



File: 26250-20/10257

Site: 10257

December 18, 2014

Mr. Nicholas McGregor  
Imperial Oil Limited  
405 – 5945 Kathleen Avenue  
Burnaby, BC V4H 5J7

Dear Mr. McGregor:

**Re: Background Soil Assessment, 1097 South Trans-Canada Highway,  
Cache Creek, British Columbia, Location No. 88004690/SAP No. JF.00596**

The Ministry of Environment (ministry) has reviewed the following technical reports prepared by Parsons Canada Ltd. (Parsons) and submitted in support of your May 22, 2014 application for a determination of background soil quality of barium at 1097 South Trans-Canada Highway, Cache Creek, British Columbia (SITE 10257):

- *Background Soil Assessment, 1097 South Trans-Canada Highway, Cache Creek, British Columbia, Location No. 88004690/SAP No. JF.00596, May 22, 2014, Parsons Canada Ltd.*
- *Addendum to: Background Soil Assessment, 1097 South Trans-Canada Highway, Cache Creek, British Columbia, Location No. 88004690/SAP No. JF.00596, December 5, 2014, Parsons Canada Ltd.*

The legal description of the Site to which this determination of background soil quality applies is:

- 1097 South Trans-Canada Highway, Cache Creek, BC  
Lots 1 and 2, District Lot 104,  
Group 2, Kamloops Division of Yale  
Land District, District Plan KAP 44198  
PID: 016-827-562, 016-827-571

The Site is depicted in attached Figure 1 for reference.

The Background Soil Assessment Report and Addendum describe investigations and statistical calculations undertaken to establish a local background barium concentration in soil for the Site. The focus of the ministry review was to determine if the submission satisfies the requirements set out in the ministry's protocol entitled *Protocol 4 for Contaminated Site – Determining Background Soil Quality* (Protocol 4).

The report and addendum prepared by Parsons provide the following rationale for determining the barium background concentration for the Site:

- *Barium in soil was analysed across the subject property from both area where barium was considered a PCOC and from area where barium was not considered a PCOC, as part of the metals analyses and was detected at concentrations exceeding the CL standards protective of drinking water.*
- *Barium was identified as a PCOC for the former service station and used oil tank located on the northern portion of the subject property (over 60 m north of the identified barium impacts). The depth of the three barium exceedances identified suggests that the barium concentrations are not influenced by anthropogenic sources and are attributed to a naturally occurring soil or rock containing elevated concentrations of barium.*
- *Barium was identified at two separate properties in the vicinity of the subject property including in surficial soils at a site located in the hills, approximately 5.5 km to the southwest of the subject property, and in valley sediments and bedrock at a site located approximately 1.5 km to the south of the subject property. Based on this data, barium is naturally occurring in the vicinity of the subject property.*
- *The two sites where barium was identified in soils are located within the same geological setting as the subject property. The subject property is underlain by valley fill which would have originated from the native bedrock and surficial soils in the area, which have been shown to contain concentrations of barium in excess of the commercial land use standard.*

The Background Soil Assessment Report and Addendum proposed using background sampling locations within the vicinity of the Cache Creek Landfill as a reference site for calculating the barium background concentration. Barium data from the reference site and the subject property was combined to determine the local background concentration, calculated as the 95<sup>th</sup> percentile as described in Protocol 4. The local barium background concentration proposed by Parsons was 1416 µg/g.

Based on the review of the Background Soil Assessment Report and Addendum, the ministry has concluded that the submission meets the requirements specified in Protocol 4. We accept the report's conclusion that the barium exceedance measured on the Site is likely not influenced by anthropogenic sources. We concur with the use of data from the so called "B" series wells

from the Cache Creek Landfill to calculate a local barium background concentration for soil. However, we do not approve including data from the subject site (SITE 10257) in background calculations. Using data from the Cache Creek Landfill "B" series wells, the local barium background concentration, calculated as the 95<sup>th</sup> percentile, is 1827 µg/g. Thus, the following barium concentrations in soil are considered representative for the background site (Cache Creek Landfill) and the subject property (1097 South Trans-Canada Highway):

- Background reference site: 1827 µg/g
- Subject property: 78.9 to 463 µg/g

In accordance with CSR 11 (3), SITE 10257 does not constitute a contaminated site on the basis of barium concentrations in soil.

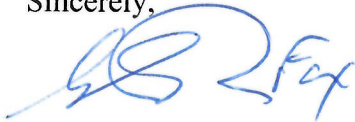
Please note that this approval is specific, and limited, to estimation of a local background concentration of barium in soil for use at 1097 South Trans-Canada Highway, Cache Creek, British Columbia.

Reports submitted in support of this application were reviewed for purposes of establishing a background soil concentration for barium at SITE 10257. The ministry has not reviewed information related to the assessment of potential site contamination. This letter, therefore, provides no assurance regarding the adequacy or completeness of investigations conducted to ascertain and address site contamination issues.

This approval is based on the most recent information available to the ministry regarding the above-referenced site. The ministry, however, makes no representation or warranty as to the accuracy or completeness of this information.

Please do not hesitate to contact Glyn Fox at 250-356-8374 or Annette Mortensen at 250-387-6797 if you require additional information.

Sincerely,



Glyn R. Fox, Ph.D.

For Director, *Environmental Management Act*

Attachment

cc: Jocelyne Bright, Parsons Canada Ltd, Langley  
Annette Mortensen, Ministry of Environment, Victoria  
Lucy Hewlett, Ministry of Environment, Victoria



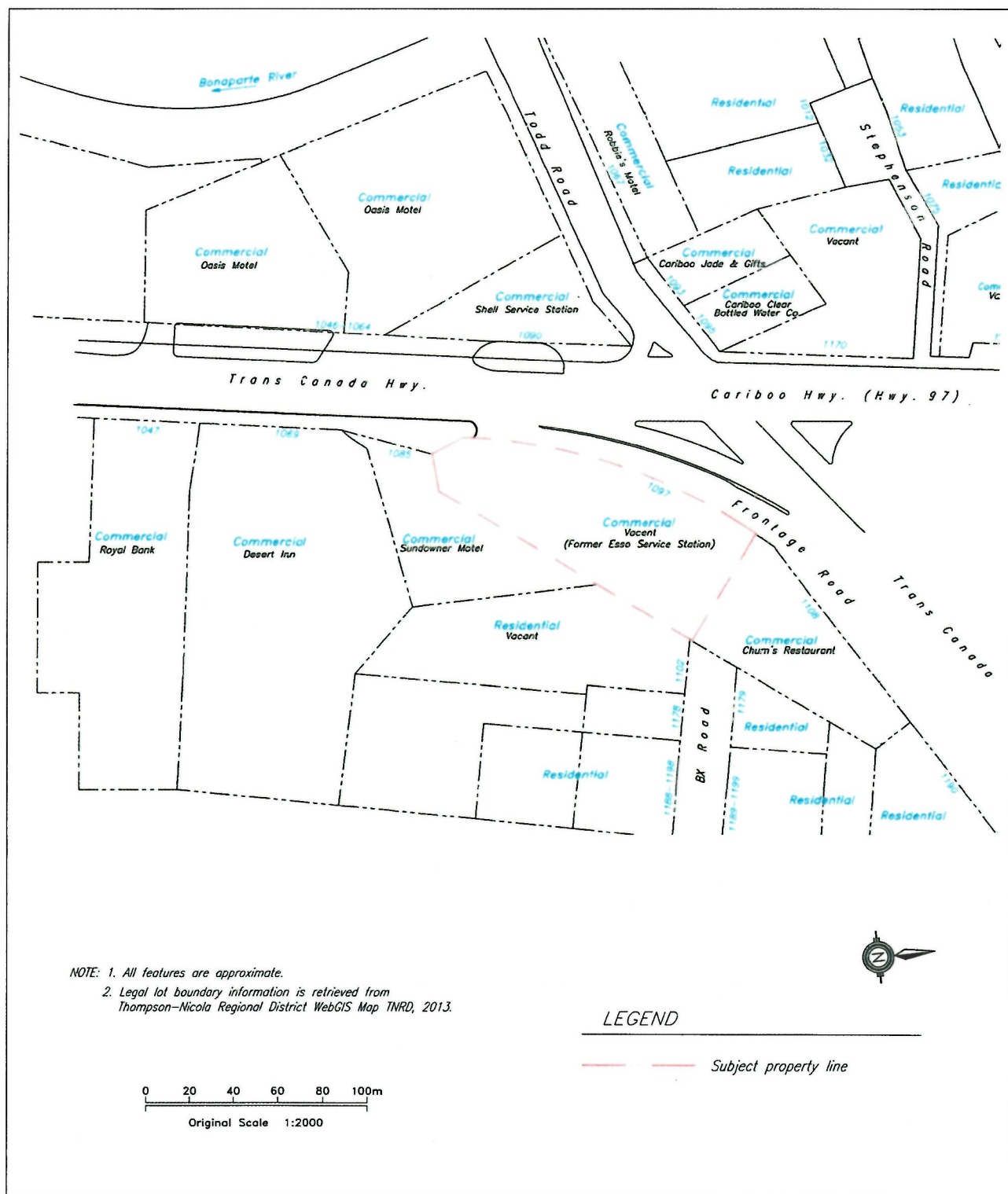


Figure 1. Location of 1097 South Trans-canada Highway, Cache Creek, British Columbia.