



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

15 W Yakima Ave, Ste 200 • Yakima, WA 98902-3452 • (509) 575-2490

November 1, 2012

Eric Hetrick
Chevron Environmental Management Company
6101 Bollinger Canyon Rd
San Ramon, CA 94583
BR1X – Room 5315

Re: Chevron Station #9-6530, 232 East Woodin Avenue, Chelan, WA
FS/ID# 77751227, Cleanup Site ID# 6660
Requiring Supplemental Feasibility Study and new Draft Cleanup Action Plan

Dear Mr. Hetrik:

The Department of Ecology (Ecology) appreciated the opportunity to meet with both Chevron and SAIC representatives on August 8, 2012 to discuss the above-referenced Site. The primary objective of the meeting was to ensure Chevron's understanding that Ecology could not work towards a Consent Decree with the current Draft Cleanup Action Plan (2009 DCAP). We realize time, effort, and resources have been spent since the approval of 2006 Feasibility Study (2006 FS) and remedy selection, 2007 satisfaction of the Agreed Order, and 2009 DCAP.

However, before a Cleanup Action Plan (CAP) can be approved, a Supplemental Feasibility Study (SFS) MUST be conducted to include updated site information and evaluate additional, more aggressive remediation alternatives with more reasonable restoration timeframes. Subsequent to the approval of the SFS, a new CAP will be drafted by Ecology. We understand the frustration you have expressed about this change in course. Unfortunately, the 2009 DCAP, as written, does not satisfy the requirements of the Model Toxics Control Act (MTCA) that regulate contaminant releases for the protection of human health and the environment. At your request, we are providing this letter to explain Ecology's rationale for rescinding our approval of the 2006 FS and requirement of a SFS. We've also outlined a path forward for how Chevron and Ecology could come to agreement on reaching cleanup goals.

The preferred alternative (2C) carried through to the 2009 DCAP includes monitored natural attenuation of shallow groundwater and soil with periodic hand bailing and absorbent socks. Ecology's concerns with the 2006 FS and 2009 DCAP are summarized below and should be addressed in future work.



- 1) **More aggressive remediation alternatives** must be included in the SFS. The preferred alternative is inappropriate for the above-referenced site because it relies on an approach that is too passive and results in an unreasonably long restoration timeframe.
 - a) **Additional, more aggressive cleanup technologies** must be evaluated in the SFS. The free product plume is estimated to be as large as 300,000 gallons and spreads over 2 acres (covering portions of 2 city blocks in downtown Chelan and affecting 17 or more neighboring properties) based on information presented in Appendix G and Figure 4-6 of the 2006 FS. For a plume this size, hand bailing over several decades is not considered a sufficient remedial action. For guidance on commonly used petroleum treatment strategies, please see Ecology Publication # 10-09-057 *Guidance for Remediation of Petroleum Contaminated Sites* (ex. Table 11.2). See also ITRC guidance, *Evaluating LNAPL Remedial Technologies for Achieving Project Goals*, Dec 2009 (ex. Table 5-1 and 5-2). In addition to these options, the SFS must include evaluation of directional drilling, interception trench, containment placement, enhanced chemical oxidation and/or bioremediation, and reactive wall and/or funnel and gate treatment technologies or a combination of treatments (e.g. those mentioned in the 2006 FS, guidance, or found elsewhere) within the right-of-ways that bisect the free product plume (ex. alley, Emerson Street, and Woodin Avenue). The goal of such an approach is to optimize use of areas of accessibility in order to treat, remove, contain or break up the free product plume to a greater extent and more quickly. It is likely that a combination of approaches for different areas of the free product and dissolved plumes would be a more effective approach. Ecology understands that soil characteristics and residual saturation have been expressed by Chevron as hindrances to more aggressive cleanup options. However, based on the information discussed in the 2006 FS and 2009 DCAP, Ecology fails to understand both *how* these properties make any more aggressive measures infeasible or *why* a broader variety of remediation strategies or combinations were not evaluated. Discussion of these parameters and other relevant considerations should be included in the SFS, and the basis for their impact on the selection of remediation alternatives should be evaluated *and* supported by data.
 - b) **Inappropriate selection of Monitored Natural Attenuation (MNA)**. Furthermore, reliance on MNA is not appropriate for use at sites with significant free product because petroleum is not readily degraded by microorganisms in this form and the dispersion, dilution by recharge, and sorption of free product is very slow. Provided adequate source removal occurs and protection of receptors is provided, MNA may be considered a component of a remedial action for this site (for example, as a final polishing step). However, adequate evaluation of MNA parameters and trends must be provided, beyond the limited analysis found in App J of the 2006 FS in order for this to be considered. For further information on Ecology's MNA guidelines, please refer to Ecology Publication #s 05-09-091 and 05-09-091a, *Guidance on Remediation of Petroleum-Contaminated Ground Water By Natural Attenuation and User's Manual: Natural Attenuation Analysis Tool Package for Petroleum-Contaminated Ground Water*. A more complete MNA evaluation of both soil and groundwater must be presented if MNA is selected.
 - c) **Restoration Timeframe**. A more reasonable (shorter) timeframe for cleanup with supporting rationale for estimation of that timeframe is required in the SFS. In the 2006 FS, a restoration timeframe of 30 years is estimated for the preferred alternative (2C).

However, this timeframe does not appear to be reasonable, the basis for its calculation has not been explained adequately, and justification for such a long timeframe has not been provided. In addition, the 2009 DCAP discussion is inconsistent about restoration timeframe estimates, stating that free product recovery would take 20 to 30 years and subsequent attenuation an additional 20 to 30 years. This totals 40-60 yrs for the restoration timeframe, not 30 years (2009 DCAP, Appendix A). As a starting point, Ecology requires Chevron to explore cleanup options that would achieve cleanup in approximately 10 years or less. The basis for restoration timeframe estimates must be explained and justification for recommendations of any timeframe over 10 years must be provided.

- 2) **The SFS should ensure protectiveness.** Greater measures for protection of receptors should be provided.
 - a) Environmental covenants soil and a soil management plan will be needed for shallow soil (0-15 feet below ground surface) remaining above the cleanup levels for protection of human health. In addition, groundwater use restrictions will be required for the area (ex. sensitive areas ordinance). Because the Site impacts multiple downtown properties and right-of-ways, the City of Chelan will need to be consulted on how to achieve cooperative, memorialized, interim and long-term protectiveness for the downtown area.
 - b) Contingency plans are required and should describe the decision criteria, approach, and potential actions needed if cleanup goals are not met within the restoration timeframe or if protection of receptors is compromised.
 - c) For the indoor air pathway, additional evaluation and periodic soil vapor monitoring is required and should include measurements of petroleum constituents and lower explosive limits (LELs). A single soil vapor sampling event was conducted June 30 to July 1, 2003 and appears to be the sole basis for recommendations on the human health exposure pathway for indoor air. These results indicate benzene as a chemical of concern with soil vapor concentrations exceeding Tier I screening levels published in Ecology guidance. Also, because there are two earthen basements AND free product (2006 FS, Table 4-5), use of the Johnson Ettinger Model, as presented in the 2006 FS Appendix F, is not appropriate (per both Ecology and EPA guidance). Please refer to Ecology publication # 09-09-047, *Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*.
 - d) Lastly, the Site is within 300 feet of the nearest surface water body, Lake Chelan. Although data indicate that the plume has not advanced beyond the silt unit to the southwest, the NAPL plume is *alarmingly close* to Lake Chelan. This, in addition to the other concerns discussed, provides heightened impetus to reach a quick and complete cleanup as well as provide robust monitoring in the interim.
- 3) Ecology appreciates that Chevron has continued to conduct monthly product bailing, quarterly groundwater monitoring and water level and free product measurements, and annual reporting. Because the previous Agreed Order has been satisfied (please refer to September 6, 2007 letter from Ecology), we also understand that this work is currently being conducted as an Independent Remedial Action.

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- 4) Additional site information has been collected since the 2006 FS was written and should be included in the SFS evaluations.
- 5) Data should continue to be entered into Ecology's Environmental Information Management (EIM) System database regularly. The most recent entry in EIM is from May 2011. Thank you for entering these past data sets. EIM protocols have recently been updated and there are now entry fields for reporting free product and water levels. Please refer to the following website for more information:
www.ecy.wa.gov/eim/helpDocs/EIMHelp_WaterLevelsInWellsWithLNAPL.pdf.

For all the foregoing reasons, please consider this letter your written notification that, after additional review, **Ecology is rescinding our acceptance of the 2006 FS.** Therefore, a SFS and new CAP will be required. Ecology will be forwarding a new Agreed Order to Chevron to govern the production of the SFS. We would like to have the new Agreed Order signed and finalized by the end of this year.

You should be aware that during a recent meeting with the City of Chelan, Ecology obtained assurances that they are supportive of a variety of remediation approaches, and further meetings to outline specifics should be planned. There are a number of issues where we need their support (e.g., environmental covenants and soil management plans (discussed above) as well as plans for remedial activities), and Ecology is willing to facilitate those meetings to achieve desired outcomes.

In recognition of the additional new work required, Ecology is willing to have staff draft the CAP at no charge once the SFS is approved. We hope that this letter clarifies Ecology's position and rationale, and provides direction for a path forward. We understand that Chevron would like to schedule a follow-up meeting to discuss next steps. Please provide a couple dates that work for your group to either myself or Laura Klasner, your new project manager. In the interim, feel free to contact me directly at (509) 454-7886.

Sincerely,



Valerie Bound
Section Manager
Toxics Cleanup Program
Central Regional Office

cc: Russell Shropshire, P.E., SAIC
Phyllis Barney, Assistant Attorney General