



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

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July 17, 2019

Dana Cannon  
West of 4th Project Coordinator  
Aspect Consulting  
401 2nd Ave S, Suite 201  
Seattle, WA 98104

**Re: West of 4<sup>th</sup> Site  
Agreed Order #DE 10402  
Site Unit 1, Addendum to In Situ Metals Immobilization Pilot Study Field  
Implementation Work Plan**

Dear Dana Cannon:

On June 3, 2018, the Washington State Department of Ecology (Ecology) received an emailed copy of the draft Site Unit 1 *In Situ Metals Immobilization Pilot Study Field Implementation Work Plan Addendum*. The Field Investigation Work Plan Addendum was submitted by the West of 4th PLPs in accordance with Agreed Order (AO) 10402, amended on November 21, 2017.

On June 10, Ecology emailed a number of questions and comments to the PLPs concerning proposals in the draft Work Plan Addendum. These questions and comments were discussed by the parties during a June 13 conference call. Based on that discussion the PLPs prepared and submitted a revised Work Plan Addendum, received by Ecology (via email) on July 1. A second revision was subsequently submitted (via email) on July 12.

Thank you for submitting the draft and revised documents by their due dates. The revised Site Unit 1 In Situ Metals Immobilization Pilot Study Field Implementation Work Plan Addendum received on July 12 is hereby approved.

The revised Work Plan Addendum proposes to inject approximately 10,000 gallons of reagent into each of the two injection wells. This will require the sequential preparation of three 3300-gallon reagent batches (per well). As the reagent is injected, however, dose-response monitoring will be conducted to determine if increases in groundwater pH attain levels consistent with project objectives. Should an acceptable pH shift not occur, the reagent strength will be modified (from a 0.1M/0.1M solution of NaHCO<sub>3</sub>/NaOH to a 0.2M/0.2M solution) before additional reagent is injected.

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It appears, then, based on the Addendum's proposals, that the PLPs have two opportunities to modify injected solution strength per well: prior to preparing the second 3300-gallon reagent batch and prior to preparing the third. Ecology therefore encourages to the PLPs to use the dose-response results of the 2018 injection events and timely field measurements taken during the injection of the first 6600 gallons at each well to anticipate the likelihood of an insufficient pH shift – should the 0.1M/0.1M solution of NaHCO<sub>3</sub>/NaOH not be modified. A new reagent batch (following the first and second batches) of 0.1M/0.1M solution strength should not be prepared unless it is likely that the desired groundwater pH target-level will be achieved without increasing reagent strength.

Please proceed to implement the revised Work Plan Addendum according to its schedule (Section 4.4 and Figure 7). As the Addendum states, sub-contracting and other pre-mobilization activities will need to be completed in advance of injections. These activities may affect the project's timeline. If so, please notify Ecology of the resulting schedule changes.

If you have any questions concerning today's letter, please contact me at (425) 649-4449 or [ejon461@ecy.wa.gov](mailto:ejon461@ecy.wa.gov).

Sincerely,



Ed Jones  
Environmental Engineer  
Hazardous Waste and Toxics Reduction Program

Sent by Certified Mail: 9171 9690 0935 0214 2536 95

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