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November 7, 2019

Tim O'Connor, Hydrogeologist III
Solid Waste Management Program
Washington State Department of Ecology
Northwest Regional Office
3190 – 160th Avenue SE
Bellevue, WA 98008-5452

RE: D310.3.2 King County Vashon Island Closed Landfill Remedial Investigation Report Agency Draft

Dear Mr. O'Connor:

The purpose of this letter is to provide you with King County Solid Waste Division's second set of responses to the Washington State Department of Ecology's comments from December 6, 2018 on the D310.3.2 Vashon Island Closed Landfill Remedial Investigation Report Agency Draft.

We appreciate your assistance with this project. Please let Marisa Baptiste (206-477-0458) or me (206-477-7580), if we can provide additional information about our responses.

Sincerely,

Kenny Chan
Project Manager III

Enclosures – CountyResponsesAttachementsA&B2.pdf

cc: Yolanda Pon, Environmental Health Services Supervisor, Public Health – Seattle & King County (PHSKC)
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Attachment A **Deliverable Review Form**

Project Name: Vashon Island Closed Landfill Remedial Investigation- MTCA Independent Action
Contract #:
Reviewer: Tim O'Connor/Ecology & Madeline Wall/Ecology
Deliverable Name: Agency Draft Vashon Island Closed Landfill Remedial Investigation Report, Volumes 1 and 2

Review Date: 10/9/2018
Response Date: 12/6/2018
Aspect Response Date: 12/31/2018

Deliverable Review					Response		
Comment No.	Reviewer Name	Page, Figure, Specification or Sheet No.	Section / Paragraph	Reviewer's Comment	Responder Name	County Response	Aspect Response
0				*Be as specific as possible. Minimize open ended comments. PM to resolve conflicting or out-of-scope comments*			*Agreed/Incorporate as stated.* *Agreed/Describe how comment will be incorporated.* *Disagree/Describe how comment will be addressed.* *Disagree/Further discussion warranted*
5	T O'Connor/ECY	ES-3	Exposure Pathways	See Attachment B for Ecology's review of PCULs for COCs. Also, the PCUL of 1,000 ug/L for Fe and 2,200 ug/L for Mn are appropriate for protecting health, however MTCA requires using a the lower secondary MCL (300 ug/L for Fe and 50 ug/L for Mn). The Concise Explanatory Statement in the 2001 revision to MTCA (General Question 10.1.8 on e-page 185) indicates that secondary MCLs listed in the DOH regulation are considered ARARs under MTCA. Ecology supports calculating background groundwater levels using upgradient/residential well data for these COCs (aquifer specific) which can be used in place of these secondary MCLs if they are higher. Reevaluation of the extent of contamination should be conducted based on Attachment B.	DC	*See Attachment B	Partially agreed. PCULs will be updated based using those proposed by Ecology as noted in responses in Attachment B. A desktop study of background concentrations will be conducted and the results presented in the RI. Reevaulation of contaminant extent (including table and figure updates) will be completed accordingly.
6	T O'Connor/ECY	ES-3	Exposure Pathways	Exposed upland soil provides a potential complete pathway for upland ecological receptors. Any areas within the Site with exposed upland soil (with suspected contamination) shallower than a depth of 15 ft bgs should be included in the RI. A conditional point of compliance (as per WAC 173-340-7490(4)) requires an agreed upon institutional control (restrictive covenant). If a conditional point of compliance (and resulting restrictive covenant/institutional control) is agreed upon with Ecology, and all contamination is deeper than the default biologically active zone (6ft bgs), then the final protective values may be adjusted to reflect an exclusion from the Terrestrial Ecological Evaluation (TEE). However, at this Site there appear to be seeps from the West Hillslope area that expose suspected contaminated water to soil at the surface. As a result, it is recommended that a complete exposure pathway exists from surface soil to uplands ecological receptors. Conditional point of compliance at the biologically active zone (0 to 6 ft bgs) does not appear appropriate for this Site, and the RI should include uplands ecological risk towards evaluation of nature and extent of contamination. If subsequent soil sampling indicates that contamination does not exist in the areas discussed above, then a conditional point of compliance may be approved by Ecology (excluding the site from the TEE), providing verification that the conditions listed in WAC 173-340-7490 (4)(a) and WAC 173-340-7491(1)(a) have been met. Until that occurs, protection of upland ecological receptors should remain included in the RI.	KSL	Partially Agree	Partially Agree. A wetlands survey and soil sampling were conducted and a site specific TEE for the West Hillslope is in progress. Results and recommendations from these evaluations will be presented in the RI to address potential ecological risk in regards to the nature and extent of contamination.
7	Wall	Pg. 10	Section 3.1	Figure 2.1 should show stream leaving site at south end going into tributary of Judd Creak	DC	Disagree	Disagree. This is an ephemeral stream meaning it does not flow year round. The source files for stream locations (Washington Department of Natural Resources and King County GIS) do not have this tributary digitized. The stream source reference will be added to the legend.
8	T O'Connor/ECY	Pg. 15	3.4.2.1	The 85-Acre well is 145' deep and may not be completed in the Unit D aquifer as the report states. I suggest contacting 85 acres and Smith-Shiratori Water District Management for copies of the well logs. There are multiple wells that are shallower and may be completed in Unit C aquifer, please review logs and attempt to locate via information on the well logs. An evaluation of the homes serviced by Class A/B water systems south of the VLF property line was discussed in the November 7, 2018 presentation. This task should be completed and an assessment of next steps conducted. The statement in the 3rd paragraph on page 15 is misleading as D-D' doesn't include any geologic information.	DC	Disagree	Disagree. Based on information added to D-D' using well logs per Comment 24 below, the County has determined that wells to the south and west, including 85-Acres are not completed in Unit C, but rather is completed in a deeper unit. As requested in Comment 24 below, Nestor, Thomas and Monier wells have been added to D-D'. Where insufficient well location information was available, well location was determined through review of property ownership data avilable on line through King County Assessor's website. We have assumed wells were located on the parcel adjacent to the structures and not located along steep slopes. Using the general topographical elevation of the assumed location of the wells, the approximate completion of the Thomas and Nestor wells were estimated to be completed in a unit deeper than Unit C. Monier well may be completed in Unit C; however this well is located at least 700 feet southwest of the landfill; however the Monier property appears to be connected to the 85-acres water system. The County is updating the domestic well survey previously conducted in 2002 that idenitfies connections to 85-acres, Group B systems, vacant lots, and private wells. The update includes sending out a survey questionaire mailer to residents in the landfill vicinity and search of Agency records. The County has contacted puryeors to aquire well logs for Smith-Shiratori and 85 Acres. These well logs are not available. Note that Smith-Shiratori is a private well. The County expects responses to survey questionaire mailer by October 25. Results will be evaluated and a meeting with the Agencies to review results and recommendations to be set in mid-December.
9	T O'Connor/ECY	Pg. 15	3.4.2.2	In the latest quarterly report (3rd Quarter 2018) the potentiometric surface map for the Cc2 aquifer indicates a northwest/west/southwestern gradient. Other quarterly and annual reports Cc2 also suggest this south-southwest gradient: cross-section C-C' shows the Cc2 aquifer between MW-20 and MW-33. The Berryman 2006a report shows two Cc2 scenarios (Figures 3-8 and 3-9); discuss how the southern gradient in the Cc2 aquifer may vary and any impacts to the extent of contamination of COCs to the south. Add groundwater potentiometric surface maps for Unit Cc3.	DC	Disagree	Disagree. Additional investigations completed since 2006 have helped refine the VLF Conceptual Site Model. This RI included a detailed review and synthesis of previous investigations to further understand site stratigraphy and hydrogeology, including Geospatial Modeling, western and southern hillslope studies and recent sonic boring drilling. The most current potentiometric map was submitted with these comment responses. In 2011, the County completed the West Hillslope Investigation, which included a survey of geology outcrops and seep elevations along the western slope. This investigation also presented trilinear plots that show demonstrate the relationship between the seep water quality and the Unit Cc2 groundwater quality. Recent potentiometric maps for Unit Cc2 have incorporated these surveyed seep elevations and the hydrogeologic model has been revised to indicate a westerly flow direction. The water quality results from Unit C are consistent with westerly direction of groundwater flow. If a southerly groundwater flow direction was present, it would result in higher COC concentrations in wells along the southern side of the site than what has been observed. Water quality along the south side of the site will be reevaluated after 3Q 2019 sampling event to confirm these conditions. Additionally, the 3rd quarter 2018 potentiometric map did not include the west hillslope springs. This p-map was revised in the Vashon 2018 Annual, which showed the groundwater in Cc2 flowing to the west. Insufficient data is available to complete a potentiometric surface for Unit Cc3.
10	Wall	Pg. 26	4.4.1.1, last paragraph	Why was LFG monitoring started in MW-13 and MW-24 in 2010?		This resulted from a change in monitoring staff.	A change in monitoring staff occurred in July 2010. The initiation of monitoring was not event driven.
14	T O'Connor/ECY	Table 5.1	Pg 1-6	See Attachment B for Ecology'sreview of PCUL's for COCs. Evaluate the protectiveness of the MCL for cis-1,2-DCE and adjust it down to HQ=1 (MTCA equation 720-1). This will produce a value of 16 ug/L. Consider renaming the column labeled "Modified MTCA Method B" for both ground water and surface water "Risk of 1E-5". "Modified Method B" could be confused with WAC 173-340-720(4)(c) and WAC 173-340-730(3)(c), neither of which allows adjusting the risk to 1E-5.	DC	Partially Agree	Partially Agree. Cis-1,2-DCE PCUL will be adjusted to 16 ug/L. The note in this column heading, as explained at the bottom of the Table, clearly identifies the modification as relating to a 1x10-5 cancer risk and references the MTCA sections that this modification is in accordance with. The column heading will remain as presented in the draft.
15	Wall	Pg. 36	5.5.1 last paragraph	What about carcinogenic effects of TCE, and what is the Method B non-carcinogenic level?	KSL	*Looks like this was already incorporated into the RI.	Both the carcinogenic (0.54 ug/L) and non-carcinogenic (4 ug/L) are presented on Table 5.1. The PCUL selected for this RI was driven by the CWA Effective Criteria, Section 304, which was 0.3 ug/l. This value is more stringent than MTCA Method B.
17	Wall	Pg. 41	6.1.2.1, Last bullet	Explain the process of considering a data point as an outlier. Reference the SAP or Unified Guidance.	KSL	"Outlier" replaced with "anomoly".	The term "outlier" will be replaced with the term "anomoly" in the text.
19	T O'Connor/ECY	Pg. 44	6.1.3	Please lower your MDL's for 1,2-dibromomethane and 1,2-dibromo-3-chloropropane as well as all other analysis to meet WAC 173-200 groundwater quality criteria.	KSL	Disagree	Disagree. As per WAC 173-200-010(3)(c), it states that these cleanup standards are not applicable for remedial actions pursuant to MTCA. Therefore achieving lower MDLs to meet WAC 173-200 groundwater quality criteria is out of scope for this Site.
21	T O'Connor/ECY	46	6.2.2	Discuss the question remaining from the 3/2/06 Environmental Evaluation section 4.1.2 where it discusses how impacted groundwater from Cc2 would discharge to Unit Cc3 at some points and then can discharge to the regional aquifer.	KSL	Partially Agree	Partially Agree. Section 6 is just meant to be a data presentation without interpretation. Section 7 is a more appropriate place to add this level of interpretation of the connection between Cc2 and other units. Text will be added in Section 6 that points the reader to Section 7 for this analysis. Based on the reinterpretation of the hydrogeological conceptual site model completed for this RI, there is no evidence to support a connection between the Cc2, Cc3 and D aquifers, as supported by the continuous cores examined during sonic well drilling.
23	T O'Connor/ECY	61-62	7.4.5.1	See Comment 6	KSL	Partially Agree	See response to Comment 6
28	Ecology	74	8.1.1	The section also indentified the Cc2 aquifer as "not a primary drinking water source." Ecology requetsed a corss-section be extended to include the geology for the 85-Acre water system well south of VLF. This well log was not available therefore Figure 3.6 of the Ri is blank south of the landfill ecept for water system wells DW-SS and 85-Acres (DW-85) location. Followign the November 7, 2018 meeting dicsussions, KCSWD will work on including another adjacent well to the south so the Cc2 aqufier can be further evaluated south of the VLF property line (using existing well lgos currently available from other residential well logs in Ecology's Water Resouce database or by contracting the water systems and find well logs) south of the VLF property line.		Partially Agree	Nestor, Thomas and Monier wells have been added to cross-section D-D'. (From Ecology letter) *As suggested in the November 7, 2018 meeting, KCSWD will work to determine if residences south of the VLF property line are connected to Class A/B water systems. Specific attention should be paid to the well mentioned in the RI (WELL ID 190701). Identifying connections to Class A/B water systems south of the VLF will assist in evaluating if another well to the south in the Cc2 aquifer is warranted.
29	Ecology	General		Ecology does not direct public outreach in an independent MTCA action: however, we encourage the County to notify the landfill neighbors of the RI and Interim Action work conducted and provide them access to the Final RI.		Agreed	Agreed. The County has contacted landfill neighbors regarding updating the domestic well survey. Likewise, a meeting with the Vashon Groundwater Committee is scheduled for October 23rd to update the committee on RI progress. The County has created a Vashon Island Landfill FAQ flyer for public education purposes.

Attachment B **Deliverable Review Form**

Project Name:	**Vashon Island Closed Landfill Remedial Investigation- MTCA Independent Action**	**Review Date:**	*10/9/2018*
Contract #:		**Response Date:**	*12/6/2018*
Reviewer:	**Tim O'Connor/Ecology & Madeline Wall/Ecology**	**Aspect Response Date:**	*12/31/2018*
Deliverable Name:	**Agency Draft Vashon Island Closed Landfill Remedial Investigation Report, Volumes 1 and 2**		

Deliverable Review					**Response**		
Comment No.	Chemical	KCSWD Proposed (ug/L)	Ecology Proposed (ug/L)	Basis for Value	Responder Name	County Responses	Aspect Response
6	Cobalt	--	4.8	Drinking water (MTCA eq. 720-1)	KSL	*Need more information	Please provide the reference dose for cobalt that should be used in the MTCA eq. 720-1.
8	Iron	1000	300	Secondary MCL	KSL	*County to perform background evaluation	Preliminary Iron and Manganese response: The County recognizes that secondary MCLs (SMCLs) are applicable standards under MTCA; however, the SMCLs for iron and manganese were not selected as proposed cleanup levels for the following reasons: 1) The SMCLs for iron and manganese are set for aesthetic qualities relating to public acceptance of drinking water and not based on health implications, and 2) the highest beneficial use for water at VLF is surface water, of which the iron and manganese PCULs identified in the RI are adequately protective. However, the County will perform a desktop background evaluation for Fe and Mn in groundwater for Units Cc2 and D only. None of the groundwater results from 2017 in Units Cc1 and Cc3 exceed the Secondary MCLs for these two compounds and therefor the background evaluation is not warranted. Note: CLARC was updated in 2019 and the new MTCA B value for manganese is 750 ug/L, which will be referenced in the revised RI Report.
9	Manganese	2,200	50	Secondary MCL (NRWQC-human health)	KSL	*County to perform background evaluation	
13	Methoxychlor	0.03	0.02	Surface water (NRWQC-human health)	KSL	Agreed	Agreed. PCUL changed to Ecology Proposed value. Note: CLARC was updated in 2019 and the new CWA Section 304(a) human health value is 0.02 ug/L, which will be referenced in the revised RI Report.