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March 17, 2017
File: 111477502

Attention: Della Berwanger, P.Geo., Manager Environmental Remediation

Canadian Pacific
2025 McCowan Road
Toronto, Ontario M1S 5K3

Dear Ms. Berwanger,

Reference: Remediation Plan for the Canadian Pacific Souris Yard, Souris, Manitoba

Stantec Consulting Ltd. (Stantec) recommends the following Remediation Plan in relation to the Canadian Pacific (CP) Souris Yard.

BACKGROUND

CP's Souris Yard is situated in Souris, Manitoba (hereinafter referred to as the "Souris Yard" or "Yard"; **Figure 1**). The Souris Yard is located between Mile 15.75 and 16.38 of the Estevan Subdivision and Mile 146.57 and 146.99 of the Glenboro Subdivision within the Town of Souris, Manitoba, along the northwest and northernmost limits of the Town. The Yard covers an area of approximately 35 hectares and is subdivided into two areas (i.e., east and west Yards) by First Street North.

Current structures at the Site consist of a maintenance-of-way office, two tool houses, shim shack, underground septic tank, garage and propane tank. Former structures included a station, roundhouse, coal/fuel oil plant, freight shed, oil dope shed, tool houses, water tank, bunk house, coal sheds, sand house, pump house, communication building, and dwellings.

The properties surrounding the eastern portion of the Yard (east of First Street North) are described as follows:

- North: Residential (mobile home park).
- East: Residential and commercial, CP Right-of-Way (ROW) to the northeast.
- South: Residential (south & southeast) and commercial (recycling depot, Town of Souris Public Works, and Imperial Oil Limited [IOL] property).
- West: Residential, commercial (storage facility).

The properties surrounding the western portion of the Yard (west of First Street North) are described as follows:



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- North: Residential or vacant.
- East: Residential and commercial, CP Yard to the northeast across First Street North.
- South: Residential and commercial.
- West: Residential and commercial (card lock and repair shop).

A topographical map (Souris Map 62F/9) produced by the Surveys and Mapping Branch of the Department of Energy, Mines and Resources identified the regional topography of the area surrounding the Site to be relatively flat with a slight gradient towards the northeast (eastern portion of the Site) and a slight gradient towards the southwest (western portion of the Site). The closest major water body is an unnamed creek located approximately 250 m east of the east end of the Site. Plum Creek, which flows east into the Souris River, is located approximately 530 m south of the west end of the Site at its nearest point.

The following summarizes work completed at the Site and resultant findings to date. A list of the reports referenced is provided at the end of this letter.

PREVIOUS ENVIRONMENTAL INVESTIGATIONS

The Souris Yard has been subject to several environmental activities, completed by different environmental consultants, dating back to 1993.

These previous investigations defined two distinct areas of groundwater impacted with dissolved-phase PHCs identified at the Yard. These were referenced in previous reports as the "Eastern Plume" and "Western Plume". The PHC impacts referenced as the "Eastern Plume" appear to have originated from a gasoline release that occurred in 1987 in the east Yard in an area formerly leased by IOL. IOL completed remedial activities in the area of the release over a two-year period and the leased land was subsequently purchased from CP by IOL in 2005. The previously referenced Western Plume appears directly related to former diesel fueling facility activities in the northwestern portion of the west Yard (location of former fuel tanks and fuel dispenser).

In the previous investigations, nineteen monitoring wells were installed at the Yard with fifteen wells located within the area of the Western Plume (west Yard) and four wells located north to northeast (on-site) of the Eastern Plume (east Yard).

Since 2013, Stantec has conducted annual sampling of monitoring wells located in the west Yard. Between 2013 and 2015, the groundwater monitoring program also involved the monitoring of wells in the east Yard. Based on the monitoring results for the east Yard, which indicated an absence of continued impact, the wells in the east Yard were not monitored in 2016.



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Stantec's 2013 program also included an evaluation of the regulatory framework, and more particularly the exposure pathways, applicable to the Yard. Groundwater is not used as a source of potable water near the Site because the Town of Souris supplies water to the residences. Accordingly, the Table 3 standards for non-potable groundwater and fine textured soil in the Ontario Ministry of the Environment and Climate Change (MOECC) *Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act*, PIBS #7382e01, revised April 15, 2011, were identified as the applicable standards for groundwater at the Yard.

In 2014 and 2015, in addition to groundwater monitoring, new monitoring wells were installed in the west Yard to refine the understanding of the Western Plume extents. Concurrent soil sampling was completed in conjunction with the well installations. The field activities in 2015 also included the decommissioning of damaged well 05-24 with a replacement well installed (05-24B) and repairs to the casing of well 06-40.

During the 2016 program, statistical analysis of the samples collected at the west Yard was completed for BTEX and PHCs F1-F3 at several well locations. Based on the completed statistical analysis, the majority of the parameters that were calculated for the monitoring well locations (with sufficient data to allow completion of the statistical analysis) showed significant decreasing or probably decreasing trends. No increasing trends were identified. Accordingly, concentrations in the petroleum hydrocarbon plume in the west Yard overall appear to be decreasing over time.

The most recent inferred groundwater flow direction was measured to be to the northeast in the east Yard in 2013, 2014, and 2015. In the west Yard, the most recent inferred groundwater flow direction in 2013, 2014, 2015, and 2016 was measured to be to the south and southwest.

REGULATORY FRAMEWORK

As noted above, during the 2013 evaluation of the regulatory framework and exposure pathways applicable to the Yard, the non-potable groundwater pathway was identified as most applicable to the Site. As the CCME guidelines do not have guidelines for a non-potable groundwater situation, the following MOECC standards were chosen because they contain standards for sites with non-potable water conditions and have been identified as the secondary standard to be applied in Manitoba under the Contaminated Site Remediation Regulation (CSRR):

- Ontario MOECC document *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*. PIBS #7382e01. March 2004 (Revised April 15, 2011)

The MOECC site condition standards (SCS) for a non-potable water condition were applied in the evaluation of the groundwater analytical results. In addition, the groundwater level during previous investigations was predominantly in the silty clay and clay layer. As such, the fine to medium-grained MOECC SCS were applied.

Design with community in mind



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PROPOSED SITE ACTIVITIES

Based on previous monitoring data and analytical results and that no groundwater impacts are identified in the wells in the east Yard, no site activities or remediation are proposed going forward for this portion of the Souris Yard.

For the west Yard, this area currently remains in operation and will remain in operation for the foreseeable future and it is therefore proposed that no remedial activities be completed in relation to the soil impacts identified at the Site at this time. At such time as operations cease, appropriate re-evaluation and action will be taken (e.g., in association with any Site redevelopment).

With regards to the groundwater impacts at the west Yard, it is proposed that a program of periodic monitoring and sampling of the installed monitoring wells (see **Figure 2**, attached) be completed to track continued changes in the groundwater chemistry; known to be decreasing and expected to continue to decrease over time. The proposed frequency of monitoring is every three years.

- Completion of an annual monitoring well inventory or condition check of the installed and accessible monitoring wells (see **Figure 2**, attached).
 - This action is proposed on account of the ongoing Site activities, to make sure the wells are maintained in a good and serviceable condition and do not become over time a potential conduit for contaminant migration from the surface into the subsurface.
 - This activity will include documentation of the following for each well:
 - Security and protection of monitoring wells.
 - Condition of monitoring well casings and caps.
 - Condition of surface seals around casings.
 - Labeling of monitoring wells.
 - Visibility and accessibility of monitoring wells.
 - Drainage or ponding around monitoring well casings.
 - Presence and condition of dedicated sampling devices (if any).



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- Minor repairs, such as well cut-downs and bolt replacements, will be completed at the time of inventory, where required.
- Completion of a monitoring and sampling program of the installed monitoring wells every three years to track changes (if any) to the groundwater chemistry.
 - This action is proposed to track groundwater chemistry as a result of the identified surface and near-surface soil impacts, with a proposed frequency considered appropriate given the absence of persistent contaminants of concern to date in the shallow groundwater beneath the Site.
 - This activity will include the collection of:
 - Monitoring data including organic vapour measurements, depth to groundwater, total monitoring well depth, and thickness of light non-aqueous phase liquid (if present).
 - Groundwater analytical data for BTEX and PHC F1-F4 concentrations from each well. Sampling methodology will be conducted following appropriate purging of each well and in accordance with industry standards. Quality assurance/quality control field samples will also be collected for laboratory analysis, representing approximately 10% of the groundwater samples collected.
 - Analytical data will be compared to the appropriate regulatory guidelines with the findings of the groundwater monitoring program summarized in a report provided to CP and shared with Manitoba Sustainable Development.
- Review of appropriate action (if required) following the annual monitoring well inventory and triennial monitoring and sampling program. For example:
 - Should a well(s) be found to be damaged and unable to be appropriately repaired, the well(s) will be decommissioned and replaced (if deemed important to the well monitoring network).

SCHEDULE OF ACTIVITIES

The last monitoring and sampling campaign at the west Yard occurred in 2016. On this basis, the following short-term schedule is proposed for the Remediation Plan actions identified above:



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Proposed Activity	Proposed Timeline
Groundwater monitoring well inventory	Completed annually between June 1 and August 30 following consultation and Site access arrangements with CP.
Groundwater monitoring and sampling program	Completion between June 1 and August 30 in 2019 (and every three years thereafter until such a time as the groundwater chemistry results support further alteration [e.g., a further reduced sampling frequency]) in conjunction with the annual groundwater well inventory.
Follow-up activities	Reviewed following each inventory and program as required.

CLOSURE

This Remediation Plan is prepared for the sole benefit of Manitoba Sustainable Development and Canadian Pacific. The plan may not be relied upon by any other person or entity without the express written consent of Stantec Consulting Ltd. and Canadian Pacific.

Any use which a third party makes of this plan, or any reliance on decisions made based on it, is the responsibility of such third parties. Stantec Consulting Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this plan.

We trust that the enclosed information is sufficient and request your approval of this Remediation Plan after which the outlined activities will be completed following the proposed schedule. If you have any questions or concerns, please do not hesitate to contact us.

Regards,

STANTEC CONSULTING LTD.

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Attachments: Figure 1 – Site Location Plan
Figure 2 – Monitoring Well Location Plan

Referenced Reports:

Morrow Environmental Consultants Inc. Phase II Environmental Site Assessment, CP Rail Souris Yard, Souris MB, EA780." February 17, 2006.

Morrow Environmental Consultants Inc., SNC-Lavalin. Supplemental Phase II Environmental Site Assessment, CP Rail Souris Yard, Souris MB, EA780. November 17, 2006.

Dillon Consulting Limited. Environmental Status Report, Canadian Pacific Souris Yard (EA780). May 2012.

SNC-Lavalin Inc., Environment Division. Groundwater Monitoring and Sampling Report, Canadian Pacific Souris Yard, Souris Manitoba EA780. December 10, 2012.

Stantec Consulting Ltd., 2013 Groundwater Monitoring and Sampling, Canadian Pacific Souris Yard, Souris, Manitoba. December 12, 2013.

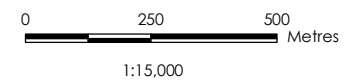
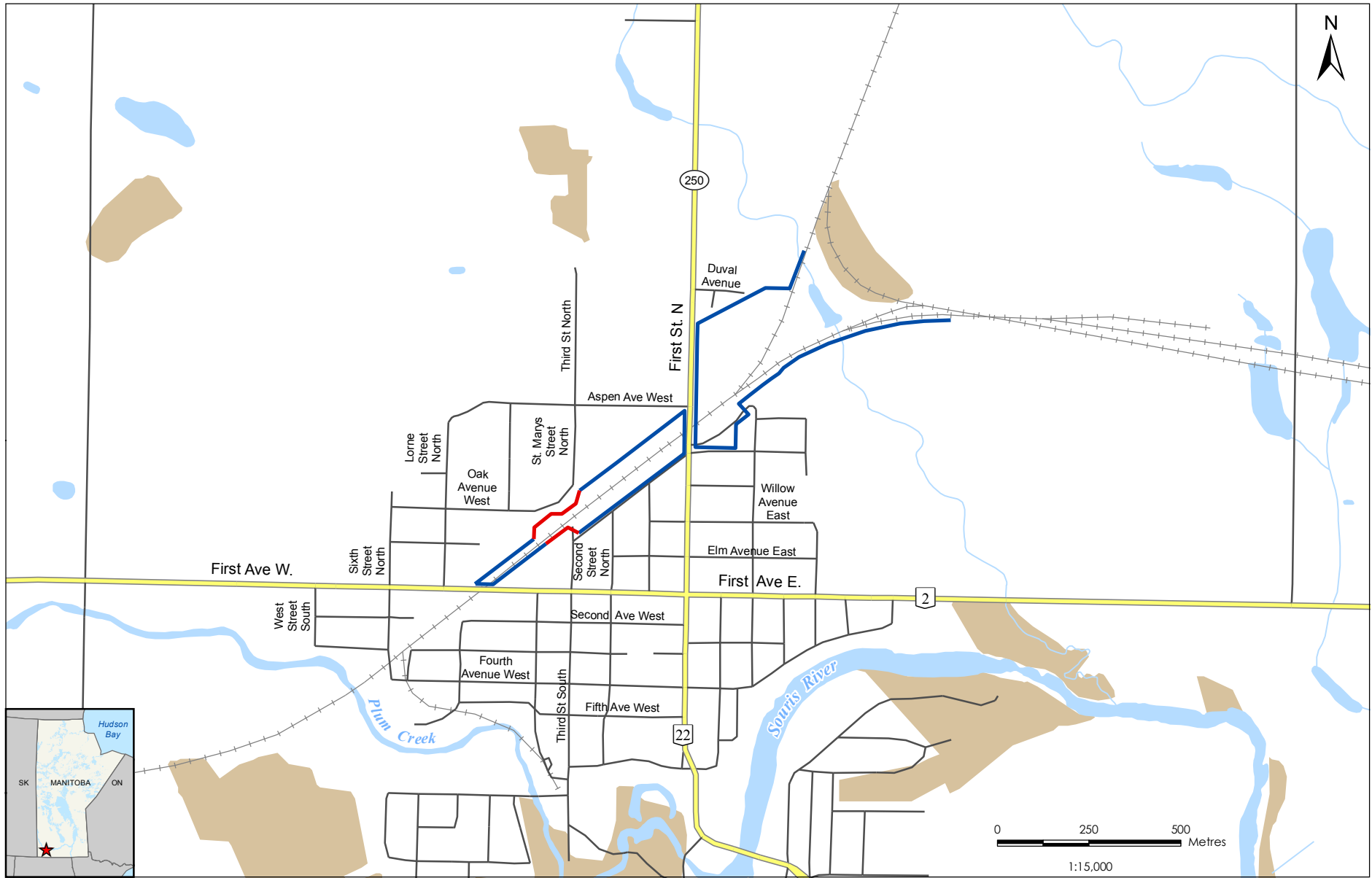
Stantec Consulting Ltd., 2014 Groundwater Monitoring and Sampling, Canadian Pacific Souris Yard, Souris, Manitoba. December 3, 2014.

Stantec Consulting Ltd., 2015 Subsurface Investigation, Monitoring and Sampling Program: Canadian Pacific Souris Yard in Souris, Manitoba. July 14, 2016.

Stantec Consulting Ltd., DRAFT 2016 Monitoring and Sampling Program: Canadian Pacific Souris Yard in Souris, Manitoba. November 21, 2016.

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 Revised: 2016-11-18 By: acampigotto



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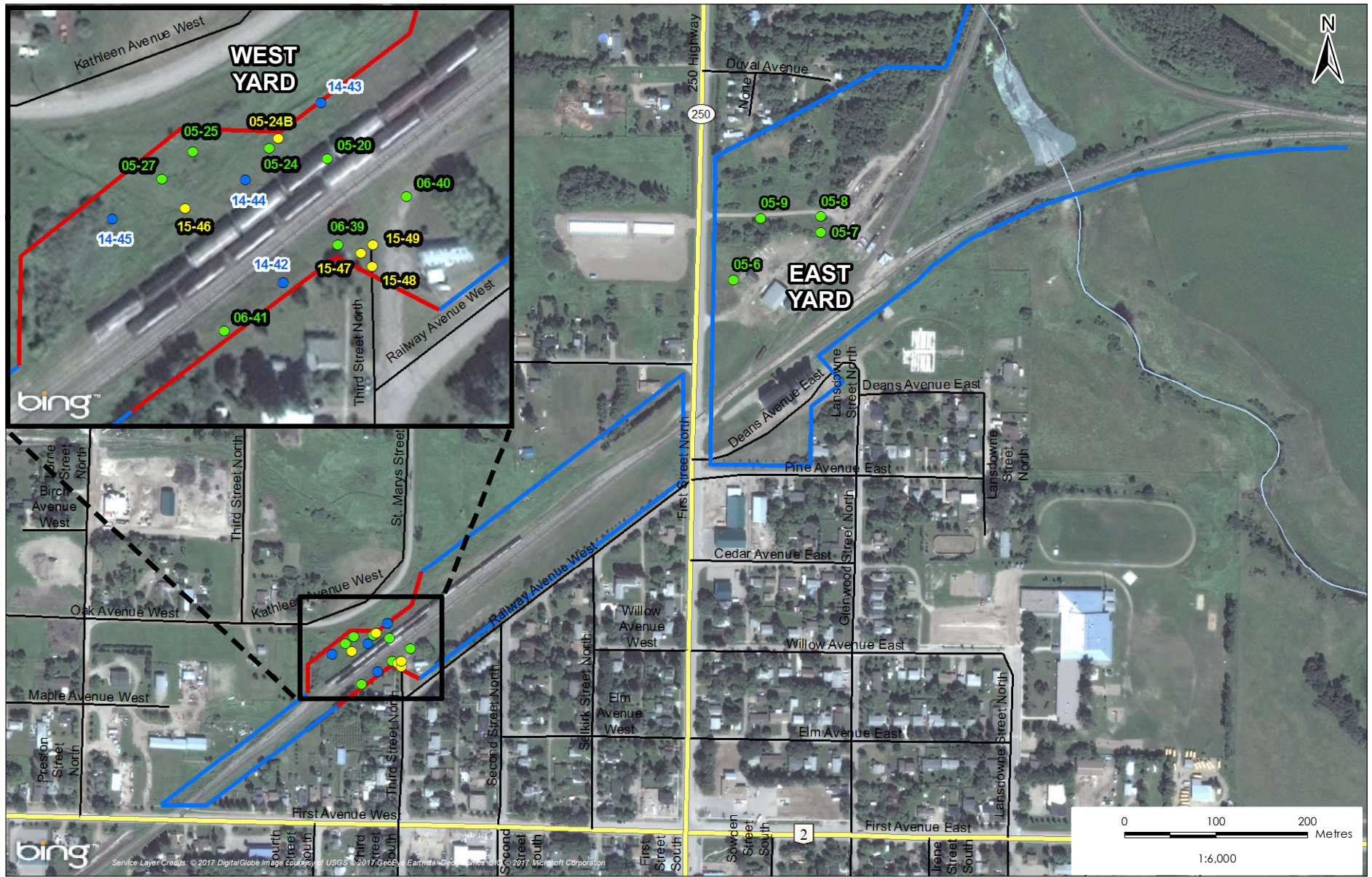
- Legend**
- ▭ Surveyed Site Boundary
 - ▭ Plan Site Boundary
 - ▬ Major Road
 - ▬ Minor Road
 - ▬ Railway
 - ▭ Waterbody
 - ▭ Wooded Area

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 14N.
 2. Base features courtesy of Manitoba Land Initiative and CANVEC.
 3. Survey Site Boundary completed September 23, 2014.
 4. Plan Site Boundary drawn from: Canadian Pacific Railway Estevan & Glenboro Subdivisions Plan Parts of: NW1/4 & S1/2 Sec 3 & SE1/4 Sec 4 Tp8 N1/2 Sec 33 & NW1/4 Sec 34 Tp7 R21 WPM, Souris, Manitoba.

Client/Project
 CANADIAN PACIFIC
 Souris Yard
 Souris, Manitoba

Figure No.
1

Title
Site Location Plan



Notes

1. Coordinate System: NAD 1983 UTM Zone 14N.
2. Base features courtesy of Manitoba Land Initiative and CANVEC.
3. Survey Site Boundary completed September 23, 2014.
4. Plan Site Boundary drawn from: Canadian Pacific Railway Estevan & Glenboro Subdivisions Plan Parts of: NW1/4 & S1/2 Sec 3 & SE1/4 Sec 4 Tp8 N1/2 Sec 33 & NW1/4 Sec 34 Tp7 R21 WPM, Souris, Manitoba.
5. Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

Legend

- ▭ Surveyed Site Boundary
- ▭ Plan Site Boundary
- Monitoring Wells Previously Installed by Others
- Monitoring Wells Installed by Stantec 2014
- Monitoring Wells Installed by Stantec 2015

Client/Project
 CANADIAN PACIFIC
 Souris Yard
 Souris, Manitoba

Figure No.

2

Title

**Monitoring Well
 Location Plan**

