



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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June 19, 2014

William Beck
Corrective Actions Manager
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**Re: 1,4-dioxane in site groundwater; dispute resolution
PSC-Georgetown Facility
Ecology/EPA # WAD 00081 2909**

Dear Mr. Beck:

In August 2013 PSC Environmental Services (PSC) invoked Dispute Resolution under Agreed Order (AO) DE 7347 to contest a Washington State Department of Ecology (Ecology) decision communicated to the company the previous month. The July 2013 Ecology decision concerned 1,4-dioxane contamination at the PSC-Georgetown site and PSC objected to two parts of our decision:

- (1) Ecology's determination that levels of 1,4-dioxane in site groundwater were not decreasing rapidly enough to satisfy cleanup goals established in the 2010 Cleanup Action Plan, and that remedial action was therefore needed to hasten cleanup; and,
- (2) Ecology's refusal to designate a company, which historically conducted business at 637 South Lucile Street, as a MTCA "potentially liable person" (or PLP).

Below, in accordance with section VIII.10(a)(iv) of the AO, Ecology has provided the NWRO Hazardous Waste and Toxics Reduction (HWTR) Section Manager's final decision on the disputed issues. Ecology is also responding to two documents related to site groundwater contaminated with 1,4-dioxane that PSC submitted in October of last year, while Dispute Resolution was still in progress. This letter provides the Section Manager's comments and decisions on the proposals contained in the two documents.

Following our discussion of the disputed July 2013 Ecology decision (in two parts) and the two PSC documents submitted in October 2013, we have included a brief summary of the most pertinent events associated with the dispute over the past 10 months (under "August 2013 through June 2014" below). This is simply intended to record the multiple steps the parties completed during the Dispute Resolution process.



Disputed Ecology decision, first part

In a July 25, 2013, letter to PSC Ecology determined that levels of 1,4-dioxane in site groundwater were not decreasing rapidly enough to satisfy cleanup goals established in PSC's 2010 Cleanup Action Plan (CAP). This determination had been preceded by earlier Ecology correspondence (May 20, 2011), agreeing with PSC that monitored concentrations of 1,4-dioxane were not decreasing fast enough to attain the CAP's cleanup standards by 2015. The July 2013 letter was, therefore, not our first notification to PSC that current monitoring trends were inconsistent with meeting the CAP's 2015 cleanup goals. In both our July 2013 and May 2011 letters Ecology notified the company that, in accordance with section VII.17 of the AO, additional remedial action was now needed to hasten 1,4-dioxane cleanup.

Ecology continues to believe that the CAP's 1,4-dioxane 2015 cleanup level goals will not be met and that action is needed to more quickly reduce concentrations in site groundwater. We believe the AO and CAP are very clear on this point. Although we agree with PSC that concentrations at certain locations and depths have been monitored long enough to demonstrate significant downward trends (especially at the estimated "margins" of the plume), concentrations at a number of other locations have, since 2010, been fairly stable. Plus, other locations where 1,4-dioxane levels are now known to be elevated have only been monitored since late 2012; insufficient data have been collected (i.e., not enough time has elapsed since monitoring began) to confidently predict cleanup level attainment dates.

In re-affirming Ecology's decision set out in our May 2011 and July 2013 letters, as well as our September 6, 2013, and October 15, 2013 letters,¹ it is not Ecology's expectation that the future action PSC takes will result in immediate achievement of dioxane cleanups throughout the plume. The contamination covers too large an area and is present in both shallow and intermediate depths. But we expect the action to quickly reduce dioxane mass in the most problematic areas and thereby shorten the overall remediation timeframe and length of time that monitoring – for this compound – will be needed in areas both east and west of 4th Ave. S. As such it could be considered an adjunct action to the cleanup action (MNA) established in the 2010 CAP.

Disputed Ecology decision, second part

PSC has asserted that the General Electric Co. (GE), which operated at 637 S. Lucile St. in the 1980s and early 1990s, released solvents containing 1,4-dioxane and should therefore be designated a MTCA PLP. Ecology has not done this. To begin the process of "naming" a party a PLP Ecology must have credible evidence that a release of hazardous substances has occurred and that this release then led to an exceedance of State cleanup levels. Based on the information available to us at this time, we do not believe there is credible evidence that a release of 1,4-dioxane occurred while GE operated at 637 Lucile St that poses a threat to human health and the environment (i.e., has resulted in an exceedance of dioxane cleanup levels).

¹ Ecology's 9/6/13 site manager letter stated that the "primary purpose" of the letter was "to reaffirm past Ecology decisions that cleanup actions must be taken by PSC pursuant to Section VII.17 of the Agreed Order. This action, from our perspective, is needed regardless of the question of whether another historic source of groundwater contamination existed one block downgradient of PSC's facility property." The HWTR Section Manager's 10/15/13 letter, sent to PSC following the October 11 dispute resolution meeting with the company, stated that PSC: "must propose actions, such as implementation of the contingent remedy, to expeditiously attain [1,4-dioxane] cleanup levels."

It is certainly true that the solvent GE used at 637 Lucile St contained 1,4-dioxane. It is also true that groundwater downgradient of the 637 Lucile St property is contaminated with dioxane. However, it is also the case that:

- a) the operators of what is now called the PSC-Georgetown facility historically managed hazardous wastes containing 1,4-dioxane,
- b) spent solvent waste, some of which contained 1,4-dioxane, was generated by GE operations at the 637 Lucile St property, and transported to the PSC-Georgetown facility for treatment and/or storage,
- c) groundwater downgradient of the 637 Lucile St property is also downgradient of part of the PSC-Georgetown facility; the two properties are only about one block apart,
- d) groundwater contaminated with dioxane has been detected in areas upgradient of the 637 Lucile St property, and these areas are downgradient of parts of the PSC-Georgetown facility,
- e) groundwater contaminated with dioxane has been detected in areas well to the north of the 637 Lucile St property, and these areas are presumed to be generally downgradient of parts of the PSC-Georgetown facility,
- f) it is known that chlorinated solvents were released at the PSC-Georgetown facility; one of the primary reasons for constructing the barrier wall was to contain highly-contaminated groundwater (concentrations so high that the presence of chlorinated-DNAPL has been assumed) east of Denver Ave, and
- g) physical containment of the highest levels of groundwater contamination beneath and immediately west of the PSC-Georgetown facility did not occur until 2004.

Over the past five years PSC has made repeated efforts to link site groundwater contamination with GE's operations at 637 Lucile. More specifically, these efforts focused on trying to demonstrate linkage between elevated levels of 1,4-dioxane measured at well 122-60, northwest of the 637 Lucile building, with historic GE operations and disposal practices. In early 2010 PSC collected and analyzed samples from the City right of way surrounding the 637 Lucile property. In 2011, with Ecology's assistance, the company obtained access to the property itself. Soil, soil gas, and groundwater samples were collected, and sewer lines were investigated, under many areas of the building. Later, in 2012, direct push groundwater samples were collected between 4th and 7th Avenues in conjunction with a broader effort to better characterize dioxane contamination.

These efforts provided vertical profiles of saturated zone dioxane concentrations at many locations at and near 637 Lucile, and indicated that the highest concentrations were present at depths corresponding to the shallow and intermediate groundwater zones. No samples from the water table zone exceeded the dioxane cleanup level. The data also showed that groundwater dioxane levels were higher immediately west of 637 Lucile (or the western side of the property) than they were immediately east (or the eastern side) of the property. At no location or depth, on or immediately adjacent to the property, however, were concentrations as high as those recorded at well 122-60. This well is clearly located in the downgradient direction from parts of the PSC-Georgetown facility. In Ecology's opinion, it is generally cross-gradient of the 637 Lucile property.

Soil samples were collected at a number of locations on/near the 637 Lucile property, both above and below the seasonal-high water table. 1,4-dioxane was rarely detected. The highest

concentration found above the water table was 2 µg/kg and came from a sample collected below the far northeast corner of the building. The concentration was an estimated value (J-flagged) and well below soil cleanup levels protective of groundwater quality.

Based on the data resulting from the 2010 and 2011 investigations, Ecology concluded that there was no evidence of a significant 1,4-dioxane source in soils or at the water table beneath the 637 S. Lucile St building. Our May 2011 letter communicated this conclusion. We assume PSC shares this view, since the company's subsequent release hypothesis shifted to the possibility of a sewer line break in the parking lot west of the building.

During dispute resolution meetings PSC put the following questions to Ecology: why do the highest levels of dioxane not appear until Maynard Ave. S, and is it just a coincidence that the 637 Lucile property is located immediately southeast of the highest historic measurements of dioxane (at/near the Lucile/Maynard intersection)? These are good questions, but in our view the answer to the second question may be yes. Ecology does not know where each release of dioxane occurred on PSC's property or over what periods of time. We do not have pre-2004 groundwater monitoring data (for dioxane) at various depths between these points and well 122-60.² So we can only speculate as to *how* the contamination we have been monitoring for ten years came to be located at its particular post-2004 locations and depths. What is clear to us, however, is that 1,4-dioxane was released at the PSC facility and the facility property is upgradient of well 122-60. In our opinion it is a source of the contamination detected at 122-60.

If, as PSC asserts, the dioxane contamination at 122-60 is primarily due to a wastewater release from a sewer line at the 637 Lucile property, it is unclear how this could have happened. Why, 10 to 20 years after the supposed release occurred, would the highest concentrations of dioxane not only be located NNW of the release point, but at a depth of 60' bgs at this location?³ This may be possible, but it seems much more plausible to us that the contamination at 122-60 migrated to that location/depth from an upgradient point (or points) to the northeast.

At this time Ecology has therefore decided not to notify GE that we believe their operations at 637 Lucile justify designation as a PLP. If PSC believes GE has contributed to site contamination we encourage the company to seek redress through private right of action.

² Until recently, the highest levels of 1,4-dioxane were measured in samples from well 122-60. This well was installed over ten years ago, following PSC's direct-push investigations west of Denver Ave. S. The purpose of the well, at the time of installation, was not to monitor 1,4-dioxane concentrations; the previous direct-push investigation at this location did not include dioxane as an analyte. Nor was its purpose to monitor 1,1,1-trichloroethane, which had not been detected at this location and depth in 1998. At the time of installation, benzene was the primary (volatile organic) contaminant of interest at 122-60.

³ PSC has correctly noted (in the letter to Ecology dated June 12, 2014) that "local flow variations caused by preferential flow along subsurface trenches or from recharge from nearby leaking stormwater pipes...could cause localized mounding and horizontal/vertical migration..." As Ecology states later in our letter, however, PSC's 637 Lucile release hypothesis is built upon a number of unknowns. To these unknowns one must also add the *pathway* linking the hypothesized release to elevated levels of 1,4-dioxane more than 150' to the NNW – at a depth of 60' bgs and persisting many years after the hypothesized release would have ceased. While there *could have* been significant localized mounding associated with a 637 Lucile sewer-line release, and this could have resulted in horizontal/vertical migration, it is not known that this occurred (or, much less, that it occurred and led to the concentrations of dioxane PSC has detected at 122-60 over the past 10 years). It is simply a theory.

October 2013 PSC proposal to study 1,4-dioxane biodegradation in site groundwater

On October 7 Ecology received a proposed biodegradation study from PSC. The primary purpose of the year-long study, according to PSC, is to determine if 1,4-dioxane is biodegrading in site groundwater (and if so, at what rate).⁴ We appreciate receiving the company's proposal, but note that the proposal is not a document identified in PSC's east-of-4th AO. Nor is it a document Ecology asked PSC to submit.

During the FS and development of the 2010 CAP neither Ecology nor PSC considered natural (i.e., in situ) biodegradation of 1,4-dioxane to be a significant loss mechanism. Goals for the cleanup of dioxane-contaminated groundwater in the CAP were based on the expectation that dilution and dispersion would quickly attenuate site concentrations. As discussed above, our attenuation projections at certain wells were incorrect and the CAP's cleanup goals for 2015 will not be met. This is the case whether biodegradation is playing an insignificant, minor, or major role in reducing dioxane concentrations.

The premise behind PSC's proposal appears to be that if biodegradation of 1,4-dioxane is actually a significant loss mechanism, and this can be demonstrated to Ecology, then Ecology will look more favorably on extending the dioxane remediation timeframe. But this is not 2010 and it is now apparent that the dioxane remediation timeframe will need to be extended in any case. Plus, even if future attenuation is primarily expected to occur via dilution and dispersion (which, based on the remediation science literature, Ecology believes is the most reasonable expectation), this form of monitored natural attenuation (MNA) will remain an important element of the cleanup action. Ecology has not asked PSC to implement an action that will directly result in attainment of cleanup levels throughout the plume. We have asked for an action that will hasten this outcome, and expect that whatever remedy is chosen and implemented will serve primarily to quickly reduce dioxane mass in the shallow and intermediate zones.

Ecology has no objection to PSC's initiation of a biodegradation study. It may result in improving our understanding of dioxane fate and transport, and the data it produces may be useful when preparing PSC's Five Year Review. However, as we noted seven months ago, this study cannot substitute for, or interfere with, the more important goal of designing and implementing an "active" action to hasten reduction of site dioxane concentrations.

October 2013 PSC proposal to investigate additional areas on the 637 S. Lucile St. property

On October 31 Ecology received PSC's "source identification and removal" proposal. In summary, the PSC document:

- claims that the 1,4-dioxane "source" is expected to be "contaminated soils and/or... piping or tanks" ("stormwater apparatus"), "at or near the 637 S Lucile property";
- requests that PSC be allowed to conduct the Rice University dioxane-degradation microcosm study in parallel with "source identification and removal";
- states that the 2010 CAP's contingent remedy will not be effective until the "location and extent" of the "source" is identified;

⁴ PSC's letter also notes that the study could provide information related to enhancing dioxane degradation with "commercially available products or bioaugmentation..."

- states that immediate implementation of the CAP's contingent remedy would be disproportionately costly, compared to the "source identification and removal" proposal;
- acknowledges that "source identification and removal" would need to be followed by monitored natural attenuation (MNA);
- notes that access to the 637 Lucile St. property would again be needed to "conduct an intensive soil and groundwater investigation." If a "source" was then found, access would also be needed to remove it; and,
- concludes that a different remedy will be proposed in the future if: a) PSC is unable to locate a source at 637 Lucile, and b) the 1,4-dioxane biodegradation microcosm study does not demonstrate that biodegradation is effectively reducing dioxane levels in site groundwater.

The October 31 submittal was a required document under PSC's AO. As Ecology stated earlier in October, the submittal should have proposed actions, such as implementation of the contingent remedy,⁵ to expeditiously attain 1,4-dioxane cleanup levels. It should have contained a description of this action or actions, the action's performance goals, and a schedule for future deliverables and site meetings related to developing a Conceptual Design of the proposed action(s). In our opinion the October 31 document does not contain proposed actions to expeditiously attain 1,4-dioxane cleanup levels. Instead, we believe its proposals serve the primary purpose of obtaining evidence of a historical solvent release.

Furthermore, Ecology disagrees that an action focusing on the contaminated saturated zone will not be effective until the "location and extent" of "contaminated soils and/or... piping or tanks" ("stormwater apparatus") is discovered and remediated. First, the presence of "contaminated soils and/or... piping or tanks," is, in our opinion, completely speculative. Soil and water table groundwater samples collected at 637 Lucile have not been significantly contaminated with dioxane and PSC has been unable to find such a vadose zone "source" during its previous investigation. Moreover, even if there were contaminated vadose zone soils near a parking lot sewer line, and PSC were actually able to find this contamination, it is not apparent that remediation of the contaminated soil would have a significantly beneficial impact on the remediation timeframe for shallow and intermediate zone groundwater contamination in most areas of the dioxane plume.

PSC's "source identification and removal" proposal is consistent with the company's hypothesis that a sewer line located under the western 637 Lucile parking lot area leaked wastewater containing 1,4-dioxane. This contention was most recently put forth in Dispute Resolution meetings and in a report ("Evaluation of 1,4-dioxane in Groundwater") prepared by Dalton, Olmstead & Fuglevand, and submitted to Ecology in June 2013. As we have repeatedly stated, Ecology agrees that releases of 1,4-dioxane may have occurred at the 637 South Lucile St. property in the 1980s and early 1990s. Releases may have included leakage of wastewater from sewer piping. These releases may then have contributed to the contamination of groundwater. However, PSC's release hypothesis is built upon a number of unknowns. These include: a) whether discharged wastewater during GE's tenure at the property contained dioxane; and, b)

⁵ Several locations of elevated dioxane levels other than well 122-60 have been discovered since 2012. Implementation of *only* the 2010 CAP's contingent remedy – which focuses on contamination located at/near well 122-60 – is therefore unlikely to be sufficient by itself to achieve the needed reduction in concentrations in areas farther west and southwest.

whether the wastewater sewer line on the property leaked. If GE wastewater actually contained a substantial amount of dioxane and the sewer line on the property significantly leaked, neither PSC nor Ecology knows how much dioxane was subsequently released, over what periods it was released, or where it was released (i.e., where the pipe leaked). Without this information we can only guess whether such a release is consistent with the site's current and historical dioxane soil and groundwater sampling/monitoring data (much less, consistent with a hypothesis that the release is, as PSC has argued, the primary source of dioxane contamination at the site).

To support the sewer-release hypothesis PSC has pointed to a 2012 water table zone measurement showing dioxane concentrations as high as 66 µg/l. This concentration was associated with a 15-19' bgs sample collected at direct-push location DP-163, located immediately west of the 637 Lucile St parking lot. The dioxane groundwater concentration measured at DP-163 between 15' and 19' is considerably higher than levels measured previously at well 126WT and at the water table intervals at nearby points DP2-6 and DP2-10. It is also higher than concentrations currently measured at well 124WT, northeast of DP-163 and – presumably – upgradient of the 637 Lucile property. But it is also the case that:

- a) 66 µg/l is below the 1,4-dioxane PSC-Georgetown cleanup level;
- b) the groundwater sample collected at DP-163 between 15' and 19' was within the water table *zone*, but several feet below the water table itself. The dioxane concentration measured at DP2-10 between 21' and 24' was 78 µg/l and this location is only about 75' southeast of DP-163. It is not particularly surprising, then, to find DP-163 dioxane levels as high as 66 µg/l at 19';
- c) 1,4-dioxane was detected at multiple 4' intervals (every interval sampled) at DP-163. The sample collected at DP-163 between 15' and 19' was the shallowest groundwater sample collected from this location. Concentrations were higher at 29', 40' (the maximum value, 310 µg/l), and 56' bgs;
- d) 1,4-dioxane was not detected in the soil sample collected above the water table (4.5' bgs) at DP-163;⁶
- e) 1,1,1-trichloroethane, presumably co-released with dioxane if the release occurred at 637 Lucile, was not detected from 30 to 90' bgs at direct-push point F7/7b in 2000/2001.⁷ At 15' bgs concentrations were only 4-14 µg/l; and,
- f) the levels of TCE and vinyl chloride detected in shallow groundwater at DP-163 are also higher than concentrations measured upgradient at well 124WT. Neither PSC nor Ecology has considered these “elevated” detections suggestive of a 637 Lucile release.

For these reasons Ecology does not believe the shallow DP-163 groundwater detection necessarily indicates that dioxane was released from an upgradient point located as close as the 637 Lucile parking lot, and that this release then led to a groundwater cleanup level exceedance.

PSC's October 31 “source identification and removal” proposal is therefore disapproved.
The company must now submit a proposal to expeditiously attain 1,4-dioxane groundwater

⁶ At 10' (just below the water table) the dioxane concentration in soil was 0.7 µg/kg J.

⁷ F7 was located along Maynard Ave., about halfway between S. Lucile and S. Finlay Streets.

cleanup levels. This is required by the 2010 AO and CAP, and PSC's focus should be on evaluating remedial technologies and alternatives that will hasten attainment of 1,4-dioxane cleanup levels throughout the plume. Then, from those alternatives, the company must propose an action that most cost-effectively meets this goal. The document containing this proposal, and the due date for submitting it, are described near the close of our letter (please see "Next Steps" below).

If PSC chooses to continue its investigation of the 637 Lucile property, Ecology has no objection as long as the activity does not interfere with work required by Ecology under the AO. However, we do not intend to be involved in any negotiations concerning investigation access; the affected private parties must reach agreement on access terms without Ecology's participation. The State's resources must now be directed towards our primary mission: ensuring an expeditious cleanup of site contamination.

August 2013 through June 2014

On August 2, 2013, Ecology received an Emailed letter from Van Ness Feldman, representing PSC. The purpose of the letter was to respond to Ecology's previous correspondence related to the presence of unacceptably elevated levels of 1,4-dioxane in groundwater at the PSC-Georgetown site. The August 2 letter from Van Ness Feldman invoked Section VIII.10 of the Agreed Order, which contains the procedures for Resolution of Disputes, and communicated PSC's objection to the Ecology decision requiring an action to address persistently elevated levels of dioxane.

Per VIII.10(a)(ii) of the Agreed Order, once Ecology receives PSC's written objection to a site-related decision, the parties' project coordinators have 14 days to confer in an effort to resolve the dispute. This period was extended two weeks, based on an August 9 request from PSC, and ended on August 30. On August 29 the PSC and Ecology project coordinators met to discuss the 637 South Lucile St. property. The meeting was productive but did not conclude with resolution of the dispute over Ecology's decision. On September 3 Ecology's project coordinator documented the inability to reach resolution in a letter to PSC.

On September 10, 2013, in accordance with VIII.10(a)(iii) of the Agreed Order, PSC requested regional Hazardous Waste and Toxics Reduction (HWTR) management review of Ecology's project coordinator's decision. A meeting was therefore subsequently held on October 11. Ecology's NWRO HWTR Section Manager and HWTR Program Manager attended the meeting. Following the meeting Ecology agreed to extend the Dispute Resolution timeframe established in the Agreed Order. We also agreed that the Ecology Section Manager would not make a final written decision on the disputed question of new site PLPs until after December 20. The December date was chosen based on the expectation that new information would be submitted by the owner of the 637 Lucile St. property, the business owner currently operating at that location, and the General Electric (GE) Co., which operated at the location in the 1980s and early 1990s.

Following the October 11 meeting Ecology additionally extended the schedule for PSC's submittal of a remedial action document requested in July 2013. The purpose of the submittal, now due November 1, was to "propose actions, such as implementation of the contingent remedy, to expeditiously attain [1,4-dioxane] cleanup levels." Ecology expected the submittal to contain a description of PSC's proposed action or actions, the action's performance goals, and a

schedule for future deliverables and site meetings related to developing a Conceptual Design of the proposed action(s).

Later in October PSC submitted two documents: (1) a proposal to study 1,4-dioxane biodegradation in site groundwater, and (2) a letter intended to comply with Ecology's request for proposed actions to expeditiously attain 1,4-dioxane groundwater cleanup levels. The latter document identified PSC's proposed action as "source identification and removal" on the 637 S. Lucile St property, followed by monitored natural attenuation (MNA). Although PSC and Ecology corresponded briefly via email about the proposed 1,4-biodegradation study, Ecology did not formally respond to either of PSC's two October documents.

On December 20, 2013, GE submitted the first of two responses to an information request concerning past operations at 637 S. Lucile St.⁸ In this first response the company answered a list of questions Ecology had asked about its operations and waste disposal practices. Later, on April 24, 2014, GE submitted an emailed response to PSC's assertion that 1,4-dioxane groundwater contamination at the Georgetown site was due to GE releases at the 637 Lucile St. property. This response took the form of a rebuttal to conclusions reached in PSC's June 2013 Dalton, Olmstead & Fuglevand report.

On May 21 Ecology electronically forwarded GE's April 24 document to PSC. We stated at that time that "if PSC would like to review the document and send us your thoughts – on this document and/or the December 2013 GE "information" submittal – you may certainly do so." PSC subsequently chose to review GE's document and on June 13, 2014, Ecology received a letter from the company (dated June 12) in which PSC took issue with a number of GE's April 24 assertions. The letter was reviewed prior to Ecology's final decision on the disputed issues; however, it is not the case that Ecology requested a PSC response to the GE document (as the letter states). Nor do we intend to respond directly to the letter, as PSC seems to assume (page 2 of the cover). Today's correspondence serves as Ecology's response to all PSC letters and other documents submitted during Dispute Resolution and pertaining to the July 2013 Ecology decision regarding 1,4-dioxane.

Next Steps

PSC's construction of the subsurface barrier wall in 2004 has been, in Ecology's opinion, a success. It has effectively cut off the downgradient migration of contaminated groundwater from the facility property and the 5400 Denver Ave. S. parcel immediately west of the facility. Despite its effectiveness however, contaminated groundwater had already migrated downgradient to areas west and southwest of the facility prior to 2004. Some of this contamination – including 1,4-dioxane – has migrated to and beyond 4th Ave. S. Levels of dioxane continue to exceed cleanup levels at a number of locations east and west of 4th Ave. S., and at some locations and depths the concentrations are much higher than cleanup levels. At these locations the cleanup levels established in PSC's 2010 AO and CAP will not be met by 2015.

This scenario was envisaged in the CAP and AO by the inclusion of a contingent remedy, which would be triggered if decreases in observed dioxane concentrations were clearly insufficient to

⁸ This was GE's second submittal of information, in response to Ecology requests concerning its operations at 637 Lucile. The first such submittal was provided in 2006.

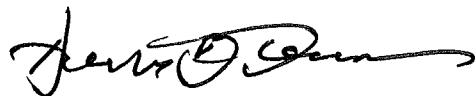
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meet 2015 target levels. Ecology has therefore directed PSC to prepare and submit documents that would constitute the first steps towards implementing an action to expeditiously attain 1,4-dioxane cleanup levels in site ground water. The first document we requested was intended to provide a description of PSC's proposed action or actions, such as implementation of the contingent remedy. We also asked that this first deliverable contain specific performance goals for the action and a schedule for future deliverables and site meetings related to developing and submitting a Remedial Design.

PSC must now submit the document Ecology requested in our July, September, and October 2013 letters. Proposals for action in that document must be focused on expeditiously attaining 1,4-dioxane groundwater cleanup levels in the shallow and intermediate zones. The action proposed must be able to quickly reduce dioxane mass in the most problematic areas of the site and thereby shorten the overall groundwater remediation timeframe. The document (proposed action and schedule) is due to Ecology on August 1, 2014.

This is the last request for the submittal that Ecology will make by letter. While we prefer to work collaboratively with PSC on this project, it is clear to us that Ecology and PSC disagree on the need for the action we have called for and the company is reluctant to proceed as we have requested. Therefore, if the required document we have described above is not submitted by its due date, or if its proposed action does not satisfy the general objectives we have articulated in this letter, Ecology intends to proceed unilaterally under our enforcement authorities. If you have any questions about today's correspondence, please contact Ed Jones of my staff at (425) 649-4449 or ejon461@ecy.wa.gov.

Sincerely,



Dennis B. Johnson
Section Manager
Hazardous Waste & Toxics Reduction Program

DBJ/EJ/sa

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