File: 26250-20/10257
Site: 10257

August 15, 2019

Stephanie Mahon
Project Manager, Imperial Oil Ltd.
505 Quarry Park Boulevard SE
PO Box 2480, Station M
Calgary, Alberta T2P 3M9

Dear Stephanie Mahon,

Re: Protocol 6 Approval Application, 1097 South Trans Canada Highway, Cache Creek, British Columbia

This letter provides my decision on your May 22, 2014 application and January 4, 2019 application addendum submitted to the Ministry of Environment and Climate Change Strategy (the ministry). The application requests approval under Protocol 6 for relief from the requirement to delineate and remediate the entire extent of contamination associated with the former Esso service station at 1097 South Trans Canada Highway, Cache Creek, BC (Esso source parcel) prior to seeking Certificates of Compliance (CoC) for three downgradient affected parcels onto which contamination has migrated. Relief from delineation and remediation has been requested in relation to a commingled petroleum hydrocarbon plume determined to be jointly sourced from the former Esso service station and a Shell service station located across the Trans Canada Highway and, specifically, in relation to that portion of the petroleum hydrocarbon contamination located west of the Trans Canada Highway. The current property owner of the former Esso source parcel is Imperial Oil Limited (Imperial).

The three affected parcels that Imperial wishes to seek CoCs for are described as follows:

- 1085 South Trans Canada Highway, Cache Creek, British Columbia (PID 008-666-172)
- 1069 South Trans Canada Highway, Cache Creek, British Columbia (PID 005-312-248)
- 1047 South Trans Canada Highway, Cache Creek, British Columbia (PID 027-986-233)

A site plan showing the locations of the above affected properties, the former Esso service station and the Shell service station at 1290 South Trans Canada Highway, is provided in Attachment A of this letter.

In reaching my decision, I have relied on information provided in the following supporting reports and correspondence:

- *Protocol 6 Preapproval Application, 1097 South Trans Canada Highway, Cache Creek, British Columbia,* dated May 22, 2014 prepared by Parsons Canada Ltd (Parsons);
- *Addendum to: Protocol 6 Preapproval Application*, dated November 13, 2014, prepared by Parsons;
- *Protocol 6 Preapproval Application Addendum*, dated February 13, 2015, prepared by Parsons;
- *Protocol 6 Preapproval Application Addendum, 1097 South Trans-Canada Highway, Cache Creek, British Columbia*, dated January 4, 2019, prepared by Parsons.
- Email correspondence to Jocelyn Bright, Parsons, from Annette Mortensen, (ENV) subject titled *2015-03-03 Pre-Approval Application Follow-up – 1097 south Trans-Canada Highway, Cache Creek, British Columbia*, dated June 26, 2015;
- Email correspondence to Jocelyn Bright, Parsons, from Annette Mortensen (ENV), subject titled *2015-03-03 Pre-Approval Application Follow-up – 1097 south Trans-Canada Highway, Cache Creek, British Columbia*, dated July 15, 2015; and,
- Email correspondence to Ingrid Sorensen (ENV) from Erin Webb, Parsons, subject titled *2019-05-06: Pre-Approval Application Addendum Follow-up – 1097 South Trans-Canada Highway, Cache Creek, British Columbia*, dated June 26, 2019.

The primary rationale presented by Parsons in the above-referenced reports and correspondence in support of the Protocol 6 approval application is summarized below. Directly quoted text is in italics; ministry annotations are in straight text. Lines of evidence are taken from the January 4, 2019 Protocol 6 addendum report unless otherwise indicated.

- *There appeared to be two separate sources of petroleum hydrocarbon impacts in the study area: one source was located on the* [Imperial] *property…and the other was located in the vicinity of Shell service station facilities to the west of the subject property* [May 22, 2014 Protocol 6 Application];
- *The inferred principal direction of groundwater flow beneath the Imperial property,* [the Shell property], *and the subject properties appears to be southerly with components to the southeast* [January 4, 2019 Protocol 6 Addendum (Refer to Attachment B)]*;*
- *LNAPL*[1] *was historically identified beneath the Imperial property, the Trans Canada Highway, and the Shell property. LNAPL analyses indicated that wells within each area contained leaded gasoline, which was sold at each service station. Both service stations are of the same era and LNAPL could be sourced from either or both properties* [May 22, 2014 Protocol 6 Application] ;
- *Shell has been uncooperative, and the delineation and characterization work planned for their property… has not been completed as a result. The complications created by Shell's disinterest to complete the originally planned work should not encumber obtaining*

[1] LNAPL – Light Non-Aqueous Phase Liquid

certifications for the third party properties [May 22, 2014 Protocol 6 Application, Appendix B]

- *In 2007, Parsons personnel observed the… removal of the Imperial Oil facilities by Hazco Environmental Services Ltd.* [May 22, 2014 Protocol 6 Application]*;*
- *Remediation was conducted beneath the Imperial property via soil vapour extraction and a groundwater treatment system…Since January 1994, an approximate volume of 25 L of free phase liquid hydrocarbons has been recovered by manual bailing from monitoring wells. The groundwater recovery and treatment system was in operation from November 1, 1994 through December 9, 1996 during which time approximately 35 500 m^3 of groundwater was recovered, treated, and discharged…* [May 22, 2014 Protocol 6 Application and November 13, 2014 addendum]*;*
- *A long offsite monitoring history* [(1994 to 2018)] *documents that the subsurface conditions at the site and adjacent properties continues to improve;*
- *The overall groundwater quality has improved beneath the Imperial property and subject properties…The areal extent of petroleum hydrocarbon impacted groundwater exceeding the applicable standards on the Imperial property has decreased and the dissolved petroleum hydrocarbon constituents throughout the plume have in general decreased;*
- *At the most downgradient portion of the subject properties (… BH75, BH76, BH78, BH79, BH81, BH82, BH86, and BH87), the measured concentrations of petroleum hydrocarbons in groundwater … have met the applicable standards since the monitoring wells were installed (2008 – 2012). This demonstrates that the plume has not been expanding in the downgradient direction*;
- *Concentrations of BTEX, VPHw, and LEPHw*[2] [near the leading edge of the plume] *at BH70 and BH77 have decreased since they were installed in 2008/2009 to the point where the concentrations are now below applicable standards;*
- *The results of the Mann-Kendall tests indicated that the concentrations of BTEX, VPHw, and LEPHw at the monitoring wells located along the upgradient edge of the plume exhibited decreasing and/or no trends at the 95% confidence interval;*
- *The results of the Mann-Kendall tests indicated that the concentrations of BTEX, VPHw, and LEPHw at the monitoring wells located within the centre of the plume exhibited either decreasing or no trends at the 95% confidence interval;*
- *The monitoring well located closest to the Shell property within the co-mingled plume (BH89-S), exhibited no trends at the 95% confidence interval and the data set indicated that the data are stable for all parameters analyzed;*
- *The results of the Mann-Kendall tests at the monitoring wells located along the downgradient edge* [(i.e. the leading edge)] *of the plume indicated that the concentrations of BTEX, VPHw, and LEPHw exhibited either decreasing or no trends.*

[2] BTEX – Benzene, Toluene, Ethylbenzene, Xylenes
VPHw – Volatile Petroleum Hydrocarbons in water
LEPHw - Light Extractable Petroleum Hydrocarbons in water

Based on the ministry's review of information provided in the above-referenced reports and correspondence, I concur that delineation and remediation of the entire extent of commingled petroleum hydrocarbon contamination associated with the former Esso service station and the Shell service station located at 1097 and 1290 South Trans Canada Highway, Cache Creek, respectively, is not required prior to Imperial pursuing CoCs for the affected downgradient parcels listed above in this letter. Specifically, I concur that it is not necessary for Imperial to delineate petroleum hydrocarbon contamination west of the Trans Canada Highway prior to obtaining CoCs for the aforementioned parcels. I base this decision primarily on the following conditions and circumstances described by Parsons:

- Imperial decommissioned their service station facility and carried out remediation between 1994 and 2007. Subsequently LNAPL, previously present below the Imperial property and adjacent Trans Canada Highway has been shown to be no longer present, the extent of petroleum hydrocarbon impacted groundwater has decreased on the Imperial property and the concentrations of dissolved petroleum hydrocarbon constituents throughout the plume have decreased;
- Information on the historical operations of both the Esso and Shell service stations, on historical investigations conducted by Imperial and Shell and on groundwater flow directions and contaminant distributions are considered to support the assertion by Parsons that petroleum hydrocarbon contamination below the Trans Canada Highway is dual sourced and commingled;
- Imperial's efforts to cooperate with Shell to delineate the entire extent of commingled contamination, as documented in the record of communication provided in Appendix B of Protocol 6 Preapproval Application, 1097 South Trans Canada Highway, Cache Creek, British Columbia dated May 22, 2014, are considered reasonable; and
- Mann-Kendall analyses of groundwater data collected from monitoring wells within the petroleum hydrocarbon plume on the Imperial property, Trans Canada Highway and downgradient properties from 2007 to 2018 indicate the plume is stable and decreasing.
- The land parcels for which the CoCs are being sought have been contaminated by the migration of the commingled hydrocarbon plume and the landowners are not responsible parties for the contamination.

This approval provides authorization to proceed with an application for CoCs for the three affected parcels listed above under the Protocol 6 review process. Aside from the specific relief granted above, it does not constitute review or acceptance by the director of any aspect of the submission requirements for such applications. In particular, it provides no confirmation of the adequacy of current site information for the purposes of applying for such legal instruments.

Please ensure that a copy of this letter is included in the CoC applications made for the affected parcels.

This decision is based on the most recent information provided 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. The Ministry expressly reserves the right to change or substitute different requirements where circumstances warrant.

Sincerely,

Peggy Evans
for Director, *Environmental Management Act*

Attachment

Attachment A: Site Plan
Attachment B: Groundwater Contour Plan – August 2017

cc: John Driedger, Shell Canada Products; John.Driedger@Shell.com
Erin Webb, Parsons; Erin.Webb@parsons.com
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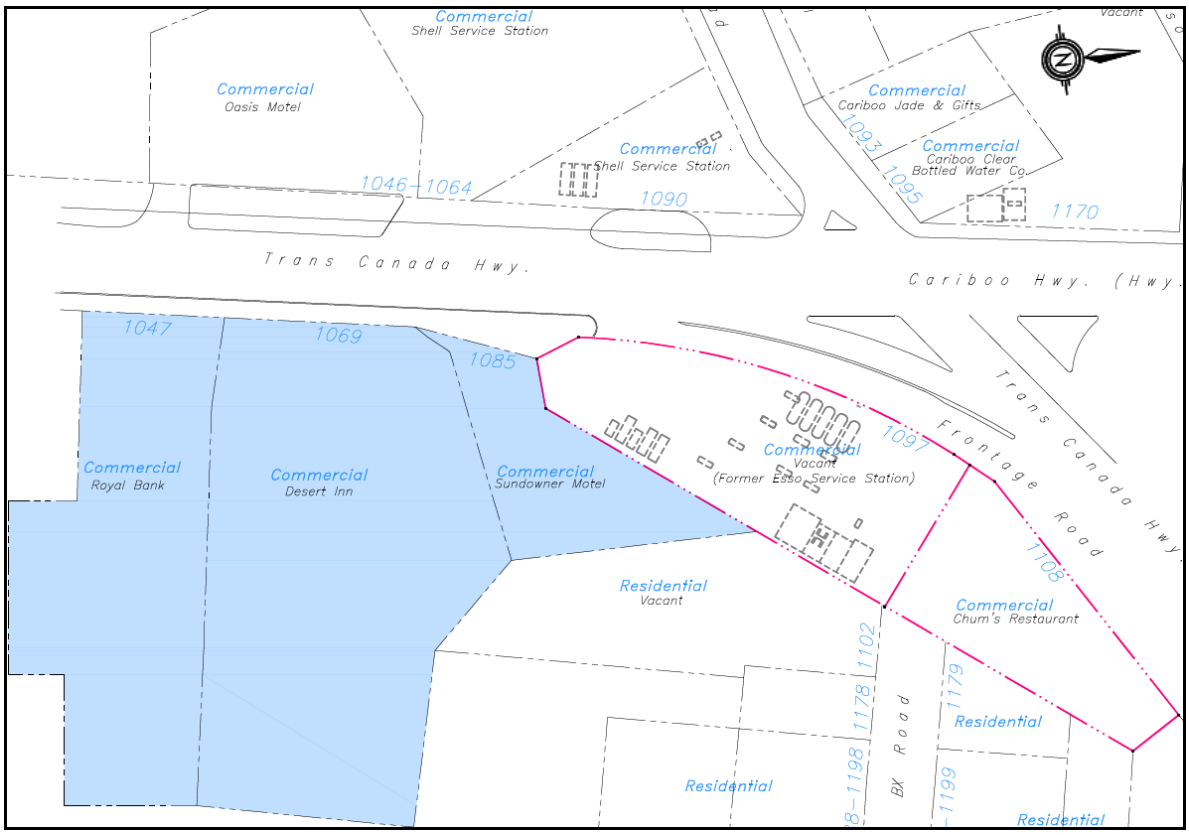
Attachment A
Site Plan



Attachment B
Groundwater Contour Plan – August 2017