200 - 325 - 25th Street SE
Calgary, AB
T2A 7H8

Bur/Bus: (403) 716-8000
Telec/Fax: (403) 716-8039

FINAL

Phase I Environmental Site Assessment

Chinook Ridge - Proposed Golf Course
Portion of SE-31-028-03-W5M
Cochrane, AB

CHINOOK RIDGE LODGE AND GOLF COURSE LTD.

PROJECT NO. 149104750.500

PROJECT NO. 149104750.500

REPORT TO	**Chinook Ridge Lodge and Golf Course Ltd.** **PO Box 130** **Cochrane, AB T4C 1A4**
FOR	**Phase I Environmental Site Assessment**
ON	**Chinook Ridge - Proposed Golf Course** **Portion of SE-31-028-03-W5M** **Cochrane, AB**

September 1, 2011

Stantec Consulting Ltd.
200 - 325 - 25th Street SE
Calgary, AB
T2A 7H8

Phone: (403) 716-8000
Fax: (403) 716-8039

Table of Contents

Table of Contents

Table of Contents

Appendices

Executive Summary

Executive Summary

Site Description and Current Operations

Stantec Consulting Ltd. (Stantec) conducted a Phase I Environmental Site Assessment (Phase I ESA) of the property located within a portion of the southeast quarter of section 31, township 28, range 3, west of the fifth meridian (SE-31-028-03 W5M), northeast of Cochrane in Alberta, herein referred to as the "Site". The Phase I ESA was conducted for Chinook Ridge Lodge and Golf Course Ltd. for due-diligence purposes prior to the development of a golf course on the Site. The purpose of the Phase I ESA was to assess if evidence of potential or actual environmental contamination exists in connection with the Site, as a result of current or past activities on the Site or neighbouring properties.

The Site is currently occupied by a single-storey, residential building. The building is surrounded by agricultural land, with the exception of a small forested area to the north. In addition a hay shed is located in the southeast portion of the Site. Available historical information and information obtained during the site visit indicated the homestead was started to be built approximately in the early 1970s, and completed in the early 1980s. The Site consists of approximately 64.7 hectares (160 acres). Agricultural land occupies approximately 90% of the total site area. The remaining 10% of the total site area is comprised of trees, site buildings, landscaped areas, and graveled roadways.

Records Review

Based on a review of available aerial photographs, the Site has consisted largely of undeveloped land from at least 1953 to 2005. The footprint of one homestead has been located in the central portion of the Site, since the early 1970s, however a building wasn't erected until the early 1980s. An ephemeral creek was depicted in the north portion of the Site from 1953 to 2005. From at least 1953 until the late 1960s, the south portion of the Site consisted of agricultural land and the north portion of the Site consisted of forested land. In an 1953 aerial photograph, small disturbed areas and structures were visible near the northeast and southwest portions of the Site. In 1966, a large portion of the forested area in the north portion of the Site appeared cleared and by 1980 the forested area appeared completely cleared. In a 1987 aerial photograph, an ephemeral body of water (i.e., wetland) was visible in the central portion of the Site. This area appeared dry in aerial photographs dated from 1993 to 2005. Small structures and vehicles were visible in the southeast portion of the Site in a 2005 aerial photograph. Ms. Chloe Cartwright has owned the Site since 1998.

The area north of the Site has been undeveloped since the mid 1960s. In aerial photographs dated 1962 and 1953, the area north of the Site was primarily forested, however was mostly cleared in an aerial photograph dated 1966. The area east of the Site has been occupied by a homestead and used for agricultural land use since the early to mid 1960s. The homestead is located approximately 100 m east of the Site. The area south of the Site has been undeveloped since at least the early 1950s. An aerial photograph dated 1962 shows agricultural land use. No current or historical activities, operations or tenants on the neighbouring properties located north, east and south of the Site that would be considered potential sources of environmental concern to the Site were identified. According to Ms. Cartwright, the current land use surrounding the Site is agricultural.

The area west of the Site has been undeveloped since at least the early 1950s. An aerial photograph dated 1987 shows a wellsite approximately 80 m west of the northwest corner of the property. Based on a review of available records, this active crude oil well and associated facility was drilled in 1984. A review of the available historical and regulatory information suggests the quality of the surface and subsurface (e.g. soil and groundwater) in the vicinity of the crude oil well lease property may have been adversely impacted by the former drilling and fracturing activities. Furthermore, the presence of a bulk fuel AST within 80 m west of the Site is considered to represent an ongoing potential environmental concern. Based on the distance from the Site (80 m west), the presence of AST at the lease property, and the anticipated regional direction of groundwater flow (southeasterly towards the Site), the historical and current operations associated with the crude oil well lease property are considered to represent a potential concern to the Site.

Site Visit/Interviews

One AST is located on the site, immediately west of the Hay Shed in the southeast portion of the Site. It is used to store diesel fuel which supplies the on site farm tractors and equipment. The tank has an unknown volume and is reported to be over 20 years old. No leaks or spills related to this AST were observed or reported to Stantec. At the time of the site visit, surficial rust was noted on the exterior of the AST. No odours

Executive Summary (continued)

Site Visit/Interviews (continued)

were identified and vegetation under and around the AST did not appear to be stained or stressed at the time of the site visit. It is Stantec's understanding that this AST will not remain on the Site for the proposed Golf Course.

Wastewater discharges occurring at the Site included sanitary wastewater from the residential washrooms and kitchen areas. The wastewater is discharged to a septic tank north of the household. The septic tank was installed in 1988 and according to Ms. Cartwright, the tank is emptied every three years and has not required maintenance on it.

According to Ms. Cartwright, domestic garbage had been burned in a steel drum north of the residential property from 1988 to 1994. In approximately 1991 construction debris including small pieces of wood, insulation, carpet and drywall were used to fill a low area located on the north side of the driveway. It was indicated to Stantec that neither the septic tank, historical burn pit, or the buried construction debris are in the area of construction for the proposed golf course, and therefore will not be disturbed.

Conclusions

On-site Potential Environmental Concerns:

Domestic garbage had been burned in a steel drum from approximately 1988 to 1994 in a location north of the residential property. The discarded and burned domestic waste represents a low environmental concern. Discarded material should be removed and disposed of appropriately. According to Ms. Cartwright, the area where the historic burn pile is not included in area of development.

An AST containing diesel fuel has been located to the west of the hay shed, located in the southeast portion of the Site, since approximately 1998. The AST represents an ongoing potential environmental concern. It is recommended that a secondary containment that can hold 110% of the existing AST contents be used. In addition, long grasses that were observed at the time of the Site visit should be removed to mitigate the fire hazard. It is Stantec's understanding that the AST will be removed from Site upon redevelopment. If spills or staining are identified in the future, an environmental professional should be consulted at that time.

A septic tank is located north of the residential building, located in the east central portion of the Site. The tank was installed in approximately 1988 and has not required maintenance. It is recommended that a Phase II ESA be conducted to evaluate subsurface conditions. According to Ms. Cartwright, the area where the septic tank is located is not included in the area of development.

Off-site Potential Environmental Concerns:

Information obtained from the ERCB Abacus Datagraphics Database indicated that TriOil Resources Ltd. operates a natural gas pipeline located approximately 100 m west of the Site generally oriented north/south. No spills or complaints were reported for the section of pipeline located within the Site. The presence of the pipeline, which travels approximately 100 m west of the Site, is considered to represent an ongoing environmental concern and is the responsibility of the owner of the pipeline.

Based on a review of the available historical and regulatory information, the quality of the surface and subsurface (e.g. soil and groundwater) in the vicinity of the crude oil well lease property may have been adversely impacted by the former drilling and fracturing activities. Furthermore, the presence of a bulk fuel AST within 80 m west of the Site is considered to represent an ongoing potential environmental concern. Based on the distance from the Site (80 m west), the presence of AST at the lease property, and the anticipated regional direction of groundwater flow (southeasterly towards the Site), the historical and current operations associated with the crude oil well lease property are considered to represent a potential concern to the Site.

The Phase I ESA has revealed evidence of potential environmental concerns associated with the Site as summarized above. Based on the findings of this Phase I ESA, it is recommended that an intrusive investigation be conducted for due diligence purposes on Site in the area of the crude oil well lease to determine if the surrounding soil and/or groundwater has been impacted by the operation. Additionally, an intrusive investigation should be conducted in the area of the septic tank. Historical burned debris located north of the residential

Conclusions (continued)

property should be removed and disposed of at an approved facility. Finally, vegetation in the area of the AST west of the hay shed should be removed to mitigate the fire hazard. During development, excavated material and any exposed subsurface soils should be monitored for visual or olfactory evidence of potential environmental impacts. If potential impacts are identified, further assessment by an environmental consultant is recommended.

The statements made in this Executive Summary are subject to the same limitations included in the Closure (Section 7.0) and are to be read in conjunction with the remainder of this report.

Phase I Environmental Site Assessment

1.0 General Information

Client Information:
Chinook Ridge Lodge and Golf Course Ltd.
Ms. Chloe Cartwright
PO Box 130
Cochrane, AB T4C 1A4

Project Information:
149104750 - Chinook Ridge Golf Course,
SE-31-028-03-W5M
149104750.500

Site Information:
Chinook Ridge - Proposed Golf Course

Portion of SE-31-028-03-W5M
Cochrane, AB

Consultant Information:
Stantec Consulting Ltd.
200 - 325 - 25th Street SE
Calgary, AB T2A 7H8

Phone: (403) 716-8000 **Fax:** (403) 716-8039
E-mail Address: lincoln.weller@stantec.com
Site Visit Date: 08/26/2011
Report Date: 09/01/2011
Site Assessor: Lincoln Weller, B.Sc., Geol.I.T.
Report Preparer: Lincoln Weller, B.Sc., Geol.I.T.
Senior Reviewer: Amin N. Kassam, B.Sc.

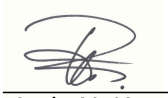
Site Assessor:

Lincoln Weller, B.Sc., Geol.I.T.
Environmental Scientist

Report Preparer:

Lincoln Weller, B.Sc., Geol.I.T.
Environmental Scientist

Senior Reviewer:



Amin N. Kassam, B.Sc.
Principal/Practice Leader,
Environmental Services

2.0 Introduction

2.1 Objectives

Stantec Consulting Ltd. (Stantec) conducted a Phase I Environmental Site Assessment (Phase I ESA) of the property located within a portion of the southeast quarter of section 31, township 28, range 3, west of the fifth meridian (SE-31-028-03-W5M) northeast of Cochrane, Alberta, herein referred to as the "Site". The Phase I ESA was conducted for Chinook Ridge Lodge and Golf Course Ltd. for due-diligence purposes prior to the development of a golf course at the Site. The purpose of the Phase I ESA was to assess if evidence of potential or actual environmental contamination exists in connection with the Site, as a result of current or past activities on the Site or neighbouring properties.

A site plan is included in **Appendix A** and selected photographs of the Site are included in **Appendix B**.

2.2 Scope of Work

The Phase I ESA carried out by Stantec on this property was conducted in general accordance with Stantec's Proposal dated January 11, 2010 and the Canadian Standards Association's (CSA) *Phase I Environmental Site Assessment* Standard Z768-01 (R2006).o The Phase I ESA consisted of the following:

- records review including, but not limited to, publicly available city directories, aerial photographs, fire insurance plans, geological and topographic maps
- provincial government regulatory search
- review of available environmental databases and records
- review of previous environmental reports and existing title searches, if made available
- interviews with persons having knowledge of the Site
- a site visit
- evaluation of information and preparation of the report provided herein

A Phase I ESA does not include sampling or testing of air, soil, groundwater, surface water or building materials. For this Phase I ESA, no enhancements to the CSA standard were made.

This assessment did not include a review or audit of operational environmental compliance issues, or of any environmental management systems, which may exist for the Site.

The assessment of the Site for the potential presence of hazardous building materials was based on the age of the building and components, and a non-intrusive visual review of the Site. No sampling of materials was conducted. A Phase I ESA does not constitute a Hazardous Materials Survey or Designated Substances Survey.

The assessment of the Site for microbial contamination and moisture damage was made during the walk through of the building. This assessment was visual only and not every area was assessed. No sampling or intrusive investigation was conducted.

The professional qualifications of the project team are provided in **Appendix C**.

The site visit was conducted by Mr. Lincoln Weller, B.Sc., Geol.I.T., of Stantec, on August 26, 2011. The Site and readily visible and publicly accessible portions of adjoining and neighbouring properties were observed for the presence of potential sources of environmental contamination. Stantec was accompanied by Ms. Chloe Cartwright of Chinook Ridge Lodge and Golf Course Ltd. during the site visit. Ms. Cartwright has been associated with the Site since 1988.

Interviews were carried out to obtain or confirm information on the historic operations and activities on the Site. Ms. Cartwright of Chinook Ridge Lodge and Golf Course Ltd. was interviewed during the course of the site visit.

2.3 Regulatory Framework

In Alberta, the management and investigation of contaminated sites is regulated under the Environmental Protection and Enhancement Act (EPEA) and the Water Act. EPEA prohibits the release of substances in an amount that causes or may cause a significant adverse effect. When a release occurs, the release must be reported and remedial measures must be implemented. The EPEA authorizes the Director to issue Remediation

2.0 Introduction (continued)

2.3 Regulatory Framework (continued)

Certificates when contaminated land has been remediated. The Remediation Certificate protects the responsible party from future environmental protection orders related to the remediated site. The Water Act regulates the management of water supplies and water quality, including groundwater.

In December 2010, Alberta Environment (AENV) revised and re-issued new remediation guidelines (Alberta Tier 1 and Tier 2 Soil and Groundwater Remediation Guidelines). These guidelines allow three management options: Tier 1, Tier 2 and Exposure Control. Remediation of a site under a Tier 1 involves the use of generic guidelines. Tier 2 allows for the consideration of site-specific conditions through the modification of generic (Tier 1) guidelines. Exposure Control management involves risk management through exposure barriers or administrative controls based on site-specific risk assessment. Unconditional regulatory closure is available for sites managed to Tier 1 and Tier 2 objectives.

During a Phase I ESA samples are not collected, however, if there are previous soil or groundwater sample results available, the results are compared to applicable federal and provincial regulations and guidelines.

A Phase I ESA involves a review of any site buildings for the potential presence of hazardous materials related to building components and materials. Specific federal or provincial regulations, guidelines or codes of practice exist for these individual hazardous materials. Where required, this documentation was utilized to determine appropriate conclusions and formulate appropriate recommendations.

3.0 Records Review

3.1 Information Sources

The applicable search distance for the records review included the Site, properties immediately adjacent to the Site and other neighbouring properties where activities considered to be potential sources of environmental contamination were apparent. Information sources obtained and reviewed as part of the records review are listed below.

SOURCE	INFORMATION/CONTACT
Aerial Photographs	1953, 1962, 1966, 1970, 1975, 1980, 1984, 1987, 1993, 2000, and 2005
Fire Insurance Plans	Information not available
City Directories	Information not available
Previous Environmental Reports	Previous environmental reports were not provided to Stantec for review.
Company Records	Information not available
Geological and Geotechnical Reports	Alberta Energy and Utilities Board, 1999. "Geological Map of Alberta". Scale 1:1,000,000 Natural Resources Canada, 2000. "Airdrie, Alberta". ETopo 82-O/08, Scale 1:50,000 Shetsen, I. 1987. "Quaternary Geology, Southern Alberta". Scale 1:500,000
Environmental Control Orders, Stop Orders, Prosecutions, or Tickets	Environmental Law Centre, Enforcement Search Services, (780) 424-5099 EcoLog ERIS Database Search
Reportable Spill/Release Occurrences	Abacus Datagraphics: Energy Resources Conservation Board pipeline and oil well database. http://www.abacusdatagraphics.com Alberta Environment, Sustainable Resource Development Freedom of Information and Protection of Privacy Office, (780) 427-5022 EcoLog ERIS Database Search
Contaminated Sites	Alberta Environment, Sustainable Resource Development Freedom of Information and Protection of Privacy Office, (780) 427-5022 EcoLog ERIS Database Search
Environmental Approvals, Licences, Registrations, and Permits	Alberta Environment, Environmental Permits/Approvals http://www3.gov.ab.ca/env/water/ApprovalViewer.html Abacus Datagraphics: Energy Resources Conservation Board pipeline and oil well database. http://www.abacusdatagraphics.com EcoLog ERIS Database Search

3.0 Records Review (continued)

3.1 Information Sources (continued)

SOURCE	INFORMATION/CONTACT
Landfill Records	Alberta Environment Help End Landfill Pollution Database (1988)
	Alberta Environment Active and Inactive Land Disposal Sites (1982)
	EcoLog ERIS Database Search
Underground & Aboveground Storage Tanks	Petroleum Tank Management Association of Alberta, (780) 425-8265
	EcoLog ERIS Database Search
Other Available Information	Current title: Alberta Registries, Title Information Service, (403) 297-6511
Water Well Records	Alberta Environment Groundwater Information System, http://www.telusgeomatics.com/tgpub/ag_water

3.2 Previous Reports

No previous environmental reports were available for review.

3.3 Regulatory Information

Available environmental databases and records were searched to determine if the Site, adjacent or neighbouring properties were listed. The databases and search results are presented below. The federal, provincial, and municipal departments which provided regulatory information for the Site are listed in **Appendix D**.

Regulatory Information:

Alberta Environment, Regulatory Approvals Centre: Information obtained from the Regulatory Approvals Centre Internet Search Service (Authorizations/Approval Viewer) indicates that they have no record of any approvals having been issued for the Site.

Environmental Law Centre (ELC): On June 25, 2010, the ELC (enforcement history) indicated that they have no records of Tickets, Prosecutions, and Warning Letters issued to Chloe Cartwright (current site owner).

Alberta Environment Freedom of Information and Protection of Privacy (FOIP) Office: A file search request with the Alberta Environment FOIP office, initiated on June 24, 2010, did not identify routinely available records relating to the Site based on the parameters provided.

Alberta Environment Environmental Site Assessment Repository (ESAR): A search of the Alberta Environment ESAR database did not identify files or reports pertaining to the Site.

Petroleum Tank Management Association of Alberta (PTMAA): The PTMAA indicated that they have no record of any aboveground storage tanks (ASTs) or underground storage tanks (USTs) being present at the Site or within 200 m of the Site.

Abacus Datagraphics Database: The Energy and Resources Conservation Board (ERCB) governs oil and gas activities in Alberta. Publicly accessible information includes pipeline locations, well site and associated facilities

3.0 Records Review (continued)

3.3 Regulatory Information (continued)

information, and recorded environmental incidents associated with the oil and gas industry. A search of the Abacus Datagraphics Database (Abacus) identified two natural gas pipelines approximately 100 m west and 170 southeast of the Site, respectively. An active crude oil well and associated facillity were identified approximately 80 m west of northwest corner of the Site. The well and pipelines are discussed below:

- A natural gas pipeline (License 21977 - Line 15), operated by TriOil Resources Ltd., runs north-south approximately 100 m west of the western boundary. According to Abacus, the pipeline is constructed of steel and the license date is January 30, 1986. Based on the information available, no spills were identified for this pipeline,
- An active crude oil well (License #0109796), licensed by TriOil Resources Ltd. has been located approximately 80 m west of the Site since 1984. Further information regarding this well is provided below under ERCB Core Research Centre.

Alberta Environment Water Wells Database: A search of Alberta Environment Groundwater Information System identified 6 water wells located on-site. Water well usage is listed as domestic (3 wells), domestic and stock (2 wells), and other (1 well). Static water levels ranged from approximately 8 mbg to 77 mbg. The lithology listed on the water well drilling reports consisted generally of clay overlying alternating layers of sandstone and shale.

Alberta Environment and Environment Canada Help End Landfill Pollution Database (1988) and Active and Inactive Land Disposal Sites (1982): A search of these databases did not identify any active or historical landfills within 1 km of the Site.

EcoLog Environmental Risk Information Service (EcoLog ERIS): A search of the EcoLog ERIS database dated July 8, 2010 identified 6 water well records on the Site. In addition, a crude oil well was identified west of the Site within 200 m.

ELC Wellsite Reclamation Historical Search Service: The ELC reclamation search results dated June 24, 2010, indicated that there have been no Reclamation Certificates, Reclamation Orders or Conservation and Reclamation notices issued for the Site or for the adjacent quarter section to the west of the Site (SW-31-028-03-W5M), in which the abovementioned well and pipelines are located.

ERCB Core Research Centre: Information obtained from the ERCB Core Research Centre indicated that mud additives including, but not limited to: gel, caustics, soda ash, lime, calcium chloride, and alcomer were used during the drilling process between October and November 1984. Comments on available daily drilling reports indicated that there may have been a sump and flare pit present on the lease property, and that the drilling rig was serviced on a regular basis on the lease property. Two mud tanks and a 30,000 L aboveground storage tank (AST), reportedly containing diesel, were noted at being located at the lease property during the drilling process. The crude oil well site was visible in aerial photographs dated from 1987 to 2005. A bulk fuel AST and a pump-jack were visible in the northwest and southeast portions of the lease property, respectively, during this time period. Information obtained from the ERCB Core Research Centre indicated that the crude oil well underwent hydraulic fracturing from January to March 1985. Comments on the daily completion reports indicated that crude oil, cardium crude oil, methanol, and acid were used in the fracturing process during this time period.

3.4 Physical Setting

3.4.1 Surficial Geology

Based on an available surficial geology map, the native surficial soils of the Site consist of till. The characteristic permeability of these soils is low. A site-specific determination would be required in order to obtain detailed soil profile and permeability information.

3.0 Records Review (continued)

3.4 Physical Setting (continued)

3.4.2 Surface Water Drainage

The surfaces of the Site consist of undeveloped land. Surface water is anticipated to drain by infiltration and/or overland flow.

3.4.3 Topography and Regional Drainage

The Site topography slopes toward the southeast towards the Beaverdam Creek. Based on an available topographic map and the observed site topography, regional surface drainage (anticipated shallow groundwater flow direction) appears to be to the south.

It should be noted that the direction of the shallow groundwater flow in limited areas can also be influenced by the presence of underground utility corridors and is not necessarily a reflection of regional or local groundwater flow or a replica of the Site or area topography.

3.4.4 Bedrock Geology

Based on an available bedrock geology map, bedrock in the area of the Site consists of nonmarine light grey or yellowish, medium- to fine-grained cross-bedded, brownish weathering sandstone and olive green siltstone/mudstone interbedded with thin sandstone lenses and miror lenses of carbonaceous shale.

4.0 Site Description

4.1 Property Information

The Site includes the entire quarter section with the exception of a rectangular parcel out section in the northeast corner of the Site. The Site is located approximately 35 kms northeast of Cochrane, Alberta. The Site is bound to the east by Range Road 35, and to the north, south and west by agricultural land. Agricultural land occupies approximately 90% of the total site area. The remaining 10% of the total site area is comprised of trees, site buidlings, landscaped areas, and graveled roadways. The legal description of the Site and the current ownership are provided in the detailed site summary below.

Site plans are included in **Appendix A** and selected photographs of the Site are included in **Appendix B**.

Current Site Owner:	Chloe Cartwright
Legal Description:	Portion of SE-31-028-03-W5M
Property Area:	64.7 hectares (160 acres)
Utility Providers:	
Water:	Drilled Wells
Storm and Sanitary Sewers:	Septic Tank
Electricity:	Local Provider
Natural Gas:	Local Provider

4.2 On-Site Buildings and Structures

At the time of the site visit, the east central portion of the Site was occupied by a single-storey, rectangular, bungalow with a triple attached garage, and included a walk out basement. The site building had a total foot print of approximately 409 m² (4,400 ft²). A storage shed of approximately 14 m² (150 ft²) was located south of the bungalow. In addition, the southeast corner of the Site was occupied by a Hay Shed and had a foot print of approximately 836 m² (9,000 ft²). The remainder of the Site consisted of agricultural land. A site plan is provided as Figure No. 2, **Appendix A**.

The site building is primarily a wood-framed structure. The roof consists of cedar shake, and the exterior walls are stucco. The site building is constructed on a concrete foundation. Interior finishes consist of gypsum board. The storage shed is constructed entirely out of wood and sits on wooden skids. The Hay Shed in built on a concrete floor slab and constructed with double hoop engineered 16 gauge steel overlaid with vinyl covering.

The table below provides a summary of the site building information.

Building ID:	# of Levels:	Basement:	Area:	Year Built:	Building Use:	General Construction:
Bungalow	1	Yes - Walk out	409 sq. m (4,400 sq. ft.)	Started in early 1970s, finished in early 1980s	The property is used as a residential property.	Described above
Storage Shed	1	No	14 sq. m (150 sq. ft.)		Storage of extra building supplies and furniture	Described above
Hay Shed	1	No	836 sq. m (9,000 sq. ft.)	Constructed between 1998 and 2000.	Storage of hay and farming equipment	Described above

4.0 Site Description (continued)

4.3 Historical Land Use

Historical land use for the Site was determined through historical records listed in Section 3.0. A summary of the historical information is presented below.

Based on a review of available aerial photographs, the Site has consisted largely of undeveloped land from at least 1953 to 2005. The footprint of one homestead has been located in the central portion of the Site, since the early 1970s, however a building wasn't erected until the early 1980s. An ephemeral creek was depicted in the north portion of the Site from 1953 to 2005.

From at least 1953 until the late 1960s, the south portion of the Site consisted of agricultural land and the north portion of the Site consisted of forested land. In an 1953 aerial photograph, small disturbed areas and structures were visible near the northeast and southwest portions of the Site. In 1966, a large portion of the forested area in the north portion of the Site appeared cleared and by 1980 the forested area appeared completely cleared.

In a 1987 aerial photograph, an ephemeral body of water (i.e., wetland) was visible in the central portion of the Site. This area appeared dry in aerial photographs dated from 1993 to 2005. Small structures and vehicles were visible in the southeast portion of the Site in a 2005 aerial photograph. Chloe Cartwright has owned the Site since 1998.

5.0 Site Visit Findings

5.1 Current Site Operations

The Site is currently occupied by a single-storey, residential building. The building is surrounded by agricultural land, with the exception of a small forested area to the north. In addition, a hay shed is located in the southeast portion of the Site. The land is currently being used to grow hay.

5.2 Waste Generation and Storage

5.2.1 Solid and Liquid Wastes

At the time of the site visit, non-hazardous solid waste generated at the Site was collected and according to Ms. Cartwright, the contents are removed for off-site disposal at the Calgary Landfill once every two weeks. Recyclable wastes generated at the Site, such as paper and cardboard, were collected and according to Ms. Cartwright, the contents are removed off-site to Cochrane on a monthly basis.

According to Ms. Cartwright, domestic garbage had been burned in a steel drum north of the residential property from 1988 to 1994. In approximately 1991, construction debris including small pieces of wood, insulation, carpet and drywall were used to fill a low area located on the north side of the driveway. It was indicated to Stantec that neither the historical burn pit, or the buried construction debris are in the area of construction for the proposed golf course, and therefore will not be disturbed.

No wastewater discharges other than domestic wastewater were identified to be produced on the Site at the time of the site visit.

5.2.2 Drains, Sumps, Septic Systems and Oil Water Separators

Wastewater discharges occurring at the Site included sanitary wastewater from the residential washrooms and kitchen areas. The wastewater is discharged to a septic tank north of the household. The septic tank was installed in 1988 and according to Ms. Cartwright, the tank is emptied every three years and has never required maintenance on it.

No sumps, oil/water separators, generation of process effluent, or other potential sources of environmental contamination related to wastewater discharges were observed during the site visit.

5.2.3 Air Discharges and Odours

No sources of air emissions suspected to result in residual contamination were identified to be present on the Site. Furthermore, no strong, pungent, or unusual odours were identified during the site visit.

5.3 Fuel and Chemical Storage

5.3.1 Underground Storage Tanks (USTs)

No chemical or fuel storage USTs were identified to be present or reported on the Site during the site visit. Further, no vent or fill pipes indicating the potential presence of an abandoned or decommissioned UST were observed.

5.3.2 Aboveground Storage Tanks (ASTs)

One AST is located on the site, immediately west of the Hay Shed in the southeast portion of the Site. It is used to store diesel fuel which supplies the on site farm tractors and equipment. The tank has an unknown volume and is reported to be over 20 years old. No leaks or spills related to this AST were observed or reported to Stantec. At the time of the site visit, surficial rust was noted on the exterior of the AST. No odours were identified and vegetation under and around the AST did not appear to be stained or stressed at the time of the site visit.

5.0 Site Visit Findings (continued)

5.3 Fuel and Chemical Storage (continued)

5.3.3 Other Storage Containers

No chemical storage other than a small quantity of cleaning chemicals used and stored in the residential building was observed stored on Site. According to Ms. Cartwright, there was a propane tank on Site from 1988 to 1992 that was used for household heating.

5.4 Building Systems/Equipment

5.4.1 Heating and Cooling Systems

The residential building is provided with heat via a gas furnace. No air conditioners are present on Site.

5.4.2 Hydraulic Equipment

At the time of the site visit, no hydraulic equipment associated with the building systems were observed at the time of the site visit. However, a bob cat is used on Site and contains hydraulic lines. No visible leaks were observed or reported to Stantec.

5.5 Exterior Site Observations

5.5.1 Surface Features

Several oil stains were observed at the time of the site visit on the concrete slab in the Hay Shed. No other stained surficial materials were observed on the Site during the site visit.

Two wetlands were identified on Site, one in the southwest and one in the central portion of the Site. According to Ms. Cartwright, the wetlands are seasonal. A wetlands assessment has been conducted by Stantec, and is provided under a seperate cover.

No other watercourses, pits, lagoons or ditches were identified to be present on the Site.

5.5.2 Fill Materials

At the time of the site visit, no evidence of imported fill materials was observed. The Site generally appeared to be at grade with the adjacent roadways and adjoining properties. Based on the observations made during the site visit, it is unlikely that significant quantities of fill materials were brought onto the Site at the time of site development.

5.5.3 Wells

Alberta Environment identified six water wells on Site. According to Ms. Cartwright, five wells are located on Site. Three wells are located in the southwest portion of the Site, one well is located northwest of the hay shed in the southeast portion of the Site, and one well is located approximately 120 northeast of the residential property.

No abandoned or existing wells (oil, gas or disposal) were identified on the Site.

5.6 Hazardous Building Materials

5.6.1 Asbestos-Containing Materials (ACMs)

The common use of friable (crumbles easily by hand pressure) asbestos-containing materials (ACMs) in construction generally ceased voluntarily in the mid 1970s but was only banned through legislation in the mid-late 1980s. Asbestos was used in thousands of building products and the common uses of friable ACMs included boiler and pipe insulation, and spray-on fireproofing. Asbestos was also used in many manufactured products such as floor tiles, ceiling tiles, transite cement products and various other construction

5.0 Site Visit Findings (continued)

5.6 Hazardous Building Materials (continued)

5.6.1 Asbestos-Containing Materials (ACMs) (continued)

materials. Some cement drain piping currently used in the construction of buildings still contains asbestos (non-friable). Vermiculite used as insulation may be contaminated with asbestos fibres.

Ms. Cartwright indicated that no previous ACM survey had been conducted at the Site. Based on the approximate date of construction (i.e., 1984) of the site building, it is unlikely that site construction materials containing friable and non-friable ACMs are present. It should be noted that a Phase I ESA does not constitute a comprehensive asbestos survey.

5.6.2 Polychlorinated Biphenyls (PCBs)

From the 1930s to the 1970s, PCBs were widely used as coolants and lubricants for electrical equipment, including transformers and capacitors, and in a number of industrial materials, including sealing and caulking compounds, inks and paint additives. The use of PCBs was prohibited in heat transfer and electrical equipment installed after September 1, 1977, and in transformers and capacitors installed after July 1, 1980. Regulations now require that PCB containing equipment be taken out of service prior to regulated deadlines.

Based on the approximate date of construction (i.e., 1984), it is unlikely that electrical equipment containing PCBs are present at the Site. A pole-mounted transformer was located north of the residentail building in the east central portion of the Site. The transformer is likely owned and maintained by the utility provider and is not the property owner's responsibility. At the time of the site visit, no visible evidence of stained surficial materials was observed near the transformer. The transformer was in good condition and no staining was observed at the time of the site visit. Ms. Cartwright indicated that the pole-mounted transformer was installed approximately five years ago.

5.6.3 Lead-Based Materials

In 1976, the lead content in interior paint was limited to 0.5% by weight under the federal Hazardous Products Act. Lead based water supply pipes were used greater than 50 years ago. Between 1930 and 1986, most buildings used copper pipe with lead-solder joints. Other lead-based products include wall shielding (x-ray rooms).

Based on the age of the site building (i.e. 1984), it is unlikely that lead-based building materials are present at the Site.

5.6.4 Urea Formaldehyde Foam Insulation (UFFI)

Urea Formaldehyde Foam Insulation (UFFI) was used as an insulation product for existing houses between the mid-1970s and its ban in Canada in 1980. It was not commonly used for commercial or industrial buildings.

No evidence of the application of UFFI was observed during the site visit. It should be noted that a Phase I ESA does not constitute a comprehensive hazardous materials survey and there may be UFFI in areas of the Site not viewed by Stantec such as wall cavities and inaccessible crawlspaces.

5.6.5 Ozone-Depleting Substances (ODSs)

Refrigeration and air conditioning equipment in place before 1998 may contain refrigerants containing Ozone-depleting Substances. Non-ODS refrigerants have been developed and are available to replace these materials in newer equipment.

Potential ODSs at the Site include unknown coolants in the stand-alone refrigeration equipment located in the kitchen. No air conditioning units were present on-site at the time of the site visit.

5.0 Site Visit Findings (continued)

5.7 Special Attention Items

5.7.1 Radon Gas

Radon is a radioactive gas associated with uranium rich black shale and/or granite bedrock. Radon emits alpha particles and produces several solid radioactive products called radon daughters. Harmful levels of radon and radon daughters can accumulate in confined air spaces, such as basements and crawl spaces.

Based on information collected from regional geological maps and Alberta Environment water well drilling records, accumulation of radon gas products is not considered an environmental concern to the Site.

5.7.2 Microbial Contamination (Mold) and Indoor Air Quality

The growth of mold in indoor environments is typically due to a moisture problem related to building envelope or mechanical systems deficiencies or design, and can produce adverse health effects. There is no practical way to eliminate all mold and mold spores in the indoor environment. The way to control mold is to control moisture.

No water staining or evidence of previous water damage was observed at the time of the site visit or reported by Ms. Cartwright. It should be noted that the Phase I ESA is only a cursory overview of the Site and therefore does not constitute a comprehensive mold assessment. No intrusive investigations into mechanical systems, suspended ceilings, or plumbing were conducted.

5.7.3 Electromagnetic Frequencies (EMFs)

Electrical currents induce electromagnetic fields. No scientific data supports definitive answers to questions about the existence or non-existence of health risks related to electromagnetic fields.

No high-voltage transmission lines or electrical substations, which could generate significant electromagnetic fields, were identified on or immediately adjacent to the Site.

5.7.4 Noise and Vibration

The effects of noise and vibration on human health vary according to the susceptibility of the individual exposed, the nature of the noise/vibration and whether exposure occurs in the working environment or in the home.

No major or persistent sources of noise and vibration were identified to be present at the Site during the site visit.

5.8 Adjoining Property Information

The current activities on neighbouring properties within a 200 m radius of the Site observed at the time of the site visit and a summary of historic information gathered through the records review are presented below.

North: Based on available aerial photographs and the observations made during the site visit, the area north of the Site has been undeveloped since the mid 1960s. In aerial photographs dated 1962 and 1953, the area north of the Site was primarily forested, however was mostly cleared in an aerial photograph dated 1966. According to Ms. Cartwright, the current land use is agricultural.

No current or historical activities, operations or tenants on the neighbouring properties located north of the Site that would be considered potential sources of environmental concern to the Site were identified.

East: Based on available aerial photographs and the observations made during the site visit, the area east of the Site has been occupied by a homestead and used for agricultural land use since the early to mid 1960s. The homestead is located approximately 100 m east of the Site.

5.0 Site Visit Findings (continued)

5.8 Adjoining Property Information (continued)

No current or historical activities, operations or tenants on the neighbouring properties located east of the Site that would be considered potential sources of environmental concern to the Site were identified.

South: Based on available aerial photographs and the observations made during the site visit, the area south of the Site has been undeveloped since at least the early 1950s. An aerial photograph dated 1962 shows agricultural land use. According to Ms. Cartwright, the current land use is agricultural.

No current or historical activities, operations or tenants on the neighbouring properties located south of the Site that would be considered potential sources of environmental concern to the Site were identified.

West: Based on available aerial photographs and the observations made during the site visit, the area west of the Site has been undeveloped since at least the early 1950s. According to Ms. Cartwright, the current land use is agricultural. An aerial photograph dated 1987 shows a wellsite approximately 80 m west of the northwest corner of the property. Based on a review of available records, this active crude oil well and associated facility was drilled in 1984. More details associated with this wellsite are described in Section 3.3.

Based on a review of the available historical and regulatory information, the quality of the surface and subsurface (e.g. soil and groundwater) in the vicinity of the crude oil well lease property may have been adversely impacted by the former drilling and fracturing activities. Furthermore, the presence of a bulk fuel AST within 80 m west of the Site is considered to represent an ongoing potential environmental concern. Based on the distance from the Site (80 m west), the presence of AST at the lease property, and the anticipated regional direction of groundwater flow (south to southeasterly towards the Site), the historical and current operations associated with the crude oil well lease property are considered to represent a potential concern to the Site.

5.9 Client-Specific Items

No specific client requests were made with respect to this Phase I ESA.

6.0 Conclusions and Recommendations

The Phase I ESA has revealed evidence of potential environmental concerns associated with the Site as a result of current and/or historical on-site and off-site land uses. Potential environmental concerns and associated recommendations regarding the Site are based on the following:

On-site Potential Environmental Concerns:

Domestic garbage had been burned in a steel drum from approximately 1988 to 1994 in a location north of the residential property as shown in **Appendix B** (Photo No. 12 and 13). The discarded and burned domestic waste represents a low environmental concern. Discarded material should be removed and disposed of appropriately. According to Ms. Cartwright, the area where the historic burn pile is not included in area of development.

An AST containing diesel fuel has been located to the west of the hay shed, located in the southeast portion of the Site, since approximately 1998. The AST represents an ongoing potential environmental concern. It is recommended that a secondary containment that can hold 110% of the existing AST contents be used. In addition, long grasses that were observed at the time of the site visit should be removed for fire control. It is Stantec's understanding that the AST will be removed from Site upon redevelopment. If spills or staining are identified in the future, an environmental professional should be consulted at that time.

A septic tank is located north of the residential building, located in the east central portion of the Site. The tank was installed in approximately 1988 and has not required maintenance. It is recommended that a Phase II ESA be conducted to evaluate subsurface conditions. According to Ms. Cartwright, the area where the septic tank is located is not included in the area of development.

Off-site Potential Environmental Concerns:

Information obtained from the ERCB Abacus Datagraphics Database indicated that TriOil Resources Ltd. operates a natural gas pipeline located approximately 100 m west of the Site generally oriented north/south. The pipeline is depicted in Figure 2.0, included in **Appendix A**. No spills or complaints were reported for the section of pipeline located within the Site. The presence of the pipeline, which travels approximately 100 m west of the Site, is considered to represent an ongoing environmental concern and is the responsibility of the owner of the pipeline.

Based on a review of the available historical and regulatory information, the quality of the surface and subsurface (e.g. soil and groundwater) in the vicinity of the crude oil well lease property may have been adversely impacted by the former drilling and fracturing activities. Furthermore, the presence of a bulk fuel AST within 80 m west of the Site is considered to represent an ongoing potential environmental concern. Based on the distance from the Site (80 m west), the presence of AST at the lease property, and the anticipated regional direction of groundwater flow (southeasterly towards the Site), the historical and current operations associated with the crude oil well lease property are considered to represent a potential concern to the Site.

The Phase I ESA has revealed evidence of potential environmental concerns associated with the Site as summarized above. Based on the findings of this Phase I ESA, it is recommended that an intrusive investigation be conducted for due diligence purposes on Site in the area of the crude oil well lease to determine if the surrounding soil and/or groundwater has been impacted by the operation. Additionally, an intrusive investigation should be conducted in the area of the septic tank. Historical burned debris located north of the residential property should be removed and disposed of at an approved facility. Finally, vegetation in the area of the AST west of the hay shed should be removed to mitigate the fire hazard. During development, excavated material and any exposed subsurface soils should be monitored for visual or olfactory evidence of potential environmental impacts. If potential impacts are identified, further assessment by an environmental consultant is recommended.

7.0 Closure

This report has been prepared for the sole benefit of Chinook Ridge Lodge and Golf Course Ltd. The report may not be used by any other person or entity without the express written consent of Chinook Ridge Lodge and Golf Course Ltd. and Stantec Consulting Ltd. (Stantec). All parties are subject to the same limit of liability as agreed to in the contract under which the work was completed. Any use which a third party makes of this report, or any reliance on decisions made based on it, are the responsibility of such third parties. Stantec accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

In providing services to the Chinook Ridge Lodge and Golf Course Ltd., Stantec relied on Chinook Ridge Lodge and Golf Course Ltd. providing all existing studies, reports and other available data, including those generated by Chinook Ridge Lodge and Golf Course Ltd. or by retained third parties, or reports done by others for which Chinook Ridge Lodge and Golf Course Ltd. was entitled to rely upon. During the course of the work, Stantec may also have relied upon certain verbal or written information provided by parties knowledgeable about the Site, including government officials and other parties and on information contained in the files of government agencies available to Stantec at the time of the study. Stantec has not independently verified, and accordingly shall have no responsibility for, the accuracy, completeness, workmanship or any other aspect of the information described above. Although attempts were made, whenever possible, to obtain a minimum of two confirmatory sources of information, Stantec in certain instances has been required to assume that the information provided is accurate.

The information and conclusions contained in this report are based upon conditions at the time the work was conducted. The work was undertaken by trained professional and technical staff in accordance with generally accepted engineering and scientific practices current at the time the work was performed. The conclusions and recommendations presented represent the best judgement of Stantec based on the data obtained during the assessment. Due to the nature of assessment and the limited data available, Stantec cannot warrant against undiscovered environmental liabilities. Conclusions and recommendations presented in this report should not be construed as legal advice.

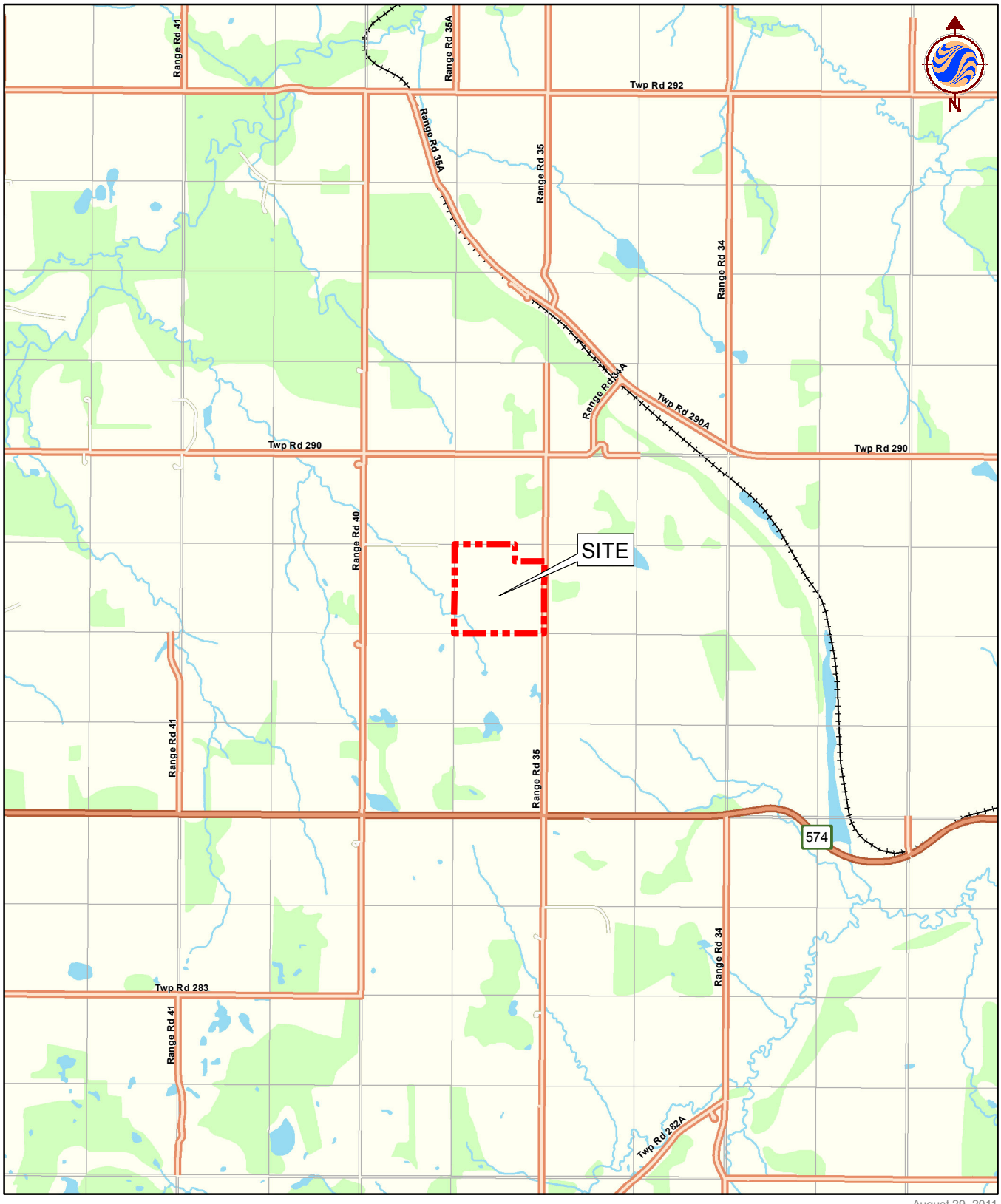
Since the purpose of a Phase I ESA is to identify evidence of potential or actual contamination, the identification of site conditions which may pose a non-environmental risk to buildings or people on the Site is beyond the scope of this assessment. (Examples include but are not limited to underground mine workings, volcanic or earthquake activities, severe weather, and/or flood plains in the area.) Stantec accepts no responsibility for damages, if any, suffered as a result of any non-environmental risk.

Should additional information become available which differs significantly from our understanding of conditions presented in this report, we request that this information be brought to our attention so that we may reassess the conclusions provided herein.

This report was prepared by Lincoln Weller, B.Sc., Geol.I.T., and reviewed by Amin Kassam, B.Sc.

Appendix A

Site Plans



EK U:\149104750_chinook_ridge\Documents\gis\maps\Figure_1_0.mxd

August 29, 2011
149104750

Stantec

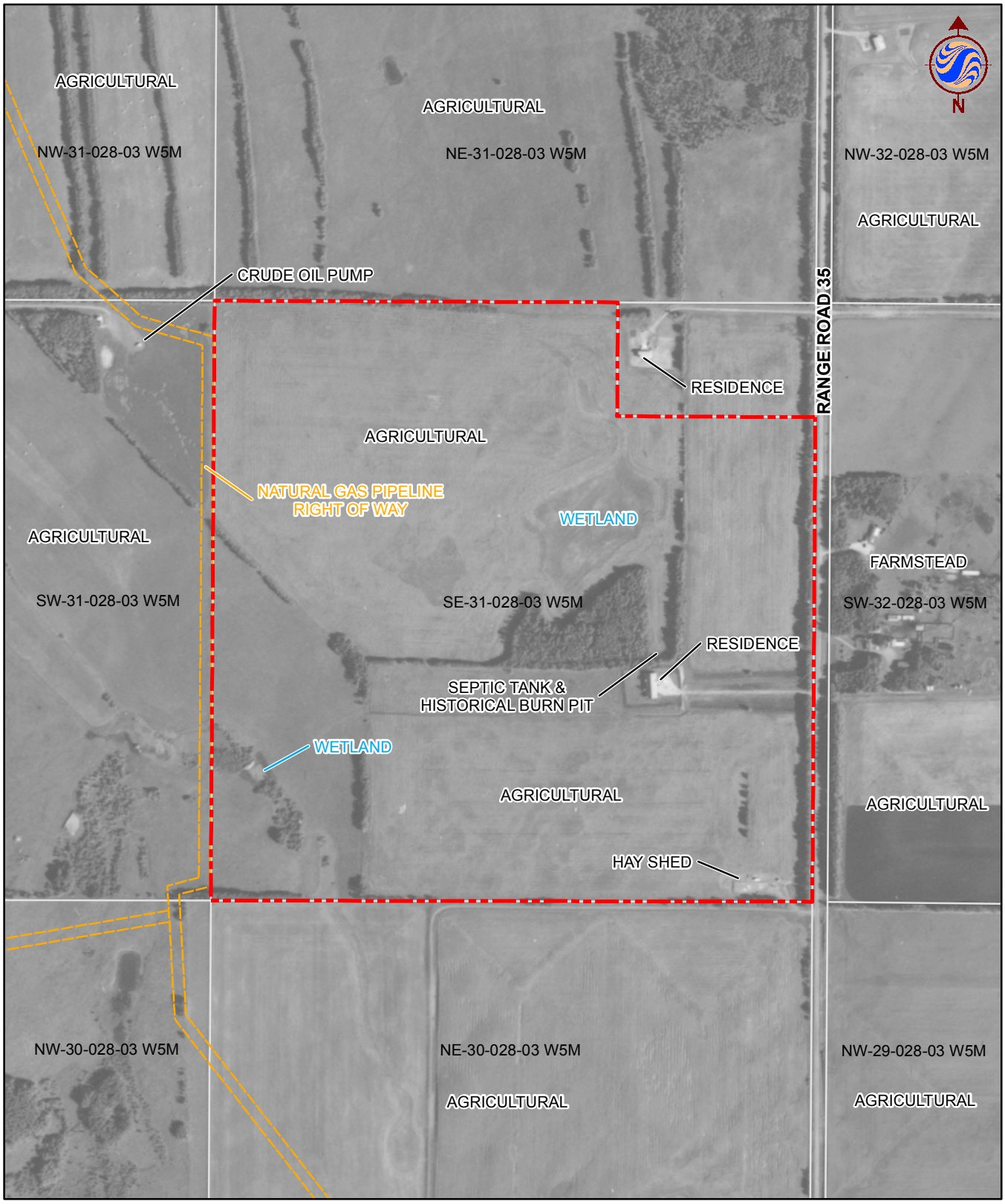
0 500 1000 1500 2000 m
1:50000

Client/Project
CHINOOK RIDGE LODGE & GOLF COURSE LTD.
PHASE I ENVIRONMENTAL SITE ASSESSMENT
PORTION OF SE-31-028-03 W5M, COCHRANE, AB

Figure No.
1.0

Title
Site Location Plan

200 - 325 25th St. SE Calgary, AB T2A 7H8



EK U:\149104750_chinook_ridge\Documents\gis\maps\Figure_2_0.mxd

August 29, 2011
149104750

Legend:
Site
Right of Way

Note: Air photo dated Aug. 8, 2000

0 50 100 150 200 250 300 m
1:7500

Stantec

Client/Project
CHINOOK RIDGE LODGE & GOLF COURSE LTD.
PHASE I ENVIRONMENTAL SITE ASSESSMENT
PORTION OF SE-31-028-03 W5M, COCHRANE, AB

Figure No.
2.0

Title
Site Plan & Surrounding Land Use

200 - 325 25th St. SE Calgary, AB T2A 7H8

Appendix B

Photographs

Residential property located on the Site.

Storage shed located south of the residential property.

Hay shed located in the southeast portion of the Site.

Farm equipment parking in the hay shed.

Oil stains located on the concrete slab inside the hay shed.

AST containing diesel fuel, located west of the hay shed.

Surficial rust located on the underside of the AST.

Bobcat with hydraulic lines.

Location of septic tank and historical burn pit, north of the residential property, looking south.

Debris pile from historical burn pit consisting of glass, metal, cinders, and unidentifiable debris.

An active crude oil well approximately 80 m west of the site. Note the barbed wire fence in the foreground indicating property line.

West side of the property looking north. Note the active crude oil well in the distance.

Northeastern portion of the Site, looking north. Note the seasonal wetland on the far left, and a homestead located on the parcel out portion of the quarter section.

Northeast portion of the Site, looking north.

Seasonal wetland located in the central portion of the Site.

Driveway to residential property, looking east.

Southern portion of the site, looking west.

Seasonal wetland located in the southwest portion of the Site, looking southwest.

Adjacent agricultural property northeast of the Site.

Range Road 35, east of the Site, looking north.

Appendix C

Assessor Qualifications

AMIN KASSAM B.Sc.

Environmental Scientist, Practice Leader
Environmental Remediation

Profile

Mr. Kassam has been working the area of Environmental Site Assessments (ESAs) since 2000. He is the Practice Leader for the Environmental Remediation Group in Stantec's Calgary East office. Mr. Kassam has conducted over 400 Phase I and Phase II ESAs including assessments of undeveloped, industrial, commercial, and residential sites such as: industrial plant sites, apartment buildings, retail and office buildings, upstream/downstream petroleum retail/ production/distribution sites, former rail lines and lumber yards, property acquisitions, and government (i.e., municipal, provincial, federal) sites in Alberta, British Columbia, Saskatchewan, and Manitoba. He is familiar with the identification of environmental compliance issues that may result in contamination at the assessed sites. Mr. Kassam has also completed Phase II field work, proposals, and reports for various sites in Western Canada including commercial, residential, and undeveloped properties.

Education

Bachelor of Science: Zoology, Biological Sciences and Ecology
University of Alberta, Edmonton, Alberta, 1996

Environmental Technologist: Water, Air, and Soil Pollution Studies
Mount Royal College, Calgary, Alberta, 1998

Competencies

Site Visits

Report Writer

Senior Reviewer

Lincoln Weller B.Sc., Geol.I.T.

Environmental Scientist

Lincoln is a graduate of Acadia University, Nova Scotia, and has had over 4 years of environmental and geotechnical experience. This includes environmental site assessment (soil and groundwater) and remediation programs at industrial, commercial, and residential sites. Lincoln is currently gaining experience with conducting soil, groundwater, liquid and vapour sampling programs; installation of groundwater monitoring wells; and remedial excavations. In addition, he is involved in the preparation of technical reports for environmental assessments and groundwater monitoring programs.

EDUCATION

Bachelor of Science, Acadia University, Wolfville, Nova Scotia, 2005

MEMBERSHIPS

Geologist-In-Training, Association of Professional Engineers, Geologists and Geophysicists of Alberta

PROJECT EXPERIENCE

Environmental Site Assessments Phase I, II, III
Environmental Sampling – Proposed Library, Turner Valley, Alberta (Environmental Scientist)
Participated in the installation and development of groundwater monitoring wells, including collection of soil and groundwater samples and writing of report.

Groundwater Monitoring and Reporting
Bowden Refinery, Bowden, Alberta (Environmental Scientist)
Preparation of the 2009 annual groundwater monitoring report required by the facility's Alberta Environment Approval.

Olds Gas Plant, Olds, Alberta (Environmental Scientist)
Preparation of the 2009 annual groundwater monitoring and return flow reports required by the facility's Alberta Environment Approval.

Proposed Library, Turner Valley, Alberta (Environmental Scientist)
Participated in the installation and development of groundwater monitoring wells, including collection of soil and groundwater samples and writing of report.

Soil and Water Quality Assessments
East Village Revitalization and Riverwalk Urban Promenade, Calgary, Alberta
Conducted soil and groundwater sampling during construction of underground facilities for an urban Brownfield site.

** denotes projects completed with other firms*

Lincoln Weller B.Sc., Geol.I.T.

Environmental Scientist

Lincoln is a graduate of Acadia University, Nova Scotia, and has had over 4 years of environmental and geotechnical experience. This includes environmental site assessment (soil and groundwater) and remediation programs at industrial, commercial, and residential sites. Lincoln is currently gaining experience with conducting soil, groundwater, liquid and vapour sampling programs; installation of groundwater monitoring wells; and remedial excavations. In addition, he is involved in the preparation of technical reports for environmental assessments and groundwater monitoring programs.

EDUCATION

Bachelor of Science, Acadia University, Wolfville, Nova Scotia, 2005

MEMBERSHIPS

Geologist-In-Training, Association of Professional Engineers, Geologists and Geophysicists of Alberta

PROJECT EXPERIENCE

Environmental Site Assessments Phase I, II, III
Environmental Sampling – Proposed Library, Turner Valley, Alberta (Environmental Scientist)
Participated in the installation and development of groundwater monitoring wells, including collection of soil and groundwater samples and writing of report.

Groundwater Monitoring and Reporting
Bowden Refinery, Bowden, Alberta (Environmental Scientist)
Preparation of the 2009 annual groundwater monitoring report required by the facility's Alberta Environment Approval.

Olds Gas Plant, Olds, Alberta (Environmental Scientist)
Preparation of the 2009 annual groundwater monitoring and return flow reports required by the facility's Alberta Environment Approval.

Proposed Library, Turner Valley, Alberta (Environmental Scientist)
Participated in the installation and development of groundwater monitoring wells, including collection of soil and groundwater samples and writing of report.

Soil and Water Quality Assessments
East Village Revitalization and Riverwalk Urban Promenade, Calgary, Alberta
Conducted soil and groundwater sampling during construction of underground facilities for an urban Brownfield site.

** denotes projects completed with other firms*

Appendix D

Supporting Documentation

REGULATORY DATABASE/RECORDS REVIEW

Regulatory Information Providers:

• **Alberta Environment, Regulatory Approvals Centre**: Alberta Environment issues Approvals, Licenses, Registrations and Permits under the *Provincial Water Act* and *Environmental Protection and Enhancement Act.*

• **Environmental Law Centre (ELC)**: The ELC provides information on the environmental enforcement history of a company or individual, specifically reviewing enforcement action taken by Alberta Environment under the *Alberta Environmental Protection and Enhancement Act,* and its predecessor legislation, the *Hazardous Chemicals Act*, *Agriculture Chemicals Act*, *Clean Water Act* and *Clean Air Act*.

• **Alberta Environment Freedom of Information and Protection of Privacy (FOIP) Office:** Alberta Environment, through the FOIP office maintains environmental files pertaining to properties located in Alberta.

• **Petroleum Tank Management Association of Alberta (PTMAA)**: The *Alberta Fire Code* (1997) requires that ASTs with volume capacities of 2,500 litres or greater and all underground storage tanks (USTs), regardless of volume, must be registered with the PTMAA. Unregistered tanks cannot legally be used, filled or have product removed from them (in the case of used oil). Tanks used for agricultural purposes do not fall under the *Alberta Fire Code* and hence registration is not required. Tanks on federal lands including reserves, national parks, etc., must register with the federal government and are also not governed by the *Alberta Fire Code*. Tanks associated with upstream oil and gas production does not require registration with the PTMAA.

Database Information/Record Sources:

• **Alberta Environment and Environment Canada:** Alberta Environment's Help End Landfill Pollution database was complied in 1988 to provide information on Alberta's industrial landfill sites. Alberta Environment and Environment Canada's Active and Inactive Land Disposal Sites 1982 document inventories active and inactive land disposal sites in Alberta.

• **Alberta Environment Groundwater Information System:** Since the mid-1970s water well drillers have been required by legislation to submit drilling reports to Alberta Environment. The database contains approximately 500,000 records with about 5,000 new drilling reports received annually. Telus Geomatics maintains an on-line searchable database of these records.

• **Abacus Datagraphics Database:** The Alberta Energy and Utilities Board (AEUB) is the Government of Alberta agency that governs energy-related activities in Alberta. The Abacus Datagraphics Database has information from the AEUB that includes pipeline locations, well site and associated facilities

information, and recorded environmental incidents associated with the energy and utility industry.