



October 20, 2020

Manitoba Conservation and Climate
Programs and Strategies
1007 Century Street
Winnipeg, MB R3H 0W4

E-mail: warren.rospad@gov.mb.ca

Attention: Warren Rospad

Re: Remedial Plan
Public Road 584, North of Roblin, Manitoba
Pinchin File: 274720

Pinchin Ltd. (Pinchin) is pleased to provide Manitoba Conservation and Climate with the following Remedial Plan (RP) for approval prior to a completing remedial excavation at Public Road 584, North of Roblin, Manitoba (Site).

The Site is approximately 25 kilometres north of Roblin, Manitoba and consists of a natural treed area adjacent to Provincial Road 584.

Contact information for the Client is as follows:

Jason Lang, CD, HAAG
Red River Mutual
245 Centre Street
Altona, MB R0G 0B0
Phone: 204.572.0309
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1.0 BACKGROUND

According to the Client, a roll over incident occurred with an agricultural tractor and grain cart on September 17, 2019 on Public Road 584 approximately 25 kilometres north of Roblin, Manitoba. A Manitoba Conservation and Climate Environment Officer, Dave Yunker conducted a site inspection on October 21, 2019 and observed diesel staining on the roadway as well as damage to the side of the hill. Vehicle parts were also observed hanging in the trees. It was also reported that impacted grain was removed from the Site on October 18, 2019. A volume of loss was not provided.



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Pinchin completed a Site Assessment at the Site on December 3, 2019. Due to frozen soil conditions and the inability to access the Site with powered mobile equipment, soil samples could not be collected at the time of the assessment. Strong petroleum hydrocarbon like odours were observed in four grain samples collected during the Site Assessment. Based on the information provided by Manitoba Conservation and Climate and the observations made by Pinchin during the Site Assessment, the potential exists for petroleum hydrocarbon impacts to be present at the Site. Pinchin also collected GPS data points of the Site during the Site Assessment to determine what, if any, remedial activities could be completed during the winter months when ground conditions were frozen. Based on the survey data obtained by Pinchin, the potentially impacted area is approximately 9.0 metres vertically below the elevation of the road and at an approximate horizontal distance of 20.0 metres from the side of the road. Following discussions with excavation contractors in Roblin, Manitoba, soil sampling and remedial excavation were deemed not feasible with the available equipment and frozen ground conditions during the Site Assessment.

Based on the observations collected during the Site Assessment, it was Pinchin's opinion that the Site should be reassessed, and soil sampling be conducted once ground conditions have thawed during the spring months.

A Soil Sampling Program was conducted by Pinchin at the Site on May 12, 2020, which consisted of collection of near surface soil samples. Soil samples were collected within the area of fuel release. Retrieved soil samples consisted of silty clay. Samples were collected from a maximum depth of 0.3 meters below ground surface due to presence of extensive roots below ground surface. Based on the results of field screening, a total of six (6) "worst case" soil samples were submitted for laboratory analysis of a combination of benzene, toluene, ethylbenzene and xylenes (BTEX), petroleum hydrocarbons (PHCs) in the F1 to F4 fraction ranges (F1-F4) and polycyclic aromatic hydrocarbons (PAHs).

Reported concentrations in the verification soil samples submitted for analysis of BTEX, PHCs (F1-F4), and PAHs met the Soil Quality Guidelines, with the exception of soil sample SS-4 collected from sampling location 4, which had concentrations of PHCs (F1-F3), total methylnaphthalene and naphthalene that exceeded the applicable Soil Quality Guidelines, soil sample SS-5 collected from sampling location 5, which had concentrations of PHCs (F1-F3), total methylnaphthalene and naphthalene that exceeded the Soil Quality Guidelines, soil sample SS-6 collected from sampling location 6, which had concentrations of PHCs (F1-F3), total methylnaphthalene and naphthalene that exceeded the Soil Quality Guidelines and soil sample SS-8 collected from sampling location 8, which had concentrations of PHCs (F1-F3) that exceeded the Soil Quality Guidelines.

Based on the findings of the Soil Sampling Program, Pinchin recommended developing a RP for the Site to be submitted to Manitoba Conservation and Climate for approval.



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In addition, Manitoba Conservation and Climate has requested that the slope be reinforced with matting to ensure soil stability and regrowth of vegetation.

Based on the Soil Sampling Program, an impacted area of approximately 40 square meters (m²) was inferred. The vertical extent of impacts could not be verified due to limitations of sampling equipment. In order to assess for presence of impacts at depths greater than 0.3m, use of heavy equipment would be required. Given the Site constrains to mobilize heavy equipment to the impacted area, Pinchin has recommended that vertical delineation of impacts is carried at time of remedial activities. For the purpose of this RP, a vertical extent of 1 m resulting in an inferred impacted volume of 40 cubic meters (m³) requiring remediation, has been assumed.

2.0 SCOPE OF WORK

The scope of work to be completed includes excavation of impacted soils, verification soil sampling, and excavation backfilling.

The remedial excavation will be conducted in general accordance with the following documents:

- Manitoba Conservation and Climate guidelines entitled:
 - *“Environmental Site Assessments in Manitoba”*, dated April 2016;
 - *“Manitoba Criteria for BTEX in Investigation Results”*, dated October 2014; and
 - *“Treatment and Disposal of Petroleum Contaminated Soil”*, dated January 2015.
- Manitoba Conservation and Climate information bulletins entitled:
 - *“Application of the CCME Canada-Wide Standard for Petroleum Hydrocarbons in Soil: Management Limits”*, dated October 2015;
 - *“Contaminated Sites Remediation Regulation Reporting Requirements and Standards”*, dated October 2015; and
- Canadian Council of Ministers of the Environment (CCME) publication entitled “Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment – Volume 4 Analytical Methods”, dated 2016.
- Pinchin’s standard operating procedures (SOPs).
- Canadian Standards Association publication entitled “Phase II Environmental Site Assessment, CSA Standard Z769-00 (R 2013)”.



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2.1 Remediation Activities

2.1.1 Pre-Excavation Activities

Prior to any remedial activities, the following will be completed:

- Submit the Remedial Plan to Manitoba Conservation and Climate for approval;
- WERI will retain the services of an independent contractor and public utility services to identify the locations of buried and overhead utility services prior to any excavation activities. Certain underground utilities (especially if constructed of plastic, fibreglass, clay, concrete pipe, repaired lines, etc.) cannot be located by standard locating practices. Pinchin and its utility locators will require all Site plans to be provided by the Client, Site owner or Site representatives to identify the locations of untraceable buried utilities. Pinchin will not be responsible for any damages to utilities that are not on plans provided or cannot be identified by standard locating practices;
- Pre-arrange for acceptance of soil to be disposed of at a licensed disposal facility; and
- Obtain all necessary provincial and municipal permits.

2.1.2 Soil Remediation Activities

2.1.2.1 Soil Excavation

Upon completion of the pre-excavation activities, WERI, working under the direction of Pinchin, will complete the following:

- WERI will subcontract Crane Guys Inc. to mobilize a 5096S 50-tonne truck-mounted crane to the Site in order to lower excavating equipment to the remediation area. The crane will be positioned partly on the municipal right-of-way (ROW) and will require traffic control including single lane closure to allow for continued use of the ROW by the public; and
- Using a 325 mini excavator (7,000lb), soil with previously identified impacts and/or obvious visual/olfactory impacts will be excavated from the ground, packed in soil bags and lifted by the crane into dump trucks. The impacted soil will then be transported directly from the Site for disposal at an approved licensed disposal facility. The extents of impacted soil has not been fully delineated. For the purpose of this RP an excavation measuring 5 metres (m) by 8 m in surface area with a total depth of 1 m has been assumed, yielding a total excavation in-ground volume of 40 m³. Copies of waybills/bills of lading produced by the disposal facility for the received impacted material will be presented to Pinchin for review.



2.1.2.2 Verification Soil Sampling

Following the completion of the excavation, Pinchin will document the environmental status of the soil at the excavation limits by completing the following:

- The soil will be examined for visual/olfactory evidence of impacts and a verification soil sampling program will be conducted in accordance with Pinchin's Standard Operating Procedures (SOPs); and
- Soil samples will be collected from the sidewalls and floor of the excavation using the excavator bucket or directly from the sidewalls and floor of the excavation by Pinchin personnel at the frequency specified in Pinchin's SOPs for field screening. Pinchin will field screen soil samples for the presence of petroleum derived vapours using visual and olfactory considerations, along with a combustible gas indicator (CGI) calibrated to hexane. A combination of visual and olfactory observations and CGI organic vapour readings will be utilized to identify the most apparent "worst-case" soil samples for laboratory analysis of PHCs F1-F4, BTEX and PAHs. Pinchin has assumed that six (6) soil samples will be submitted for laboratory analysis. The soil samples will be submitted on rush 1-2 business days turnaround time.

2.1.2.3 Excavation Backfilling and Slope Matting

The excavation will be backfilled, by WERI, with clean imported fill material and will not be compacted.

A PYRAMAT® 25 turf reinforcement mat will be installed along the side of the embankment where the trailer rolled down and stripped vegetation in order to provide soil stabilization.

The excavation will be completed from bottom up and include placement of a seeded topsoil and LANDLOK® S2 product over the reinforcement matting to allow for vegetation regrowth, as per installation specifications provided by the supplier Propex Geosolutions.

2.2 Analytical Laboratory

Selected soil samples will be delivered to Bureau Veritas Laboratories (BV Labs) in Winnipeg, Manitoba for analysis. BV Labs is an independent laboratory accredited by the Standards Council of Canada and the Canadian Association for Laboratory Accreditation. Formal chain of custody records of the sample submissions will be maintained between Pinchin and the staff at BV Labs. The soil samples will be submitted on rush 1-2 business days turnaround time.



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2.3 QA/QC Protocols

Various quality assurance/quality control (QA/QC) protocols will be followed during the remedial excavation to ensure that representative samples are obtained and that representative analytical data is reported by the laboratory.

Field QA/QC protocols that will be employed by Pinchin will include the following:

- Soil samples will be extracted from areas not in direct contact with the excavator bucket and/or sampling equipment, where possible, to minimize the potential for cross-contamination;
- Soil samples will be placed in laboratory-supplied sample jars;
- Soil samples will be placed in coolers on ice immediately upon collection, with appropriate sample temperatures maintained prior submission to the laboratory;
- Dedicated and disposable nitrile gloves will be used for sample handling;
- Non-dedicated sampling equipment will be cleaned before initial use and between uses to minimize the potential for cross-contamination; and
- Sample collection and handling procedures will be performed in general accordance with Manitoba Sustainable Development Guidelines and Pinchin's SOPs.

BV Lab's internal laboratory QA/QC consists of the analysis of laboratory duplicate, method blank, matrix spike and spiked blank samples, and an evaluation of surrogate recoveries.

2.4 Regulatory Criteria

Analytical results of soil samples are compared to criteria set forth in the Canadian Council of Ministers of the Environment (CCME) "*Environmental Quality Guidelines*" accessed on the CCME web site, the CCME "*Canada-Wide Standards for Petroleum Hydrocarbons in Soil*", dated 2008 and the CCME "*Canadian Environmental Soil Quality Guidelines for the Protection of Environmental and Human Health - Polycyclic Aromatic Hydrocarbons*", dated 2010 (hereafter collectively referred to as the "CCME Soil Guidelines").

For assessing soil quality for parameters not included in the CCME Soil Guidelines, Manitoba Conservation and Climate has adopted the following guidelines:

- Ontario Ministry of the Environment, Conservation and Parks standards specified by the MECP document entitled "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011 for non-potable groundwater conditions as a secondary regulatory criteria applicable to soil conditions in Manitoba; and



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- Alberta Environment and Parks (AEP) guidelines specified by the AEP document entitled “*Alberta Tier 1 Soil and Groundwater Remediation Guidelines*”, dated January 10, 2019” as tertiary regulatory criteria applicable to soil conditions in Manitoba.

3.0 REPORT

Pinchin will prepare a factual report for the Site documenting the findings of the remedial excavation. A copy of the report will be provided to Manitoba Conservation and Climate.

4.0 PROJECT SCHEDULE

Pinchin anticipates that remedial activities will begin shortly after the RP has been approved by Manitoba Conservation and Climate. It has been estimated that the on-Site remedial and restoration activities will be completed over an eleven (11) day period.

5.0 CLOSING

We trust that the information provided herein is sufficient for Manitoba Conservation and Climate to approve the RP. If you have any questions, or require additional information, please do not hesitate to contact the undersigned.

Sincerely,

Pinchin Ltd.

Prepared by:

Reviewed by:

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