40	15	4
SE	2	40	15	4
SW	2	40	15	4
NE	3	40	15	4
NW	3	40	15	4
SE	3	40	15	4
SW	3	40	15	4
NE	4	40	15	4
NW	4	40	15	4
SE	4	40	15	4
SW	4	40	15	4
NE	9	40	15	4
NW	9	40	15	4

**Table 13-1 Legal Land Description of the Project Area**

Quarter	Section	Township	Range	Meridian
SE	9	40	15	4
SW	9	40	15	4
NE	10	40	15	4
NW	10	40	15	4
SE	10	40	15	4
SW	10	40	15	4
NE	11	40	15	4
NW	11	40	15	4
SE	11	40	15	4
SW	11	40	15	4
NE	12	40	15	4
NW	12	40	15	4
SE	12	40	15	4
SW	12	40	15	4

**PP.14** For wind power plant applications, provide the longitude and latitude coordinates for the centre of each structure supporting a wind-powered generator. If, after approval is granted, the location of any supporting structure has to be relocated more than 50 metres from the coordinates stated in the application, the power plant proponent must reapply to the Commission for approval to relocate the structure prior to construction. For movement of less than 50 metres, the applicant is not required to reapply unless there is an adverse impact on the permissible sound level or wildlife setback distances.

The longitude and latitude coordinates for the centre of each turbine location are provided in Table 14-1.

**Table 14-1 Wind Turbine Coordinates for the Project**

Turbine ID	Latitude (dd mm ss.ss)	Longitude (-ddd mm ss.ss)
T001B	52 25 31.86	-112 06 51.42
T002	52 25 30.41	-112 06 00.39
T007	52 24 55.85	-112 06 06.25
T008	52 24 54.30	-112 05 41.23
T009A	52 24 54.43	-112 04 59.51
T011B	52 24 27.74	-112 05 15.90
T012C	52 24 29.02	-112 04 44.26
T014A	52 23 42.07	-112 05 11.39
T015A	52 23 42.17	-112 04 26.97

**Table 14-1 Wind Turbine Coordinates for the Project**

<b>Turbine ID</b>	<b>Latitude (dd mm ss.ss)</b>	<b>Longitude (-ddd mm ss.ss)</b>
T018B	52 23 03.41	-112 03 28.75
T019A	52 23 36.86	-112 03 43.98
T020	52 23 33.96	-112 03 13.90
T021C	52 23 41.21	-112 02 58.90
T025C	52 24 53.14	-112 02 59.45
T026	52 25 16.51	-112 03 13.58
T027B	52 25 18.71	-112 02 48.46
T028A	52 25 19.42	-112 02 10.35
T029B	52 25 45.03	-112 02 09.12
T030B	52 25 39.74	-112 02 48.42
T033C	52 25 43.93	-112 01 22.62
T034	52 25 44.80	-112 01 00.89
T038B	52 25 24.04	-112 00 55.05
T039B	52 25 13.80	-112 00 03.96
T040A	52 25 15.93	-111 59 30.44
T041C	52 25 27.59	-111 59 11.17
T042	52 24 30.93	-112 00 37.91
T047A	52 23 18.80	-112 00 20.58
T049A	52 23 44.57	-111 59 32.94
T051	52 22 51.96	-111 57 59.43
T052B	52 23 32.28	-111 58 05.88
T053B	52 23 19.82	-111 57 07.97
T055A	52 23 44.32	-111 57 46.75
T061A	52 25 20.42	-111 58 51.43
T062A	52 25 28.91	-111 58 29.73
T063A	52 25 28.84	-111 58 02.31
T066	52 26 35.21	-111 56 31.69
T067B	52 26 44.31	-111 56 03.02
T084C	52 23 05.42	-111 56 59.66
T085A	52 22 46.24	-111 54 58.59
T086B	52 22 51.66	-111 54 27.35
T088	52 22 40.82	-111 53 38.73
T089C	52 22 52.46	-111 53 33.04
T091B	52 23 11.31	-111 53 47.82
T092A	52 23 30.25	-111 53 28.13
T094A	52 23 43.62	-111 54 15.21

**Table 14-1 Wind Turbine Coordinates for the Project**

<b>Turbine ID</b>	<b>Latitude (dd mm ss.ss)</b>	<b>Longitude (-ddd mm ss.ss)</b>
T100	52 24 24.56	-111 51 17.44
T103	52 23 31.80	-111 51 37.29
T114A	52 23 04.37	-111 54 07.05
T115	52 22 43.91	-111 54 04.17
T116	52 22 56.59	-111 53 00.91
T118	52 24 53.69	-111 56 14.33
T120	52 23 44.94	-111 56 34.99
T128B	52 24 37.56	-112 02 09.14
T136A	52 25 14.53	-112 04 54.70
T142	52 25 15.78	-112 05 47.66
T143	52 24 59.25	-112 06 35.53
T144A	52 23 28.03	-112 04 30.14
T145	52 23 21.59	-112 03 32.95
T146	52 24 03.85	-112 05 24.39
T150	52 23 46.07	-112 00 19.16
T090	52 23 16.72	-111 54 21.40
T057A	52 24 37.94	-111 58 08.51
T003C	52 25 24.62	-112 05 13.42
T022A	52 23 58.74	-112 03 00.20
T140	52 24 08.74	-112 04 34.98
T078	52 24 09.41	-111 55 49.90
T080A	52 23 17.90	-111 56 31.70
T106	52 25 45.02	-111 56 22.04
T031B	52 25 49.75	-112 03 48.62
T073A	52 25 19.13	-111 55 45.47
T069A	52 25 54.20	-111 55 15.36
T130A	52 24 20.52	-112 00 56.31
T132	52 25 04.82	-112 01 59.66
T117B	52 24 24.51	-111 55 51.62

**PP.15 Describe the number of generating units and the total capability (kilovolt-ampere [kVA], or megavolt-ampere [MVA]) for the project.**

The Project includes 74 Vestas V110 2.0-megawatt (MW) wind turbines, for a total installed nominal nameplate capacity of 148 MW and a MVA rating of 155.6 MVA at a 0.95 power factor.

**PP.16** Describe the existing environmental and land use conditions in the local study area, and discuss potential siting and land use issues. Also, describe the regional setting of the development including regional land use plans in force (e.g., the Lower Athabasca Regional Plan). If applicable, include maps showing important environmental features and sensitive areas in the local study area.

The Project is located within the County of Paintearth and lies parallel to Battle River, which is part of the Battle River Basin, located in east-central Alberta. Highway 12 is south of the Project and Highway 36 is to the east. Secondary Highway 861 runs north-south through the eastern half of the Project.

The Project is located in an area supporting oil and gas activity, including well sites and associated infrastructure (e.g., access roads and pipelines). Other infrastructure includes communication towers and transmission facilities. Overall, residential density is consistent with an agricultural area in rural Alberta. The town of Halkirk is located approximately 12 km south of the Project.

The following regional land use plan and policies may apply to the Project:

- **Water Management Plan for the Battle River Basin:** The primary emphasis of this plan is on the need to live within the means of the watershed and the need to improve the health of the aquatic ecosystem (GOA 2014).
- **County of Paintearth No. 18 Land Use Bylaw No. 593-09, Part 7:** An application for a Wind Energy Conversion Systems must meet all the requirements in General Land Use Regulation No. 49.
- **County of Paintearth No. 18 Municipal Development Plan Volume Two – Goals and Policies:** The plan states that the County will take measures to encourage the protection and management of Environmentally Significant Areas (ESAs) and conservation and enhancement of wildlife habitats (County of Paintearth No. 18 2004). The plan also states that care will also be taken to ensure the areas of landscape value are not negatively impacted by visually intrusive developments (County of Paintearth No. 18 2004).

A detailed description of existing environmental and land use conditions within the Project Area is included in the Environmental Evaluation Report (Attachment H). Maps showing important environmental features and sensitive areas are included in Appendix A of the Environmental Evaluation Report.

**PP.17** At a level of detail commensurate with the size and type of potential effect(s) of the project, complete and submit an environmental evaluation of the project and provide a sign-off from AEP addressing the environmental aspects of the project that AEP is satisfied with. An environmental evaluation describes and predicts a project's effects on the environment before the project is actually carried out, and the measures to avoid or mitigate the project's predicted adverse environmental effects and any monitoring proposed to evaluate the efficacy of those measures. The purpose of an environmental evaluation is to ensure that enough information is provided by the applicant to inform the public and government agencies about the applicant's understanding of the consequences of its project, and to help the AUC determine if the project is in the public interest. The environmental evaluation should be conducted or overseen by an individual or individuals who possess appropriate environmental experience related to the type and scale of development. An environmental evaluation should:

- describe the present (pre-project) environmental conditions in the local study area
- identify and describe the project activities and infrastructure that may adversely affect the environment
- identify what specific ecosystem components (i.e., terrain and soils, surface water bodies and hydrology, groundwater, wetlands, vegetation species and communities, wildlife species and habitat, aquatic species and habitat, air quality and environmentally sensitive areas) within the local study area may be adversely affected by the project
- describe the potential adverse effects of the project on the ecosystem components during the life of the project
- describe the mitigation measures the applicant proposes to implement during the life of the project to reduce these potential adverse effects
- describe the predicted residual adverse effects of the project and their significance (after implementation of the proposed mitigation)
- describe any monitoring activities the applicant proposes to implement during the life of the project to verify the effectiveness of the proposed mitigation
- describe the methodology used to identify, evaluate and rate the adverse environmental effects and determine their significance, along with an explanation of the scientific rationale for choosing this methodology

If the power plant project requires preparation of a federal environmental assessment report or a provincial environmental impact assessment report, then that report should be submitted as an appendix to the application as required by PP38, and a separate environmental evaluation report satisfying the requirements of PP17 need not be prepared for the project. In such cases, the federal environmental assessment or the provincial environmental impact assessment report is sufficient to also satisfy the environmental requirements outlined in PP17.

The present environmental conditions in the local study area, the potential environmental effects of the Project, proposed mitigation, residual effects, and proposed monitoring programs are described in the Environmental Evaluation Report included in Attachment H. The Environmental Evaluation Report and the Post-Construction Monitoring and Mitigation Plan (Attachment I) were submitted to AEP, on February 23, 2017. Capital Power met with AEP on March 14, to discuss the Project design, the results of the Environmental Evaluation Report and the Post-Construction Monitoring and Mitigation Plan. AEP regional biologist requested clarification on predicted adverse effects to native prairie and wetlands and further information on the acoustic bat monitoring data. This information was provided in an Addendum to the Environmental Evaluation Report on March 29, 2017 (Attachment J), and AEP provided a Renewable Energy Referral Report (sign-off) for the project on April 13, 2017 (Attachment K).

**PP.18 If the project site occurs within the plan boundaries of a regional land use plan in force:**

- i. Confirm that the proposed project is being developed in accordance with the applicable regional land use plan.**
- ii. Confirm if the proposed project is in a conservation area or provincial recreation area established in the applicable regional land use plan. Provide submissions describing how the activity may be considered incidental to a previously approved activity.**
- iii. Indicate what, if any, management frameworks in place under the applicable regional land use plan are applicable to the project, the reason why any management frameworks are not applicable to the project and summarize discussions held with AEP and any other government department required to be consulted under the management frameworks regarding the project and its impacts in terms of the management frameworks. Include details on any actions or mitigation measures recommended as a result of the discussions and describe how these actions or mitigation measures will be incorporated into the project.**

At the time of preparing this application, development of a land-use plan for the Red Deer Region had not been initiated by AEP (AEP 2017).

**PP.19 Describe the participant involvement information. (See Appendix A – Participant involvement program requirements).**

Consultation for the Project has occurred in a manner that meets or exceeds the scope of the PIP described in AUC Rule 007, including direct consultation and notification activities. Participant involvement information is provided in the PIP Report (Attachment C).



- PP.20** List all occupants, residents and landowners on lands within the appropriate notification radius as determined using Appendix A1– Participant involvement program guidelines, as well as other interested persons that were consulted as part of the participant involvement program. If there are populated areas just outside the minimum notification distance, applicants should consider including those areas in the participant involvement program.
- As described in Section 2.0 of Attachment C, Capital Power completed direct consultation and notification with occupants, residents, and landowners within an 800 metre (m) and 2,000 m radius (respectively) around the Project Area.
- PP.21** Supply a list of mailing addresses, with corresponding land locations and two sets of printed mailing labels of those parties mentioned in PP20, above.
- The documentation requested and the printed mailing labels will be provided to the AUC via mail.
- PP.22** Identify any persons who expressed concerns about the project and the specifics of their concerns.
- Sections 3.0 and 4.0 of Attachment C describes the nature of stakeholder concerns with the Project, expressed to Capital Power at the time of filing this submission.
- PP.23** Summarize discussions held with potentially directly and adversely affected persons.
- Section 4.0 of Attachment C identifies persons who may potentially be directly and adversely affected by the Project, discusses the concerns expressed and describes Capital Power's efforts to engage with stakeholders to address their concerns.
- PP.24** If potentially directly and adversely affected persons raised any concerns, describe how these concerns were dealt with or are being dealt with.
- Section 4.0 of Attachment C identifies how Capital Power addressed, or plans to address, concerns about the Project.
- PP.25** For those potentially directly and adversely affected persons identified above, include a confirmation of resolution of the concerns, if applicable.
- Stakeholders have sought information and asked questions about the Project. Many stakeholders have expressed support for the Project. Feedback received to date was incorporated into the Project design, where appropriate. Capital Power will continue to gather and address concerns from stakeholders throughout the development process. Section 4.0 of Attachment C summarizes the information, actions, responses, and resolution of any concerns by potentially directly and adversely affected persons.

As the regulatory review process progresses with the submission of the AUC Rule 007 application and the formal public notifications associated with such filing are advertised, further public consultation efforts may identify directly and adversely affect persons. Capital Power is committed to addressing the concerns of such stakeholders.

**PP.26 If the power plant is to be located within oil and gas facility, confirm the power plant will comply with the standards outlined in sections 8.090 of the *Oil and Gas Conservation Rules*.**

Not applicable, the Project is not located within an oil and gas facility.

**PP.27 Provide a noise impact assessment (NIA), in accordance with the current AUC Rule 012.**

A Noise Impact Assessment (NIA) was conducted to predict the potential noise impact of the Project under representative operating conditions, and compared the results of these predictions to compliance criteria defined by AUC Rule 012: Noise Control (AUC 2013). The NIA report is provided in Attachment M.

**PP.28 For an application where no changes to the major components of the power generating equipment are contemplated after filing the application, provide details of the power generating equipment and associated facilities, such as make, model and nominal capability.**

As per Section 3.4 of AUC Rule 007, Capital Power has filed an application based on a specific wind turbine and layout for the Project. As previously described, the Project consists of 74 Vestas V110 2.0-megawatt (MW) wind turbines, for a total installed nominal nameplate capacity of 148 MW. The Project also includes access roads, an underground electrical collector system, and a substation, as described below. Further details on the Project layout and design are provided in the Environmental Evaluation Report (Attachment H). Notwithstanding, Capital Power remains in ongoing discussions with several potential vendors of wind turbine generators for use in the Project. These equipment vendors continue to make advancements in performance and operating characteristics, such that a change in turbine technology and layout could occur. The final determination of the specific equipment for the Project will be driven by the various wind turbine technologies' performance characteristics, costs, and operating parameters that best optimize the wind resource within the Project Area.

**Wind Turbine Generators**

The technical specifications of the Vestas V110 – 2.0-MW wind turbines are provided in Table 28-1. The Vestas V110 has a three-bladed upwind rotor system and a 'flat-topped' nacelle, which houses the generator and gearbox.

**Table 28-1 Vestas V110 2.0-Megawatt Turbine Technical Specifications**

Specification	Detail
cut-in wind speed	3 m/s
cut-out wind speed	20 m/s
nominal power wind speed	7.5 m/s
number of blades	3
rotor diameter	110 m
rotor swept area	9,503 m <sup>2</sup> /turbine
rotor swept height	150 m
rotor speed (variable)	Nominal 14.9 rpm, range 8-15.2 rpm
tower (hub) height	95 m
gearbox	Conventional three stage design with one planetary and two parallel stages
generator	6-pole Doubly Fed Induction Generator with a partial power converter
braking system	Three independent aerodynamic brakes to slow the rotor in the event of a fault or normal shutdown
yaw system	Ring gear and 6 pinions/yaw drives mounted on the nacelle
tower design	Four-piece tubular steel sections with flange connections

Note: m/s = metres per second; m = metres; m<sup>2</sup> = square metres; rpm = rotations per minute

### **Collector System**

Each of the 74 wind turbines will have a transformer within its nacelle to increase the voltage generated by the wind turbine from 690 volts (V) to 34.5 kilovolt (kV). The cables entering and exiting the wind turbines will be installed underground.

Power generated by the wind turbines will be conveyed to the substation through an underground collector system, which will consist of seven 34.5 kV circuits of underground distribution aluminum power cables buried to a minimum depth of approximately 1 m (or 915 millimetres) as per the Canadian Electrical Code. Each circuit typically includes three individual cables; one cable for each electrical phase for 3-phase power. Approximately 29 km of cable for each of the seven circuits will be installed by direct ploughing and/or trench excavation, using sand bedding for protection against mechanical damage. A fibre optic cable and plastic warning tape will be installed at the same elevation as the power cables. Junction boxes will be installed, where needed, to join the various segments of the collector line within each circuit.

### **Substation and Operation & Maintenance (O&M) Building**

The substation will be located in northeast quarter section of Section 35, Township 39, Range 15 and west of the fourth meridian (NE 35-39-15 W4M; UTM: 428790 E, 5806451 N, NAD 83, Zone 12). The substation will mainly consist of electrical equipment, including a power transformer, high and medium voltage circuit breakers and disconnect switches. A separate application will be submitted to the AUC, pursuant to Section 14 of the *HEEA*, for a permit to construct and a licence to operate the substation.

A control building will be located inside the substation, and a separate Operation and Maintenance (O&M) building will be located within or next to the existing Halkirk Wind Power Facility O&M building, which is located in the Village of Halkirk, Alberta. The new or expanded O&M building for the Project

will mainly consist of an electrical room, workshop, supervisory control and data acquisition (SCADA) room, parts room, conference room, and office spaces.

#### **Access Roads**

Permanent operational roads will be required to access and maintain the wind turbines during the operational life of the Project. The permanent operational roads will consist of a combination of all-weather gravelled access roads and seasonal lighter duty trails. The Project will require approximately 43 km of permanent operational roads that are approximately 25 m wide during construction and approximately 7.5 m wide during operation.

Temporary crane paths and construction roads will also be required during construction. The primary purpose for the temporary crane paths will be to move the assembled crane from turbine to turbine and to avoid additional crane breakdowns and travel on county roads. In some cases, the temporary crane paths will also be used as temporary construction roads for the delivery of wind turbine components, construction materials, and equipment to the wind turbine locations.

- PP.29 For an application where vendors which are to supply the major components of the power generating equipment have not been selected, provide the nominal capability of the applied-for power plant and the design and maximum operating parameters, and characteristics specified for the power generating equipment and associated facilities.**

Not applicable. Details of the power generating equipment and associated facilities are provided in PP.28.

- PP.30 Present the estimated power plant heat rates, efficiency of the power plant and details of the cooling system for the power plant.**

Not applicable, the Project is a wind power development.

- PP.31 State the fuel requirements of the power plant, including type, source, method of handling, transportation, process storage and environmental effects.**

Not applicable, the Project is a wind power development.

- PP.32 Provide a legible plant site drawing showing all major equipment components.**

A map showing the location of all major equipment and associated infrastructure is provided in Figure 32-1.

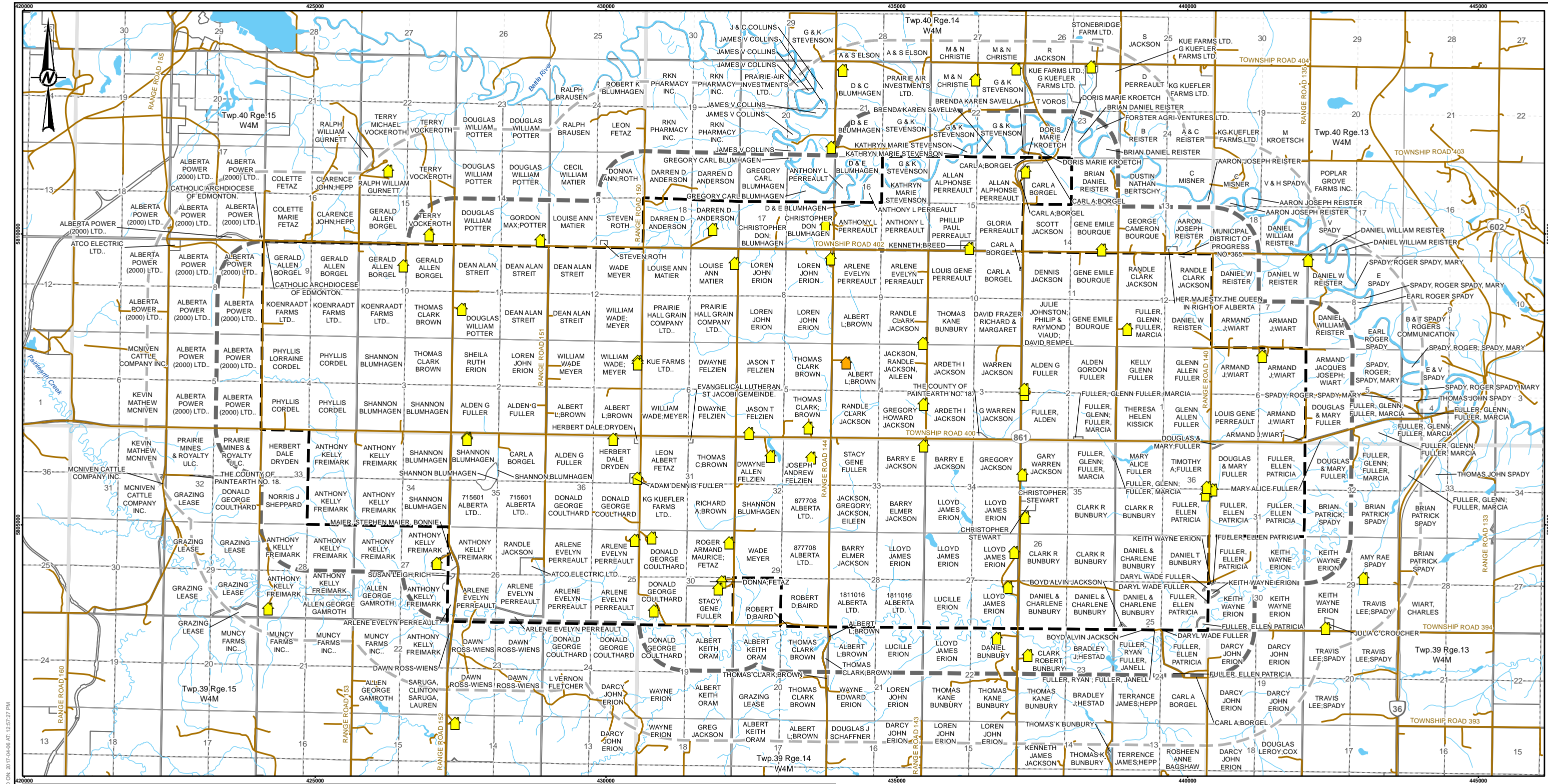






**PP.33**      **Provide a legible map showing the power plant site boundaries and land ownership, including any residences and dwellings within the appropriate notification radius as determined using Appendix A1– Participant involvement program guidelines, as well as any additional energy-related facilities within the project area.**

Landowners and residences within the 800 m direct consultation radius and 2,000 m public notification radius for the Project are shown on Figure 33-1. Existing energy related facilities within the Project Area are shown on Figure 33-2.



Path: I:\2015\1543760\Maping\WCD\General\Map\_k-2\_Landowners\_Refer.mxd PRINTED ON: 2017-04-06 AT: 13:57:27 PM

- LEGEND**
- RESIDENCE
  - FORMER RESIDENCE
  - ROAD/HIGHWAY
  - WATERCOURSE
  - PARCEL
  - PROJECT AREA
  - PERSONAL CONSULTATION (800 m RADIUS OF PARTICIPATING LANDOWNERS)
  - PUBLIC NOTIFICATION (2,000 m RADIUS OF PARTICIPATING LANDOWNERS)
  - WATERBODY



CLIENT



CONSULTANT



YYYY-MM-DD	2017-04-06
DESIGNED	JM
PREPARED	SK/AA
REVIEWED	CDM
APPROVED	CS

**REFERENCE(S)**

1. ALBERTA TOWNSHIP SYSTEM, HYDROGRAPHY AND TRANSPORTATION BASE DATA © GOVERNMENT OF ALBERTA 2015. ALL RIGHTS RESERVED.  
DATUM: NAD83 PROJECTION: UTM ZONE 12

PROJECT

**HALKIRK 2 WIND PROJECT**

TITLE

**CONSULTATION AND NOTIFICATION LANDOWNERS**

PROJECT NO.  
1543760

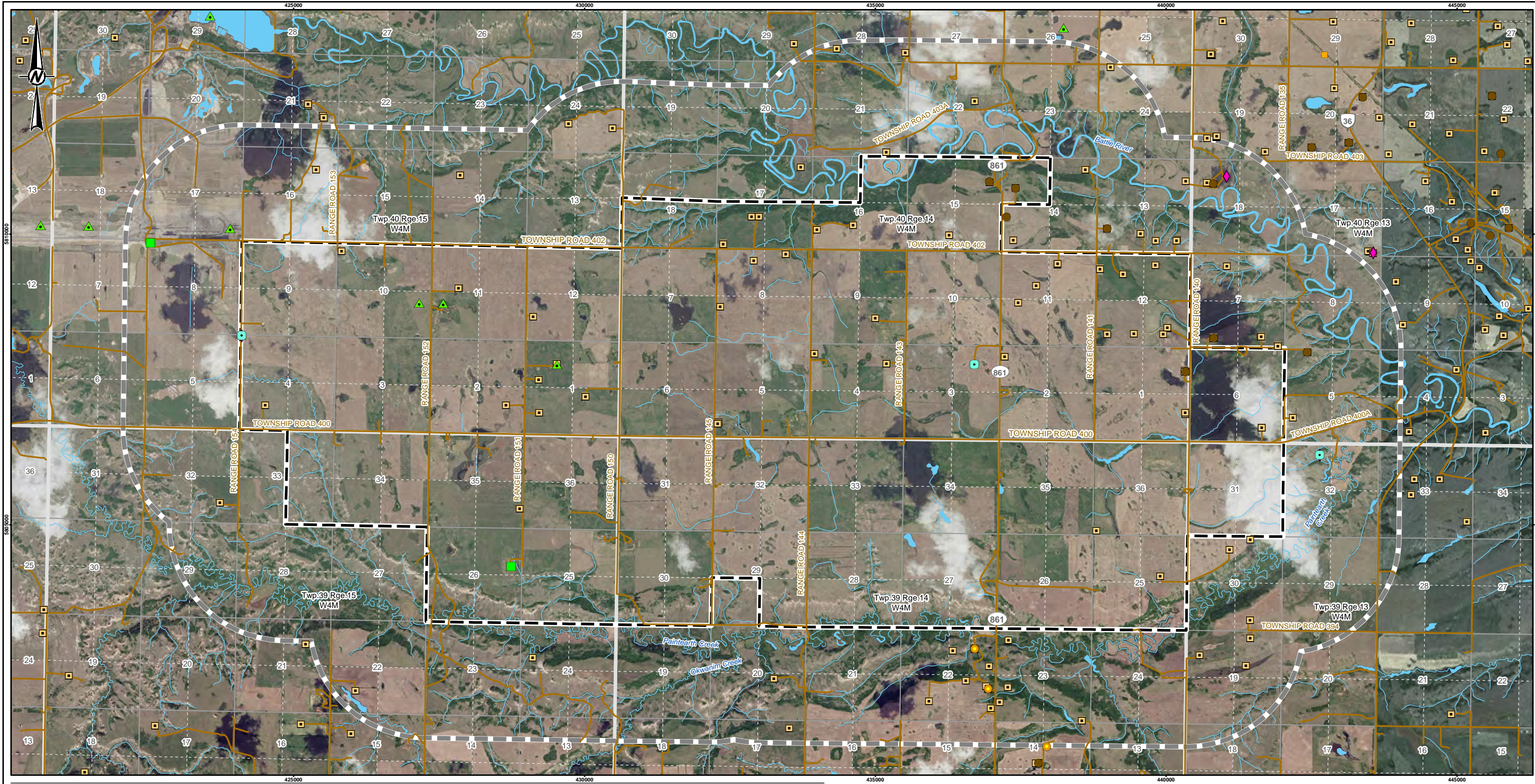
CONTROL

REV.  
0

FIGURE  
**33-1**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B





- LEGEND**
- PROJECT AREA
  - PUBLIC NOTIFICATION (2 km)
  - FACILITIES**
  - BATTERY
  - COMPRESSOR STATION
  - GAS GATHERING SYSTEM
  - INJECTION PLANT
  - METER AND/ OR REGULATOR STATION
  - SATELLITE
  - TERMINAL
  - EXISTING SUBSTATION
  - ROAD/HIGHWAY
  - WATERCOURSE
  - WATERBODY



CLIENT	2017-04-06
DESIGNED	JM
PREPARED	SK
REVIEWED	CDM
APPROVED	CS

**REFERENCE(S)**

1. ALBERTA TOWNSHIP SYSTEM, HYDROGRAPHY AND TRANSPORTATION BASE DATA © GOVERNMENT OF ALBERTA 2015. ALL RIGHTS RESERVED.
2. WELLS, FACILITIES AND PIPELINES OBTAINED FROM IHS ENERGY INC.
3. IMAGERY OBTAINED FROM THE CLIENT.
4. BACKGROUND IMAGERY COPYRIGHT © 20090115 ESRI AND ITS LICENSORS. SOURCE: CNES/AIRBUS DS. USED UNDER LICENSE, ALL RIGHTS RESERVED

DATUM: NAD83 PROJECTION: UTM ZONE 12

PROJECT  
**HALKIRK 2 WIND PROJECT**

TITLE  
**EXISTING ENERGY RELATED FACILITIES**

PROJECT NO.	CONTROL	REV.	FIGURE
1543760		0	<b>33-2</b>

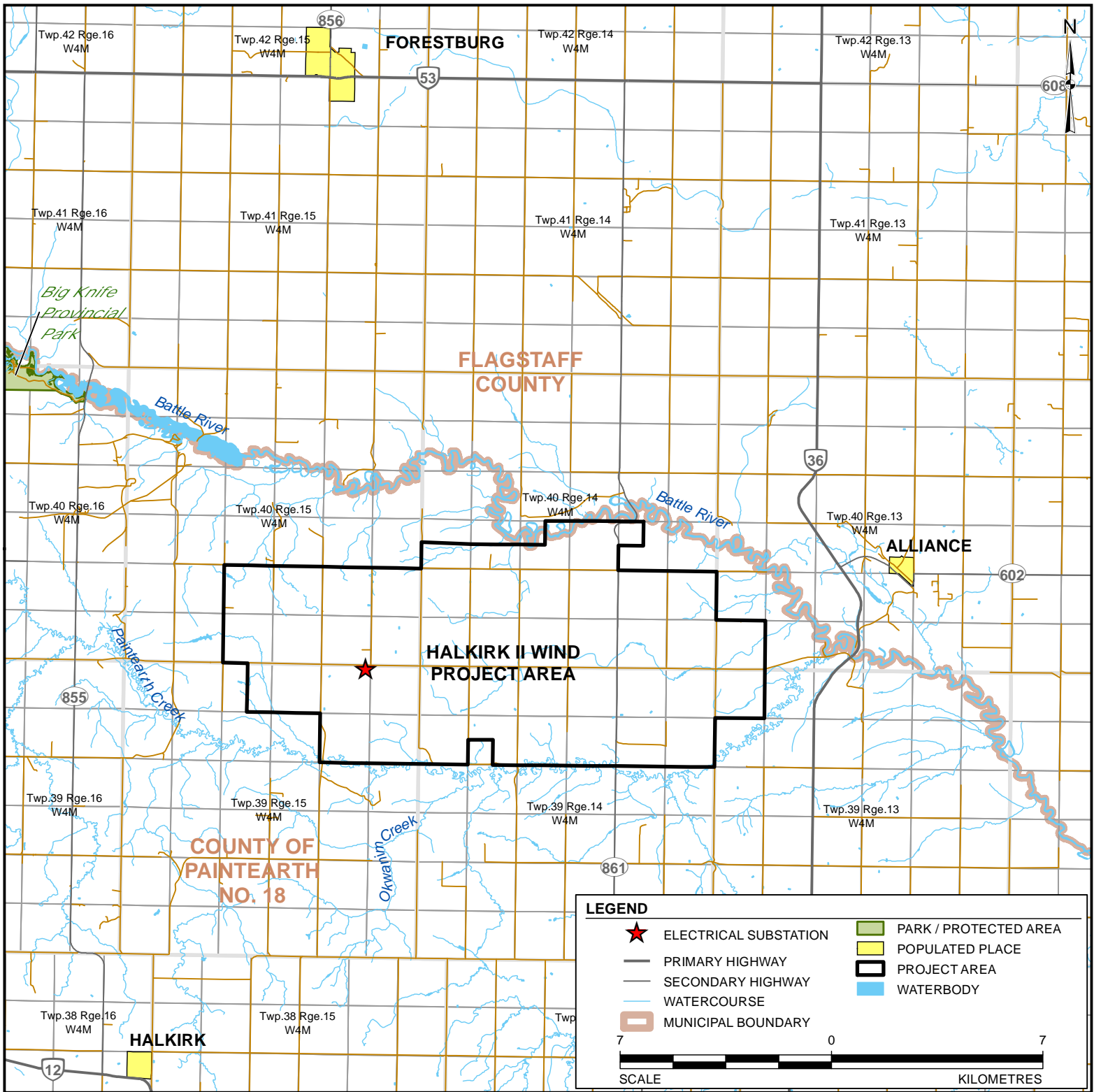
PATH: I:\2015\1543760\Mapping\WCD\General\Halkirk\_2\_Existing\_Energy\_Related\_Facilities\_Rev0.mxd PRINTED ON: 2017-04-06 AT: 12:47:08 PM

25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B



**PP.34      Provide a legible map of the project area suitable for use in a public notice.**

A map of the Project Area suitable for use in a public notice is provided in Figure 34-1.



Project Area Map for Public Notice

Figure 34-1

**PP.35 Supply the expected in-service dates, and describe ramifications if the approval date cannot be met.**

The anticipated construction schedule for the Project is outlined in Table 35-1. The schedule does provide some contingency for a potential delay in equipment arrival and adverse weather conditions. If regulatory approval is substantially delayed, subsequent construction delays may result due to a corresponding construction start in unfavourable season/poor weather conditions that would prolong construction activities. Moreover, the AESO has indicated that all projects participating in the Government of Alberta's Renewable Energy Program (REA) shall have an in service date not to exceed December 1, 2019. Delay in the application approval may result in the Project's inability to meet the REA deadline and incur financial penalties.

**Table 35-1 Construction Schedule**

Activity	Period <sup>(a)</sup>
Surveying	March 2018
Soil stripping and salvage	April – September 2018
Development of access roads	April – September 2018
Grading and installation of turbine foundations	April – September 2018
Installation of underground distribution	April – September 2018
Equipment lay down and assembly	August 2018
Assembly and erection of wind turbine generators	September – December 2018
Substation and Operations and Maintenance building	April – December 2018
Transmission line interconnection <sup>(b)</sup>	April – December 2018
Testing and commissioning	January – March 2019
In-service date	Q1 2019
Final clean-up and reclamation	Q2 – Q3 2019

<sup>(a)</sup> Subject to change pending AUC approval and AESO Stage 4 Completion anticipated for February 2018 and March 2018, respectively

<sup>(b)</sup> Pending ATCO Electric's transmission facility availability

**PP.36 Indicate the plant's emission rates, in kilograms per megawatt-hour (kg/MWh) of nitrogen oxides (NO<sub>x</sub>), sulphur dioxide (SO<sub>2</sub>), and primary particulate matter, and state whether the emissions will comply with the current Alberta Air Emission Standards for Electricity Generation and any other emission standards or guidelines that are applicable to the proposed project.**

Not applicable, the Project is a wind power development.

**PP.37 State whether the proposed plant will comply with the Alberta Ambient Air Quality Objectives and Guidelines and any other standards or guidelines that are applicable to the proposed project for ground-level concentrations of pollutants.**

Not applicable, the Project is a wind power development.

- PP.38** Provide the federal environmental assessment or provincial environmental impact assessment as an appendix to the application, if one was required by a federal or provincial authority.

The applicant must obtain approval from AEP for thermal power plant facilities greater than one megawatt in total capability at one site. An environmental impact assessment is mandatory for thermal power plant facilities that use non-gaseous fuel and are greater than 100 megawatts in total capability; an environmental impact assessment may be required for other power plant facilities regardless of total capability. When an environmental impact assessment is not mandatory, AEP will determine if it is necessary, based on the specific nature of the project. The applicant should consult with the Commission and AEP in the initial stages of preparing its application to determine the level of detail required.

An environmental assessment is not required under the federal *Canadian Environmental Assessment Act* or the provincial *Environmental Protection and Enhancement Act* for wind power developments. As described in response to PP.10, an Environmental Evaluation Report (Attachment H) and Post-Construction Monitoring and Mitigation Plan (Attachment I) for the Project were submitted to AEP, on February 23, 2017. Capital Power met with AEP on March 14, to discuss the project design, the results of the Environmental Evaluation Report and the Post-Construction Monitoring and Mitigation Plan. AEP regional biologist requested clarification on predicted adverse effects to native prairie and wetlands and further information on the acoustic bat monitoring data. This information was provided in an Addendum to the Environmental Evaluation Report on March 29, 2017 (Attachment J), and AEP provided a Renewable Energy Referral Report (sign-off) for the project on April 13, 2017 (Attachment K).

- PP.39** If the power plant is to be connected to the transmission system of the Alberta Interconnected Electric System, irrespective of voltage level, provide the following information:

- An electrical single-line diagram obtained from the ISO or sanctioned by the ISO showing the transmission development plan for the interconnection.
- A map with one or more conceptual layouts showing possible routes and general land locations for facilities that would be used to interconnect the power plant to the Alberta Interconnected Electric System.

The current functional specification for the interconnection, submitted to and reviewed by the AESO, is provided in Attachment N. Single-line diagrams for the Tinchebray 972S Substation are provided in Figure 7.3 (Pre-Project) and Figure 7.4 (Proposed) in Attachment N. The proposed transmission interconnection is shown on Figure 7.1 of Attachment N. As described in PP.6, the transmission line interconnection and any proposed changes to the Tinchebray 972S Substation are subject to a separate application to the AUC by ATCO Electric, the intended Transmission Facility Operator.

**PP.40** If the power plant is to be connected at distribution voltage level to the Alberta Interconnected Electric System (generally less than 69 kV), the applicant must provide a statement from the distribution facility owner indicating that it is willing to connect the generating facilities.

Not applicable, the Project will not be connected at distribution voltage level to the Alberta Interconnected Electric System.

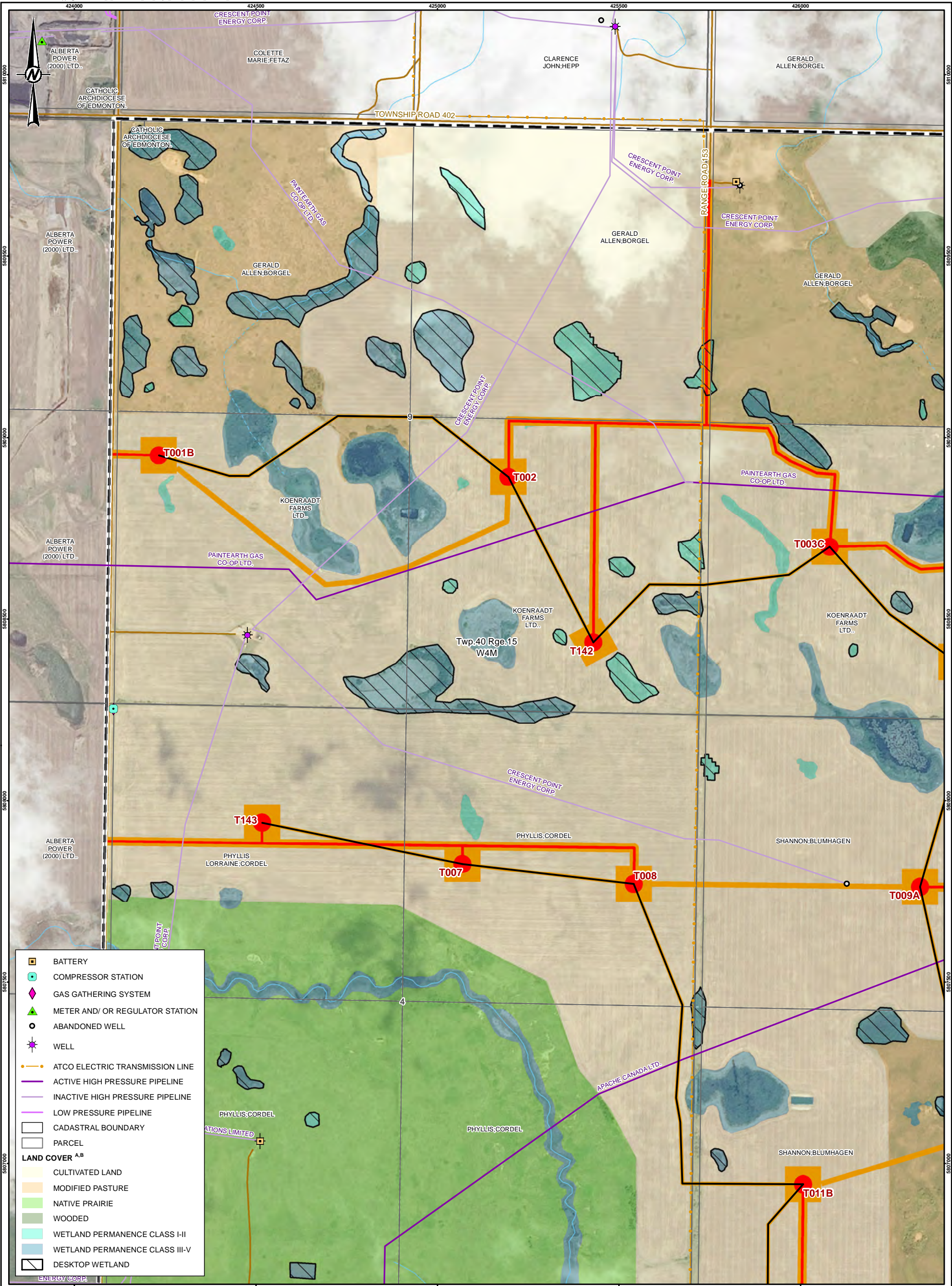
**PP.41** For a municipality or a subsidiary of a municipality to hold an interest in a generating unit, documentation confirming compliance with Section 95 of the *Electric Utilities Act* is required.

Not applicable because no municipality will hold an interest in the Project.

**PP.42** For a wind power plant application, provide legible maps and/or air photo mosaics upon which the proposed collector power line route or routes have been imposed and showing the residences, landowner names, and major land use and resource features (e.g., vegetation, topography, soil type, existing land use, existing rights-of-way, and superficial and mineable resources).

The proposed collector system, landowners, and relevant land use and resource features are shown on Figure 42-1.





**LEGEND**

PROJECT AREA

UNDERGROUND COLLECTOR SYSTEM

PERMANENT PROPOSED PROJECT INFRASTRUCTURE

TEMPORARY PROPOSED PROJECT INFRASTRUCTURE

ROAD/HIGHWAY

INDEFINITE WATERCOURSE

WATERCOURSE

**CLIENT**

Capital Power

**CONSULTANT**

Golder Associates

0 400 800

1:10,000

METRES

**NOTE(S)**

<sup>a</sup>LAND COVER TYPES MAY BE DESKTOP OR FIELD VERIFIED.

<sup>b</sup>STEWART AND KANTRUD (1971) WETLAND CLASSIFICATION SYSTEM. ALBERTA ENVIRONMENT AND SUSTAINABLE RESOURCE DEVELOPMENT, 2015. ALBERTA WETLAND CLASSIFICATION SYSTEM. WATER POLICY BRANCH, POLICY AND PLANNING DIVISION, EDMONTON, AB.

**REFERENCE(S)**

ALBERTA TOWNSHIP SYSTEM, HYDROGRAPHY AND TRANSPORTATION BASE DATA © GOVERNMENT OF ALBERTA 2015. ALL RIGHTS RESERVED. FACILITIES AND PIPELINE DATA OBTAINED FROM IHS ENERGY INC. IMAGERY OBTAINED FROM THE CLIENT

**PROJECT**

HALKIRK 2 WIND PROJECT

**TITLE**

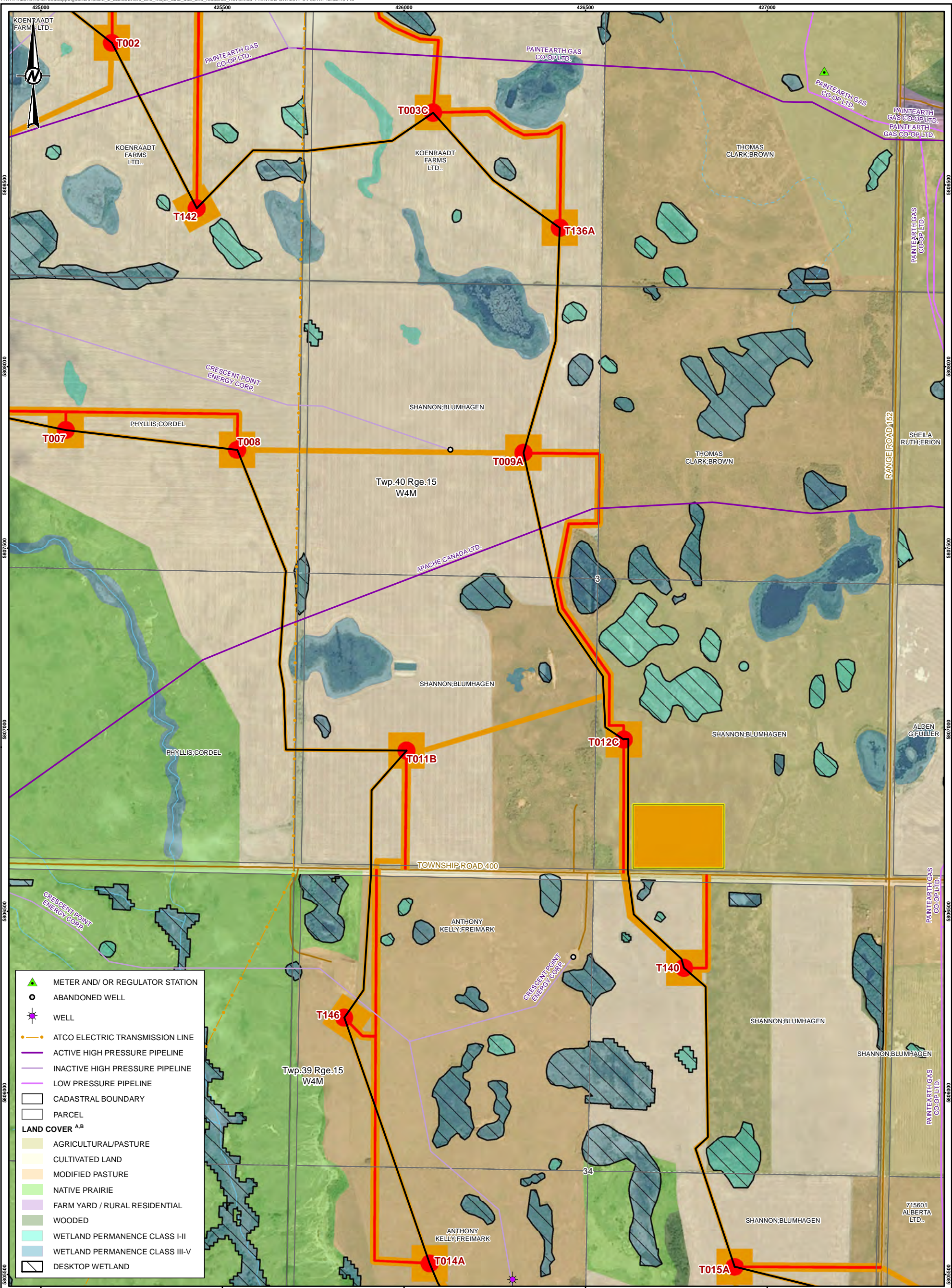
**LANDOWNERS AND MAJOR LAND USE AND RESOURCE FEATURES**

PROJECT NO. 1543760 CONTROL REV. 0

FIGURE 42-1A

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B 25mm





- LEGEND**
- PROJECT AREA
  - UNDERGROUND COLLECTOR SYSTEM
  - PERMANENT PROPOSED PROJECT INFRASTRUCTURE
  - TEMPORARY PROPOSED PROJECT INFRASTRUCTURE
  - TEMPORARY LAYDOWN YARD AND SUBSTATION TEMPORARY WORKSPACE
  - ROAD/HIGHWAY
  - INDEFINITE WATERCOURSE
  - WATERCOURSE



CLIENT

**Capital Power**

CONSULTANT	YYYY-MM-DD	2017-04-06
	DESIGNED	AO
	PREPARED	SG
	REVIEWED	CDM
	APPROVED	CS



**NOTE(S)**

\*LAND COVER TYPES MAY BE DESKTOP OR FIELD VERIFIED.

\*STEWART AND KANTRUD (1971) WETLAND CLASSIFICATION SYSTEM. ALBERTA ENVIRONMENT AND SUSTAINABLE RESOURCE DEVELOPMENT, 2015. ALBERTA WETLAND CLASSIFICATION SYSTEM. WATER POLICY BRANCH, POLICY AND PLANNING DIVISION, EDMONTON, AB.

**REFERENCE(S)**

ALBERTA TOWNSHIP SYSTEM, HYDROGRAPHY AND TRANSPORTATION BASE DATA

© GOVERNMENT OF ALBERTA 2015. ALL RIGHTS RESERVED. FACILITIES AND PIPELINE DATA OBTAINED FROM IHS ENERGY INC. IMAGERY OBTAINED FROM THE CLIENT

PROJECT

**HALKIRK 2 WIND PROJECT**

TITLE

**LANDOWNERS AND MAJOR LAND USE AND RESOURCE FEATURES**

PROJECT NO.	CONTROL	REV.	FIGURE
1543760		0	42-1B

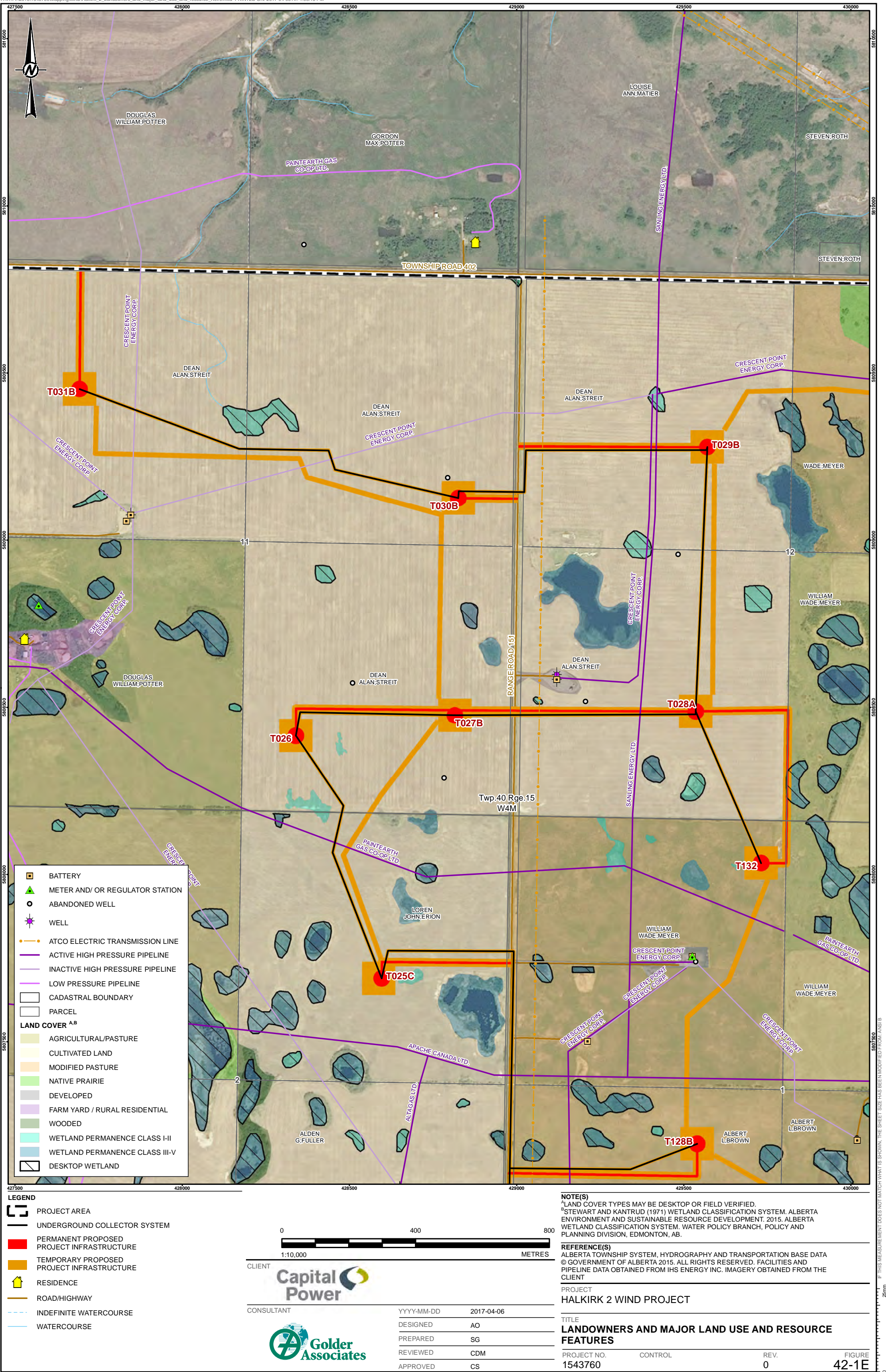




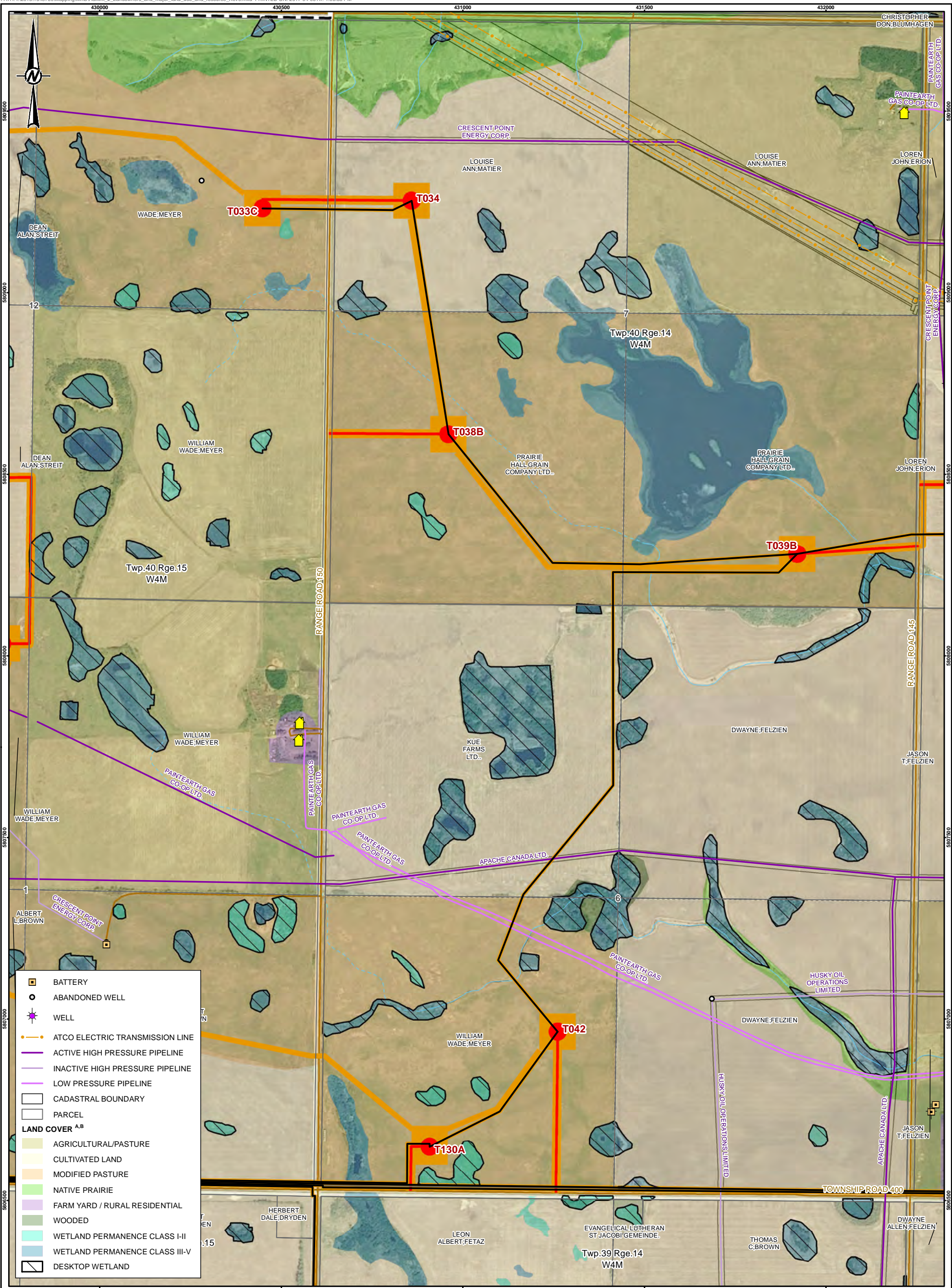












- LEGEND**
- PROJECT AREA
  - UNDERGROUND COLLECTOR SYSTEM
  - PERMANENT PROPOSED PROJECT INFRASTRUCTURE
  - TEMPORARY PROPOSED PROJECT INFRASTRUCTURE
  - RESIDENCE
  - ROAD/HIGHWAY
  - INDEFINITE WATERCOURSE
  - WATERCOURSE



CLIENT  
**Capital Power**

CONSULTANT  
**Golder Associates**

YYYY-MM-DD	2017-04-06
DESIGNED	AO
PREPARED	SG
REVIEWED	CDM
APPROVED	CS

**NOTE(S)**  
\*LAND COVER TYPES MAY BE DESKTOP OR FIELD VERIFIED.  
\*STEWART AND KANTRUD (1971) WETLAND CLASSIFICATION SYSTEM. ALBERTA ENVIRONMENT AND SUSTAINABLE RESOURCE DEVELOPMENT, 2015. ALBERTA WETLAND CLASSIFICATION SYSTEM. WATER POLICY BRANCH, POLICY AND PLANNING DIVISION, EDMONTON, AB.

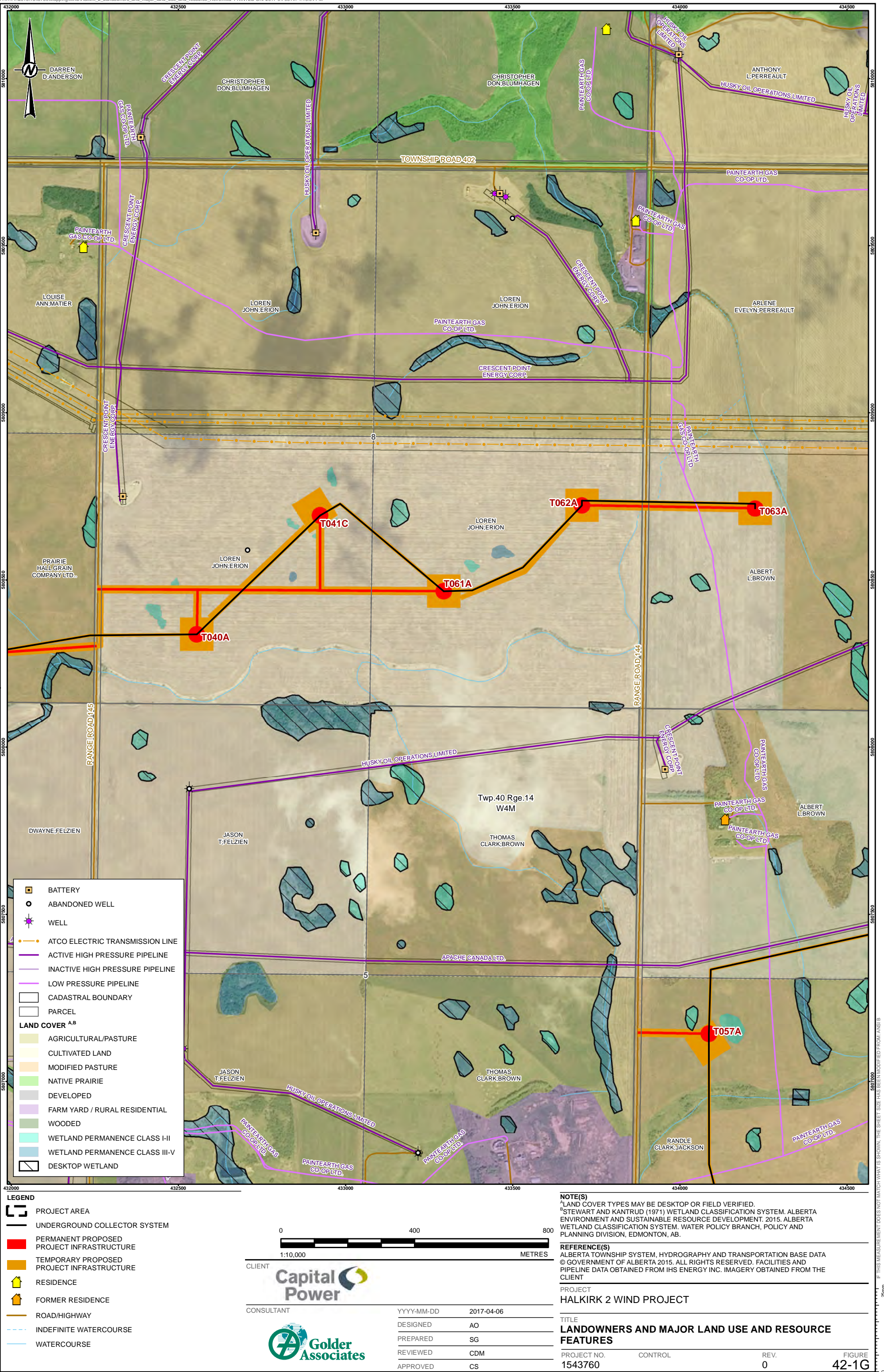
**REFERENCE(S)**  
ALBERTA TOWNSHIP SYSTEM, HYDROGRAPHY AND TRANSPORTATION BASE DATA  
© GOVERNMENT OF ALBERTA 2015. ALL RIGHTS RESERVED. FACILITIES AND PIPELINE DATA OBTAINED FROM IHS ENERGY INC. IMAGERY OBTAINED FROM THE CLIENT

PROJECT  
**HALKIRK 2 WIND PROJECT**

TITLE  
**LANDOWNERS AND MAJOR LAND USE AND RESOURCE FEATURES**

PROJECT NO.	CONTROL	REV.	FIGURE
1543760		0	42-1F





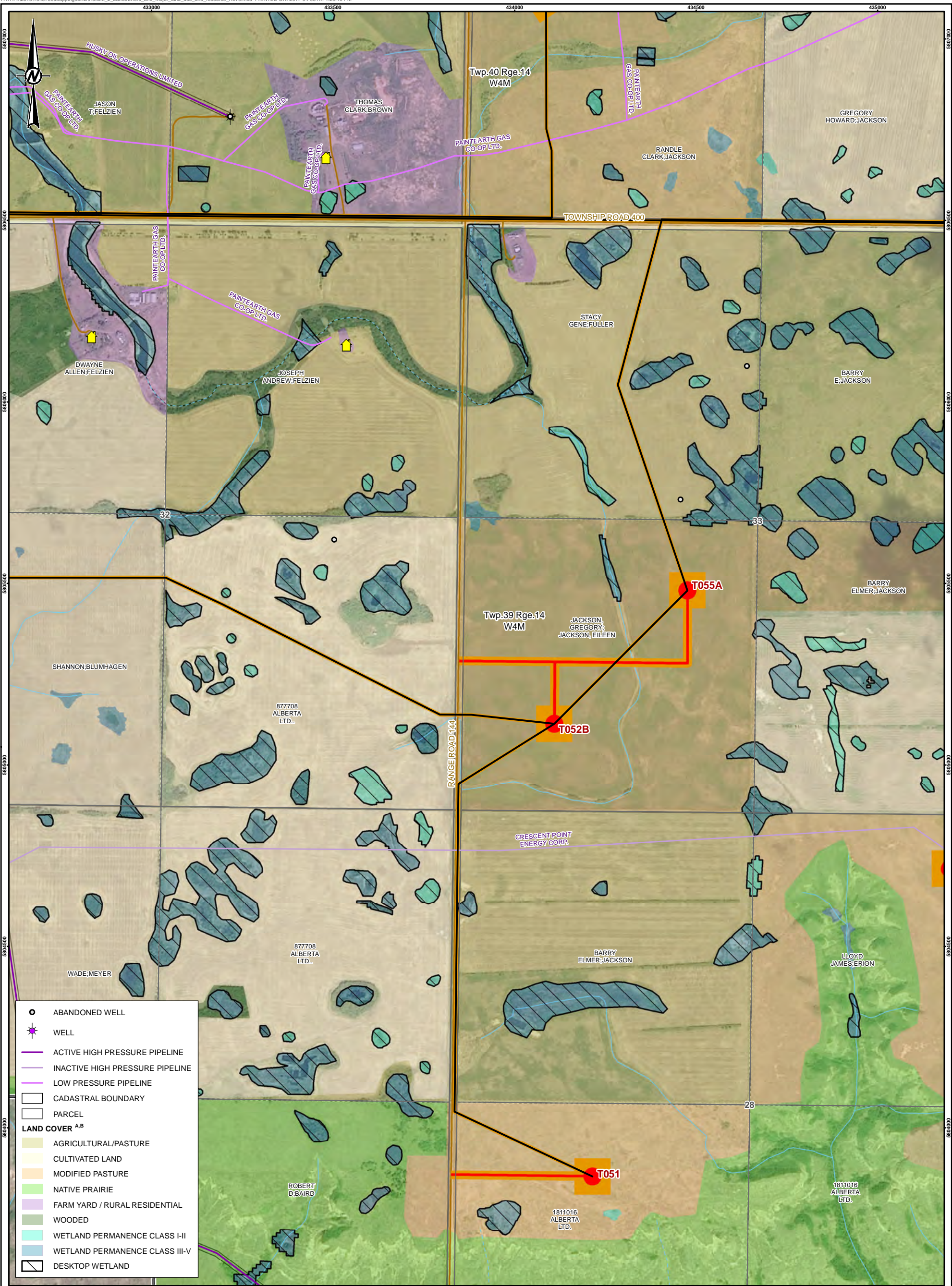


5804500

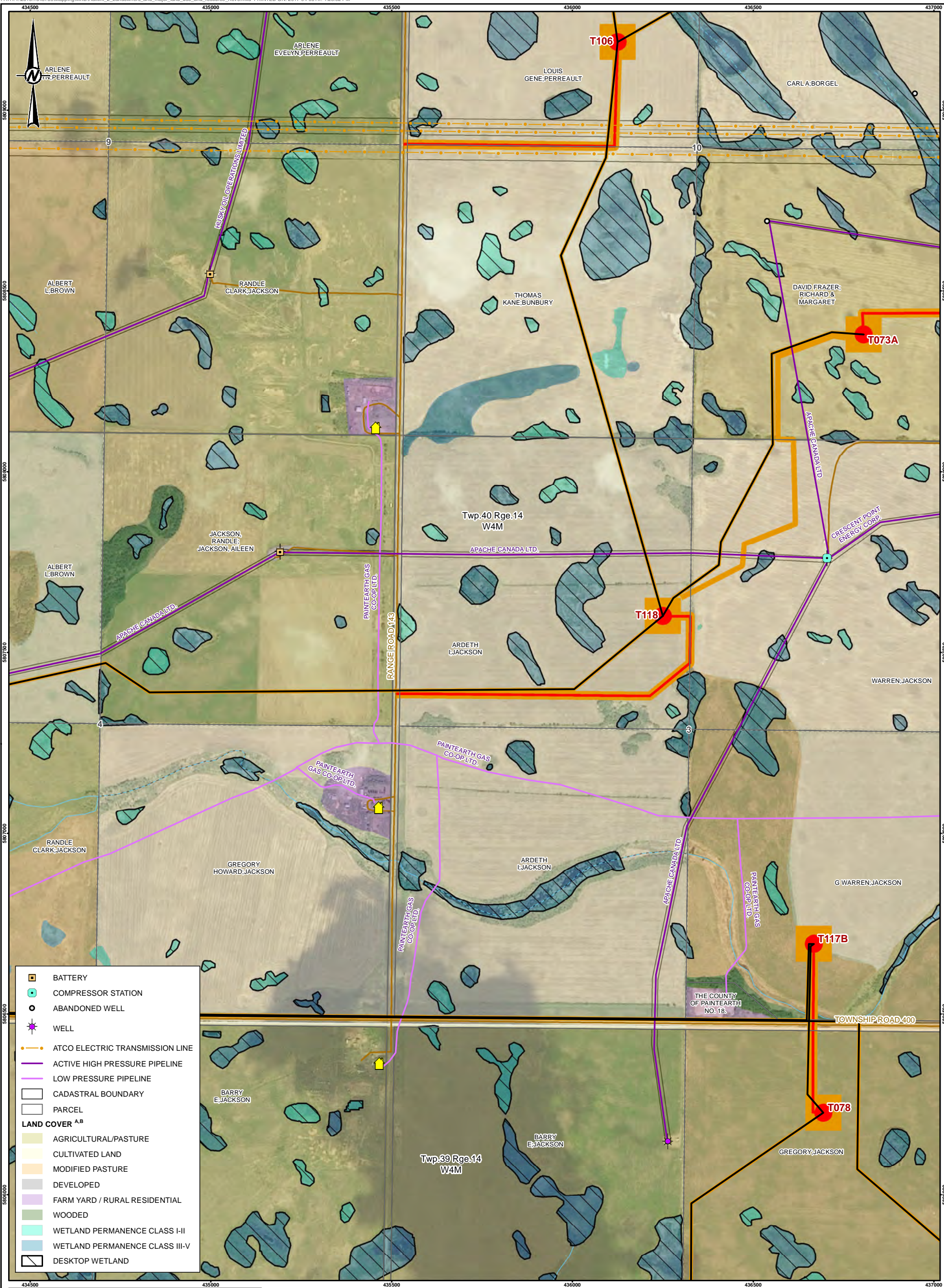
F.

11









BATTERY

COMPRESSOR STATION

ABANDONED WELL

WELL

ATCO ELECTRIC TRANSMISSION LINE

ACTIVE HIGH PRESSURE PIPELINE

LOW PRESSURE PIPELINE

CADASTRAL BOUNDARY

PARCEL

LAND COVER <sup>A,B</sup>

AGRICULTURAL/PASTURE

CULTIVATED LAND

MODIFIED PASTURE

DEVELOPED

FARM YARD / RURAL RESIDENTIAL

WOODED

WETLAND PERMANENCE CLASS I-II

WETLAND PERMANENCE CLASS III-V

DESKTOP WETLAND

PROJECT AREA

UNDERGROUND COLLECTOR SYSTEM

PERMANENT PROPOSED PROJECT INFRASTRUCTURE

TEMPORARY PROPOSED PROJECT INFRASTRUCTURE

RESIDENCE

ROAD/HIGHWAY

INDEFINITE WATERCOURSE

WATERCOURSE

CLIENT	
CONSULTANT	
YYYY-MM-DD	2017-04-06
DESIGNED	AO
PREPARED	SG
REVIEWED	CDM
APPROVED	CS

NOTE(S)

LAND COVER TYPES MAY BE DESKTOP OR FIELD VERIFIED.

STEWART AND KANTRUD (1971) WETLAND CLASSIFICATION SYSTEM. ALBERTA ENVIRONMENT AND SUSTAINABLE RESOURCE DEVELOPMENT, 2015. ALBERTA WETLAND CLASSIFICATION SYSTEM. WATER POLICY BRANCH, POLICY AND PLANNING DIVISION, EDMONTON, AB.

REFERENCE(S)

ALBERTA TOWNSHIP SYSTEM, HYDROGRAPHY AND TRANSPORTATION BASE DATA

GOVERNMENT OF ALBERTA 2015. ALL RIGHTS RESERVED. FACILITIES AND PIPELINE DATA OBTAINED FROM IHS ENERGY INC. IMAGERY OBTAINED FROM THE CLIENT

PROJECT

HALKIRK 2 WIND PROJECT

TITLE

LANDOWNERS AND MAJOR LAND USE AND RESOURCE FEATURES

PROJECT NO.

1543760

CONTROL

REV.

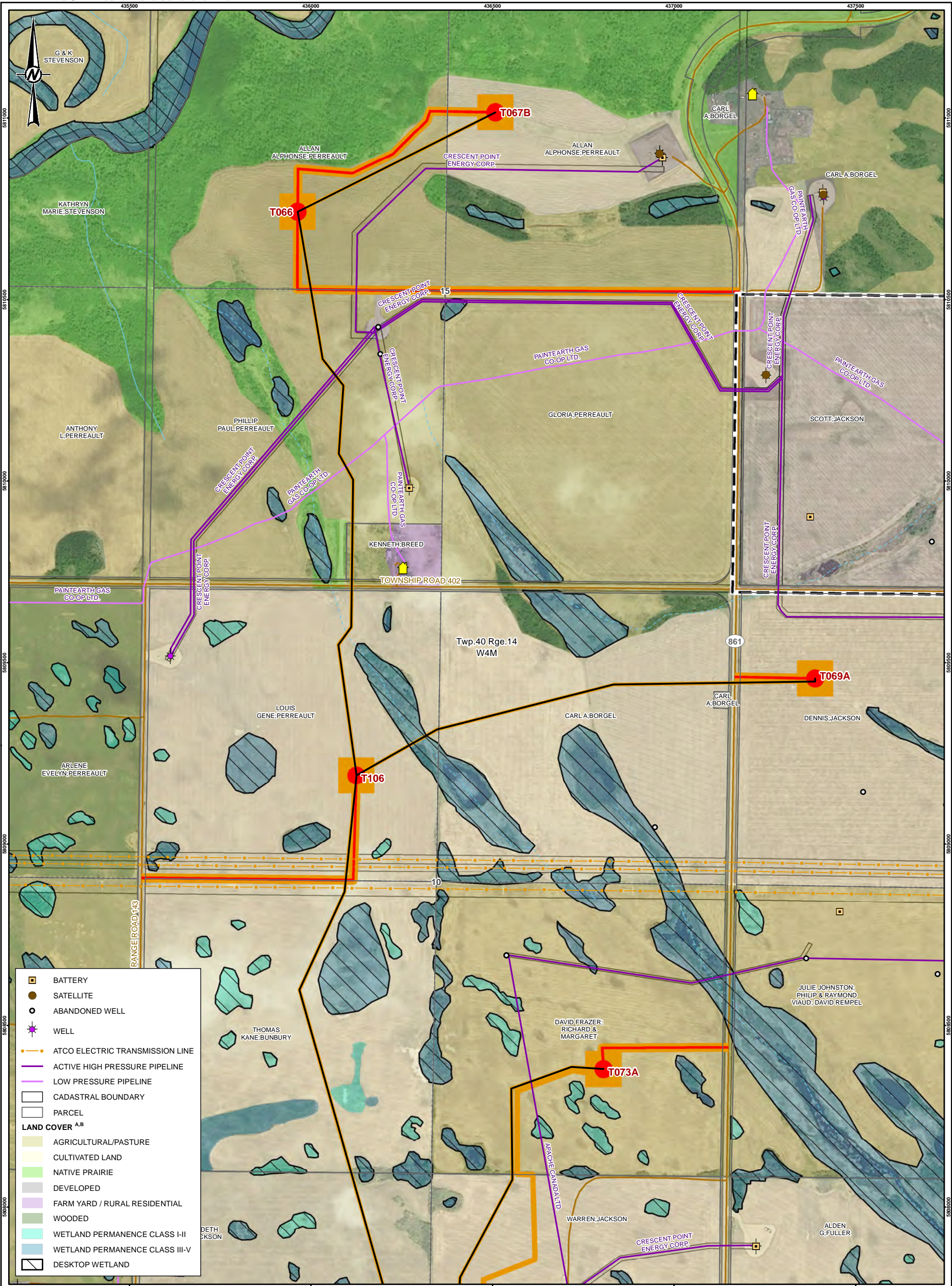
0

FIGURE

42-1J

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B





LEGEND

- PROJECT AREA
- UNDERGROUND COLLECTOR SYSTEM
- PERMANENT PROPOSED PROJECT INFRASTRUCTURE
- TEMPORARY PROPOSED PROJECT INFRASTRUCTURE
- RESIDENCE
- ROAD/HIGHWAY
- INDEFINITE WATERCOURSE
- WATERCOURSE



CLIENT



CONSULTANT



YYYY-MM-DD	2017-04-06
DESIGNED	AO
PREPARED	SG
REVIEWED	CDM
APPROVED	CS

NOTE(S)

\*LAND COVER TYPES MAY BE DESKTOP OR FIELD VERIFIED.  
\*STEWART AND KANTRUD (1971) WETLAND CLASSIFICATION SYSTEM. ALBERTA ENVIRONMENT AND SUSTAINABLE RESOURCE DEVELOPMENT, 2015. ALBERTA WETLAND CLASSIFICATION SYSTEM. WATER POLICY BRANCH, POLICY AND PLANNING DIVISION, EDMONTON, AB.

REFERENCE(S)

ALBERTA TOWNSHIP SYSTEM, HYDROGRAPHY AND TRANSPORTATION BASE DATA  
© GOVERNMENT OF ALBERTA 2015. ALL RIGHTS RESERVED. FACILITIES AND PIPELINE DATA OBTAINED FROM IHS ENERGY INC. IMAGERY OBTAINED FROM THE CLIENT

PROJECT

HALKIRK 2 WIND PROJECT

TITLE

**LANDOWNERS AND MAJOR LAND USE AND RESOURCE FEATURES**

PROJECT NO.  
1543760

CONTROL

REV.

0

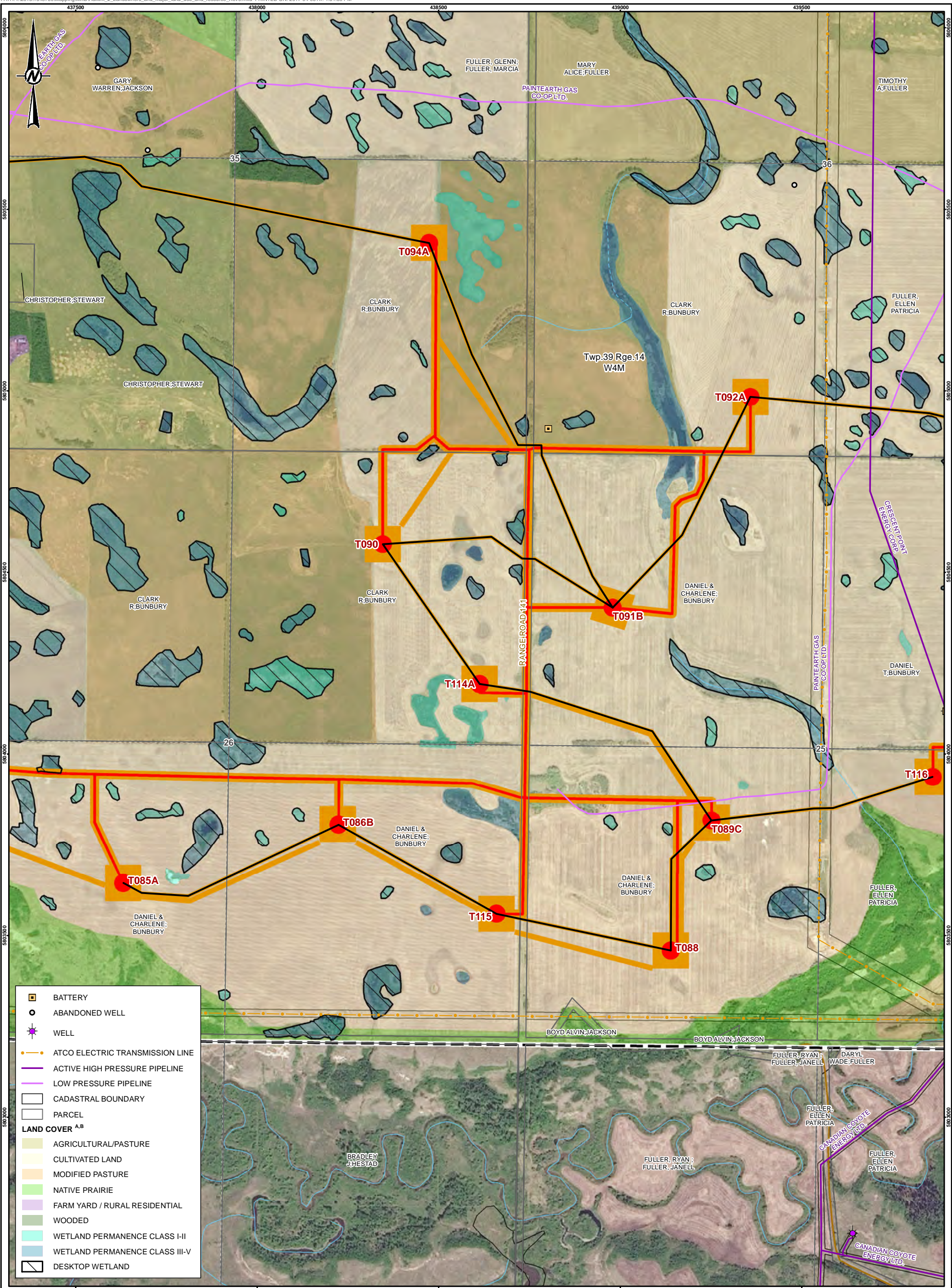
FIGURE

42-1K









**LEGEND**

- PROJECT AREA
- UNDERGROUND COLLECTOR SYSTEM
- PERMANENT PROPOSED PROJECT INFRASTRUCTURE
- TEMPORARY PROPOSED PROJECT INFRASTRUCTURE
- ROAD/HIGHWAY
- INDEFINITE WATERCOURSE
- WATERCOURSE

**CLIENT**

Capital Power

**CONSULTANT**

Golder Associates

**NOTE(S)**

\*LAND COVER TYPES MAY BE DESKTOP OR FIELD VERIFIED.  
\*STEWART AND KANTRUD (1971) WETLAND CLASSIFICATION SYSTEM. ALBERTA ENVIRONMENT AND SUSTAINABLE RESOURCE DEVELOPMENT, 2015. ALBERTA WETLAND CLASSIFICATION SYSTEM. WATER POLICY BRANCH, POLICY AND PLANNING DIVISION, EDMONTON, AB.

**REFERENCE(S)**

ALBERTA TOWNSHIP SYSTEM, HYDROGRAPHY AND TRANSPORTATION BASE DATA  
© GOVERNMENT OF ALBERTA 2015. ALL RIGHTS RESERVED. FACILITIES AND PIPELINE DATA OBTAINED FROM IHS ENERGY INC. IMAGERY OBTAINED FROM THE CLIENT

**PROJECT**

HALKIRK 2 WIND PROJECT

**TITLE**

LANDOWNERS AND MAJOR LAND USE AND RESOURCE FEATURES

**PROJECT NO.** 1543760

**CONTROL**

**REV.** 0

**FIGURE** 42-1M

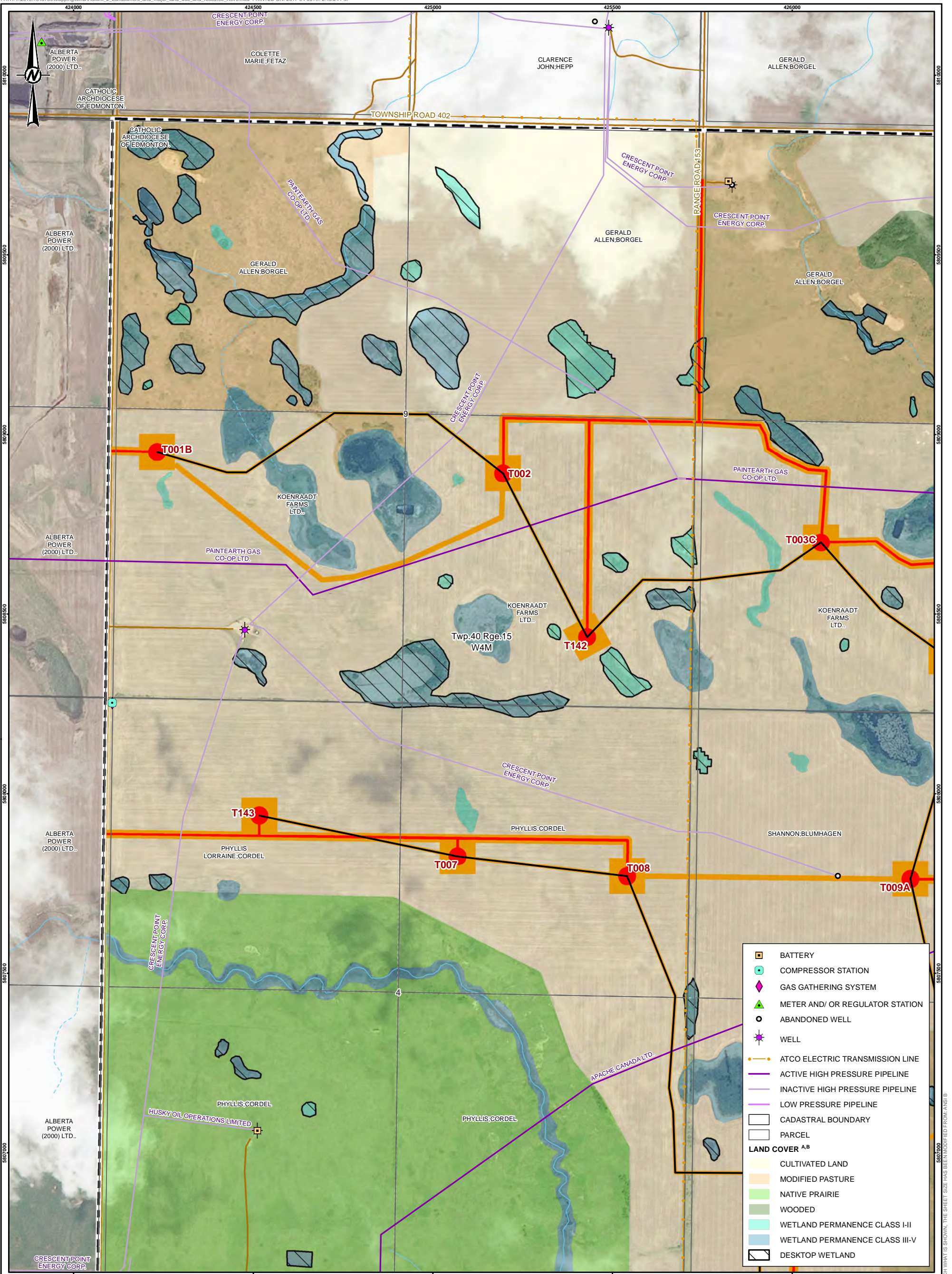
**SCALE**

0 400 800 METRES

1:10,000

**IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM 2435x3555 TO 2435x3555**





- LEGEND**
- PROJECT AREA
  - UNDERGROUND COLLECTOR SYSTEM
  - PERMANENT PROPOSED PROJECT INFRASTRUCTURE
  - TEMPORARY PROPOSED PROJECT INFRASTRUCTURE
  - ROAD/HIGHWAY
  - INDEFINITE WATERCOURSE
  - WATERCOURSE



CLIENT

**Capital Power**

CONSULTANT

**Golder Associates**

YYYY-MM-DD	2017-04-06
DESIGNED	AO
PREPARED	SG
REVIEWED	CDM
APPROVED	CS

**NOTE(S)**

<sup>a</sup>LAND COVER TYPES MAY BE DESKTOP OR FIELD VERIFIED.

<sup>b</sup>STEWART AND KANTRUD (1971) WETLAND CLASSIFICATION SYSTEM. ALBERTA ENVIRONMENT AND SUSTAINABLE RESOURCE DEVELOPMENT, 2015. ALBERTA WETLAND CLASSIFICATION SYSTEM. WATER POLICY BRANCH, POLICY AND PLANNING DIVISION, EDMONTON, AB.

**REFERENCE(S)**

ALBERTA TOWNSHIP SYSTEM, HYDROGRAPHY AND TRANSPORTATION BASE DATA © GOVERNMENT OF ALBERTA 2015. ALL RIGHTS RESERVED. FACILITIES AND PIPELINE DATA OBTAINED FROM IHS ENERGY INC. IMAGERY OBTAINED FROM THE CLIENT

PROJECT

**HALKIRK 2 WIND PROJECT**

TITLE

**LANDOWNERS AND MAJOR LAND USE AND RESOURCE FEATURES**

PROJECT NO.	CONTROL	REV.	FIGURE
1543760		0	42-1A



**References**

AEP. 2017. Red Deer Region. Available on-line:

<https://landuse.alberta.ca/RegionalPlans/RedDeerRegion/Pages/default.aspx>

AUC (Alberta Utilities Commission). 2013. *Rule 012: Noise Control*.

AUC. 2016. *Rule 007: Applications for Power Plants, Substations, Transmission Lines and Industrial System Designations and Hydro Developments*.

County of Paintearth No. 18. 2004. Municipal Development Plan. Available at:

<http://www.countypaintearth.ca/PDF/LUB/County%20of%20Paintearth%20LUB%20-%20Amended%20January%202015.pdf>. Accessed February 1, 2016.

Government of Alberta. 2014. Approved Water Management Plan for Battle River Basin (Alberta). July 2014.

Available on-line: <http://aep.alberta.ca/water/programs-and-services/river-management-frameworks/battle-river-water-management-plan.aspx>.

**ATTACHMENT A**

**DRAFT APPROVAL**

**ATTACHMENT B**

**LETTER FROM THE COUNTY OF PAINTEARTH**

**ATTACHMENT C**

**PARTICIPANT INVOLVEMENT PROGRAM**

**ATTACHMENT D**

**TRANSPORT CANADA APPLICATION**



**ATTACHMENT E**

**NAV CANADA APPLICATION**

**ATTACHMENT F**

**ENVIRONMENT CANADA WEATHER RADAR ASSESSMENT**

**ATTACHMENT G**

**ALBERTA TRANSPORTATION APPLICATION**



**ATTACHMENT H**

**ENVIRONMENTAL EVALUATION**

**ATTACHMENT I**

**POST-CONSTRUCTION MONITORING AND MITIGATION PLAN**

**ATTACHMENT J**

**ENVIRONMENT EVALUATION ADDENDUM**



**ATTACHMENT K**

**ALBERTA ENVIRONMENT AND PARKS REFERRAL LETTER**

**ATTACHMENT L**

**HISTORICAL RESOURCE ACT CLEARANCE**

**ATTACHMENT M**

**NOISE IMPACT ASSESSMENT**



## **ATTACHMENT N**

### **FUNCTIONAL SPECIFICATIONS**