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February 1, 2021

Debbie Taege
Project Manager
Boeing EHS Remediation
PO Box 3707 MC 9U4-26
Seattle WA 98124-2207

RE: Ecology Comments of *Draft Feasibility Study Boeing Auburn Facility, Auburn, Washington* by Landau Associates Inc. for the Boeing Company, dated October 30, 2019, and *Draft Supplemental Feasibility Study Report, Boeing Auburn Facility, Auburn, Washington,* by Landau Associates Inc. for the Boeing Company, dated December 11, 2020; FS #2018; CS #5049; EPA #WAD041337130.

Dear Debbie Taege:

The Washington Department of Ecology (Ecology) and Ecology's consultant, Aspect Consulting, LLC (Aspect), have completed review of the document Draft Feasibility Study Report (DFS) and Draft Supplemental Feasibility Study Report (DSFS) for Boeing Company (Boeing) prepared by Landau Associates Inc. (LAI). The Boeing Auburn Plant is located at 700 15th Street Southwest, Auburn, Washington (State Dangerous Waste Identification [ID] No. WAD041337130). The Boeing Auburn Plant is currently undergoing Resource Conservation and Recovery Act (RCRA) corrective action as required by Agreed Order No. 01HWTRNR-3345 (the currently effective Second Amended Agreed Order is dated November 1, 2018).

This review covers both the DFS and the DSFS but focuses primarily on the contents of the DSFS. Ecology and Boeing have worked together on the review of the DFS over the past year, and numerous comments on the DFS, particularly on groundwater remediation, have been communicated with Boeing and LAI in forms of emails, tech memos, and meetings. As a result of those formal and informal communications, revisions to the DFS are presented in the DSFS. Therefore, in this letter, Ecology will not repeat the comments on the DFS that have been communicated before.

This letter provides general and specific comments on the DFS (Table 1) and DSFS (Table 2). General comments are comments on general themes of the documents and may apply to multiple statements within the DFS and/or DSFS; specific comments related to themes addressed by general comments are not included in Tables 1 or 2.

Table 1. Specific Comments on the DFS

Comment #	Section	Location	Comment
1	2.2.4	para.2, 1st sentence	The statement 'the application of remedial technologies at the Site would tend to lack effectiveness' is overly pessimistic, particularly considering the success of interim actions and the EAB pilot test. Suggest change to 'These conditions can limit the effectiveness of in-situ treatment technologies'.
2	2.2.4	para 2, 6th sentence	This statement is premature; it presumes the outcome of the FS analysis. Recommend removing this sentence.
3	2.2.4	para 2, last sentence	This evaluation is premature; it presumes the outcome of the FS analysis. Recommend removing statement that the infrastructure and O&M would be impractical.
4	2.3	para 1, last sentence	This statement needs more support, which appears to be provided in the subsequent paragraphs. Suggest adding '…as summarized below' for clarity.
5	3.2.2.3	para 8	The information presented in this section does not support the conclusions of this paragraph. As noted earlier, none of the studies had longer than a 15-year MNA monitoring period. There is no reason to believe that MNA will not eventually achieve SWQSs. Similarly, a combination of active treatment and MNA will ultimately achieve SWQSs, and the fact that it is likely to take a long time does not automatically 'screen out' remediation technologies. Recommend deleting this paragraph, or rewriting to conclude that existing studies suggest that achievement of SWQSs will take a long time whether active remediation technologies are employed or not.
6	3.2.3	last paragraph, 2nd sentence	EPA has ecological screening benchmarks for TCE and VC in surface water. These criteria are well above the concentrations detected at the Site. Suggest referencing these in discussing potential ecological receptors.
7	3.3.2	2nd paragraph, 4th sentence	This sentence presumes that the time to achieve SWQSs will not be considered a reasonable restoration time frame. This is premature, as it is part of the FS evaluation. Suggest deleting this sentence.
8	3.3.2.2	3rd paragraph, 1st sentence	The FS does not conclude that it is not practicable to meet cleanup levels in a reasonable restoration time frame. Suggest deleting this sentence.
9	4.3.2	last paragraph	Because the soil pCULs were developed based Method C and groundwater pCULs were developed based site specific Method B, environmental covenant and institutional control need to be place for appropriate areas of AOC A-13 to restrict future changes in land use.

10	5.4		Should discuss environmental covenant and institutional control for appropriate areas of AOC A-13.
11	7.3		Should discuss environmental covenant and institutional control for appropriate areas of AOC A-13.

Table 2. Specific Comments on the DSFS

Comment #	Section	Location	Comment
1	global		There are a few instances of 'effect' being used when 'affect' is appropriate…suggest global search to confirm correct usage.
2	global		There are a few instances of 'heath' instead of 'health'…suggest global search to fix typos.
3	1.2.1	2nd paragraph, 1st sentence	CVOC level is above the SWQS in surface water, which poses a risk to the environment.
4	1.3.2.2	1st paragraph, last sentence	Should not presume that SWQS time frame is not reasonable.
5	1.3.2.2	2nd paragraph, 5th sentence	Should not presume that SWQS time frame is not reasonable.
6	1.3.2.2	2nd paragraph, last sentence	How would setting a CPOC affect remedy development and evaluation?
7	2.2	1st paragraph, last sentence	The conclusion that no evaluation of remedial alternatives for soil is needed is not sufficiently supported. What is the magnitude of exceedance (i.e., does the soil represent a residual source that will affect groundwater for a long time?) Are the exceedances only below the water table (and thus will be addressed by groundwater treatment or MNA) or also above the water table? And how will the exceedances be addressed - by covenants, monitoring?
8	2.2.3	2nd paragraph, last sentence	Same as comment for Section 2.2.

9	3.2.2	2nd paragraph, last sentence, footnote	MTCA has additional statistical requirements than those that are stated in the footnote. Recommend referencing WAC 173-340-720(9) and deleting the rest of the footnote text.
10	4	1st paragraph	The bullets in this paragraph should be rewritten to more objectively explain why the areas are targeted for treatment. The explanations of why Boeing believes treatment is not needed should be saved for the evaluation of alternatives, not put in this section. Suggested language in redline is provided in Attachment A.
11	4	1st paragraph, 1st bullet	See Attachment A. This bullet should be rewritten to focus on the benefits of treatment in the Algona neighborhoood area - reducing contamination to levels that are more protective for VI and better limit discharge of contamination to surface water features.
12	4	1st paragraph, 2nd bullet	See Attachment A. This bullet should explain the other benefit of treatment along the property boundary - to reduce the potential for recontamination and reduce restoration time frames downgradient from the Boeing property.
13	4	1st paragraph, 3rd bullet	See Attachment A. Treatment in the outlet collection mall area also treats the plume nearest to Mill Creek, and reduces the uncertainty of future protection of this surface water feature.
14	4	3rd paragraph, 2nd sentence	MNA is not necessarily an active remedy by itself; a remedy that <u>includes</u> MNA can be considered an active remedy if it meets the requirements of WAC 173-340-370(7). The department expects that natural attenuation of hazardous substances may be appropriate at sites where: (b) Leaving contaminants on-site during the restoration time frame does not pose an unacceptable threat to human health or the **environment**. Contaminants on site pose human health concerns and an unacceptable threat to surface water.
15	4	3rd paragraph, 4th sentence	The conclusion that the remedial alternatives would meet the requirements for the appropriate use of an MNA remedy is premature and should be removed from this section.
16	4.1	1st paragraph, 8th sentence	Delete 'at a rapid rate' – since the restoration time frame analysis and the size of the plume do not support this conclusion.

17	4.2	2nd paragraph, 2nd sentence	Text indicates that 5 injection wells were already installed; Fig. 4-3 in DSFS shows only 3 inject wells while Fig. 4 in Appendix E shows 5 wells, please reconcile the difference.
18	4.2	4th paragraph, 2nd sentence	See comment on Section 4, 1st paragraph.
19	4.2	4th paragraph, 4th sentence	Note that treatment will result in indirect treatment - via flushing - of Algona neighborhood groundwater.
20	4.3	3rd paragraph, last sentence	What other locations might be more appropriate? Would these significantly affect the conceptual implementation or cost of the remedy?
21	5.2.1	1st paragraph, 1st bullet	CVOC level is above the SWQS in surface water, which poses a risk to the environment.
22	5.2.1	1st paragraph, 3rd bullet	What does 'or as otherwise applicable' mean?
23	5.2.3	4th paragraph	The cost-to-benefit ratio can be used to inform the determination of 'permanent to the maximum extent practicable', but it does not dictate the conclusion. In addition, alternative D1 is not protective of surface water.
24	5.2.4.1	last paragraph, last two sentences	It is not a matter of whether SWQS can be achieved, but when. Delete 'if ever' and suggest deleting last sentence, or rewriting it to reflect this. Also see comment on the back diffusion in the general comments.
25	5.2.4.3	5th paragraph	The model prediction that property boundary CVOCs will not recontaminate the Algona residential area and that Outlet Collection CVOCs will not impact Mill Creek must be verified by performance monitoring, and could trigger contingency actions if not correct.
26	6	last paragraph, 3rd sentence	Delete 'if ever'.
27	Appendix D	Equation 1	Kpoint should be individual point attenuation rate, not individual well restoration time frame.

28	Appendix D	Discussion and Conclusion	Please revise the sentence "Regardless of the remedial alternative implemented at release areas and downgradient focus areas at AOC A-14, the maximum decreases in estimated restoration time frames are only as much as about 15 percent compared to implementing Site-wide MNA only (Alternative D1)". Effects of Alternatives D6, D7, and D8 to the targeted areas should be summarized here.

General comments are discussed below:

Cleanup Levels

The DFS and DSFS identify groundwater preliminary cleanup levels (pCULs) based on drinking water. Per previous communication (Ecology 2019b), groundwater pCULs should also be based on surface water quality standards (SWQSs). Numerous statements throughout the DFS and DSFS regarding the applicability of SWQSs to groundwater pCULs should be removed or corrected accordingly. Similarly, Ecology has determined that pCULs, including SWQSs, apply to the Chicago Avenue Ditch and Auburn 400 ponds. Ecology understands that the water from the Chicago Avenue Ditch and Auburn 400 ponds are not expected to be used for drinking water and individuals are not expected to consume fish from these structures at any time in the future, however, Ecology has determined that Chicago Avenue Ditch, Auburn 400 ponds, the tributary to Mill Creek, and Mill Creek are all one interconnected surface water system. In order to protect surface water, local groundwater discharges to this surface water system must meet the applicable SWQSs. The DFS (chapters 1 to 4) and DSFS should be corrected to reflect that determination.

Remediation Objectives

Section 4 of the DSFS describes the construction of alternatives but does not adequately explain the rationale and objectives of each alternative. This section should describe the potential benefits and intended objective of each alternative; the discussion of whether the alternative can achieve the objectives is covered in Section 5. Suggested edits to Section 4 of the DSFS are provided in Attachment A.

Back Diffusion

Back diffusion is discussed in a number of places in the DFS and DSFS. Ecology agrees that back diffusion is common phenomena in groundwater contamination sites. The importance of back diffusion related to plume characteristics depends on the site geology, hydrogeology and amount of organic content in the aquifer formation. Boeing Auburn site is a predominantly coarse, alluvial sands and gravels aquifer as stated in section 1.2 of DSFS. Back diffusion is not a predominant factor at this site as it is stated in section 5.2.4.1 in DSFS. Please revise the DSFS, particularly section 5.2.4.1, to avoid overly emphasizing back diffusion and conclusions based on this assumption.

SFS Pilot Test Summary

The December 11, 2020 Pilot Test Summary (Appendix E of the DSFS) re-evaluates the 2015 pilot test results, incorporating long-term monitoring data to aid in preliminary design of EISB cleanup actions and associated cleanup performance. The pilot test data suggests that the pilot test was more successful than the Pilot Test Summary concludes. This has ramifications in evaluating the potential effectiveness of EISB treatment under Alternatives D6, D7, and D8 as described below.

The effects of injection-based in-situ remediation can be understood through the concepts of in-situ reactive zones and downgradient flushing areas (Suthersan et al., 2011; Figure 1). An in-situ reactive zone occurs immediately downgradient of injections and is characterized by the presence of TOC and geochemical evidence of active biodegradation. The clean water generated in the reactive zone acts to reduce downgradient CVOC concentrations through dilution and dispersion. Boeing's interpretation of pilot-test results overlooks the importance of downgradient flushing and underestimates the effect of EISB injection. The Pilot test summary concludes that treatment can only be expected to persist up to 400 feet downgradient of the injection wells. However, data was

presented from only two monitoring locations in the injection flow path greater than 400 feet from the injection wells (AGW-247 and AGW-244). Of those, only AGW-247 contained a well screened in the shallow zone (AGW-247-5), which is the interval where treatment was most significantly observed in upgradient wells. Data from AGW-247-5 provide evidence of treated water moving downgradient in 2017 and 2018, with increasing molar fractions of ethene and ethane. We understand that Boeing attributes the decrease in CVOC concentrations to a continuation of natural attenuation; however, we interpret the elevated methane and accelerated decrease in total CVOCs observed in 2018 to be evidence of the effects of EISB treatment, as their arrival time is consistent with observed groundwater flow velocities at the site.

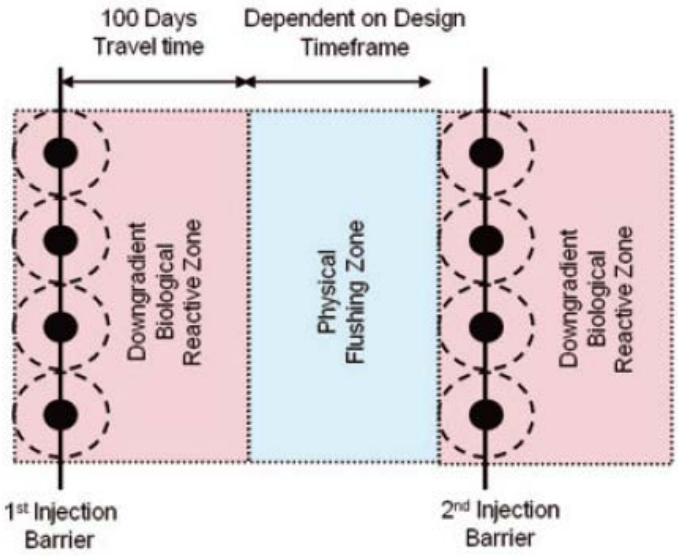


Figure 1: Conceptual depiction of EISB treatment zones (reproduced from Suthersan et al., 2011)[1]

Preliminary Design and Cost Estimates

The detailed cost estimates provided in Appendix F of the DSFS was reviewed with respect to the following attributes:

- Consistency with description of alternatives in the DSFS
- Applicability of the assumptions that form the basis of the estimates
- Accuracy of unit rates used to estimate costs
- Calculation of net present value for each of the alternatives uses of the Nov 2019 discount rate, which is historically low (0.4 percent) compared to the long-term average (2 percent; 30-year note, per Office of Management and Budget, Circular A-94 Appendix C, Revised Nov. 2019)
- Increasing the discount rate to 2% would decrease NPV of 30-year annual costs by 21%, and NPV of 100-year annual costs by 48%

[1] Suthersan, Suthan, Denice Nelson, and Matthew Schnobrich. "Hybridized design concepts and their application to ERD systems." *Groundwater Monitoring & Remediation* 31.1 (2011): 45-49.

We agree with Boeing that the 7 percent discount rate from EPA cost estimating guidance (EPA, 2000) is not realistic, but recommends that a 2 percent discount rate be used given the projected timeframe of cleanup and the historical average.

Monitored Natural Attenuation (MNA)

MNA costs constitute the majority (80 percent for 30-year, 90 percent for 100-year) of the estimated costs for DSFS Alternatives D1 and D6. Although the unit costs generally appear reasonable and consistent with our professional experience, the scope of the monitoring program (the number of wells monitored and frequency of sampling) may be overly conservative given the projected restoration time frame. Also, the monitoring time frame does not appear to include the effects of treatment for Alternatives D6, D7, and D8, which should reduce monitoring requirements.

Unit Cost

Costs for EISB engineering design are significantly higher ($288,000) for the Property Boundary Area than for Algona Focus Area ($135,000), even though the technical scopes are similar. Provide justification for the difference in cost.

Scale of Long-term Sampling Scope

- The majority of costs are associated with long-term annual sampling. Only a subset of existing wells is likely needed under a long-term monitoring program to evaluate treatment and MNA performance and compliance with cleanup standards.
- Sampling for MNA parameters can be performed at a smaller set of wells than VOC.
- Costs should assume a reduction of sampling frequency and locations over time, as wells reach cleanup goals and no longer require monitoring. Wells that achieve CULs or demonstrate a declining trend would likely require less frequent monitoring.
- The DSFS cost estimates assume that active remediation would have no impact on MNA scope. In reality, cleanup actions would reduce monitoring burden more rapidly, consistent with the roughly 56% estimated reduction in cleanup time in the Algona area.
- In accordance with the above comments, we recommend reducing the quantity of wells and sampling frequency, especially for wells that are above SWQSs but below drinking water standards, given the long cleanup time frame.

Algona Focus Area

The proposed Algona Area EISB injections include a total of five injection events over 20 years. After the pilot test injection, CVOC concentrations in the treatment zone sustained a decrease as high as three orders of magnitude after a single injection. Thus, planning five injection events is overly conservative. We recommend planning for up to three injections.

Summary of Suggested Cost Revisions

Costs were re-estimated to determine the overall outcomes of the design and cost revisions suggested in this letter. The following revisions were evaluated:

- Table F-2 – MNA (SWQS in GW)

  - Number of wells in sampling program was reduced by 50%
  - Frequency of sampling was reduced by 50%, from an average of annual to an average of biannual
  - Average duration of sampling was decreased from 100 years to 75 years to represent some wells reaching cleanup goals in less than 100 years
  - Yearly reporting and data management costs were reduced by 33% to be consistent with a reduction in sampling and analysis scope
  - Project Management and Ecology Oversight line items are based on a percentage of the total cost, and decreased as a result of the other decreases

- Table F-3 – Algona Area EISB

  - Number of injection events reduced from five to three
  - Performance monitoring reduced to account for three injection events
  - Performance monitoring sample quantity reduced to account for overlap with MNA monitoring scope
  - "Sampling Labor" line item removed, as it appears to be redundant with sampling labor in "Groundwater Sampling/Analysis" line item ($520 per sample compared to $300 per sample for sample analysis in MNA section)
  - Engineering Design, Project Management and Ecology Oversight costs are based on a percentage of capital cost and total cost, and decreased as a result of other decreases

Reasonable Restoration Time Frame Evaluation

The DFS and DSFS conclude that achieving SWQSs within a reasonable restoration timeframe is not practicable. However, it is not clear how Boeing arrives at this conclusion, and the factors for this evaluation, as laid out in WAC 173-340-360(4)(b), are not met. A long restoration time frame should not be presumed to be unreasonable, and the fact that the estimated time to achieve SWQSs is long is not justification for selecting alternative cleanup levels. Numerous statements throughout the DFS (first 4 chapters) and DSFS should be removed or revised to merely state that the estimated restoration time frame is long, not necessarily unreasonable.

DCA Evaluation

A primary theme of the DCA evaluation in the DSFS is that because the groundwater cleanup levels are based on SWQSs, all alternatives would require long-term MNA and all alternatives score similarly for overall protectiveness, permanence, and long-term effectiveness. This analysis does not properly acknowledge the advantages of alternatives that include active treatment. If treatment is targeted to address specific areas of highest exposure potential or concern, limited treatment can yield substantial improvements in environmental benefit in these specific areas even if the overall restoration time frame is not as greatly affected. Furthermore, the DCA in the DSFS overemphasizes the difficulty and risk of implementing EISB.

Comments on individual DCA criteria are as follows:

- **Protectiveness:** this criterion includes consideration of the degree of risk reduction and the time to achieve it. Alternatives with active treatment reduce the restoration time frame in areas of concern, and warrant higher ratings.

- **Effectiveness over the long term:** active treatment that reduces concentrations faster than MNA reduces residual risk during the cleanup timeframe and reduces the potential need for contingency actions. Active treatment is also ranked higher than MNA per WAC 173-340-360(3)(f). Alternatives D6, D7, and D8 warrant higher ratings for this criterion.

- **Management of short-term risks:** EISB involves non-toxic products and can be reliably implemented in a safe manner with standard best management practices and was used in the pilot study at the site. Given that injection-based in-situ remediation requires no heavy construction, no long-term operation of engineered systems and minimal transport of hazardous waste, manageability of short-term risk should rate only slightly lower for EISB treatment than for MNA. Alternatives D6, D7, and D8 warrant better ratings for this criterion.

- **Technical and administrative implementability:** EISB is highly implementable, particularly under Alternative D6 (which represents merely an expansion of the previous pilot study) and Alternative D7 (which can be implemented on Boeing property or in adjacent rights-of-way). Alternatives D6 and D7 warrant higher ratings for this criterion.

Recommended adjustments are reflected in Table 3 below.

Table 3 – Recommended DCA Criteria scoring for the DSFS

	Alternative D1		**Alternative D6**		**Alternative D7**		**Alternative D8**	
Criterion and Weighting Factor	DSFS	**Recommended**	DSFS	**Recommended**	DSFS	**Recommended**	DSFS	**Recommended**
Protectiveness (30%)	5	**5**	5	**7**	5	**7**	5	**8**
Permanence (20%)	7.5	**7.5**	8	**8**	8.5	**8.5**	9	**8.5**
Long-term effectiveness (20%)	7	**7**	7	**8**	7	**8**	7	**8.5**
Short-term risk (10%)	10	**8**	4	**7**	3.5	**5**	1	**4**
Implementability (10%)	10	**9**	6	**7**	5	**6**	1	**2**
Consideration of Public Concerns (10%)	4	**4**	8	**8.5**	8	**8.5**	6	**6**
Overall Benefit Score	6.6	**6.5**	6.3	**7.6**	6.3	**7.4**	5.5	**7.0**

Table 4 combines the recommended DCA scoring above with the recommended cost revisions in previous sections to generate benefit-to-cost (B/C) ratios for Alternatives D1 and D6.

Table 4 – Summary of the Effect of Cost Revisions on DCA Results

	Alternative D1		Alternative D6	
Scenario	B/C Ratio	Cost	B/C Ratio	Cost
Reduced EISB Costs	6.5	$ 11,700,000	6.6	$ 13,400,000
Reduced EISB and MNA Costs	6.5	$ 3,000,000	4.8	$ 4,700,000
Reduced EISB and MNA Costs – NPV with 2% discount rate	6.5	$ 2,560,000	4.7	$ 4,100,000

Selected Cleanup Action Alternative

Section 6 of the DSFS identifies Alternative D1 as the selected remedy, primarily on the basis that the calculated benefit-to-cost ratio, using the scoring and weighting system provided in Section 5, is highest compared to the other three alternatives. When the environmental benefit scoring for all four alternatives and the cost assumptions for Alternative D6 treatment are modified as noted above, the calculated benefit-to-cost ratio will change and Alternative D6 may have a very similar benefit-to-cost ratio as Alternative D1. Furthermore, while the benefit-to-cost ratio is one metric that can be useful in comparing alternatives, it is not the definitive determination of whether an alternative is the appropriate remedy for a site. Ecology believes Alternative D6 provides greater environmental benefit at a cost that is not disproportionate and is permanent to the maximum extent practicable. Alternative D6 should be selected as the preferred alternative.

Ecology suggests Boeing to revise Section 6 of the DSFS to reflect the following:

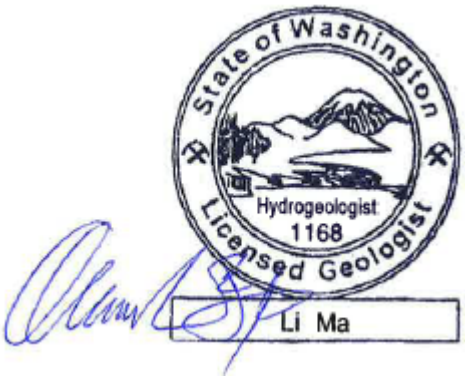
> *Based on analyses of this DSFS, Alternative D6 is the preferred remedy for the Site. This alternative meets MTCA threshold requirements, is permanent to the maximum extent practicable, provides for a reasonable restoration time frame, and considers public concerns, in accordance with WAC 173-340-360.*
>
> *Alternative D6 provides substantial additional environmental benefits for costs that are not disproportionate to the least costly alternative (Alternative D1). The focused EISB treatment area directly upgradient of the Algona residential area is estimated to reduce the restoration time frame in the Algona residential area by 56%. While treatment in this focus area may not significantly reduce the restoration time frame for the entire site, it would decrease overall risk associated with potential vapor intrusion and surface water exposure. In addition, Algona focus area EISB will address public concerns regarding contamination in the Algona residential area. Alternative D6 is easily implementable as it is an expansion of a prior pilot test that already*

proved effective. The overall benefit score for Alternative D6 (7.6) is substantially higher than for Alternative D1 (6.5).

Alternatives D7 and D8 have disproportionately high costs and lower overall environmental benefit scores than Alternative D6. Alternative D6 provides the greater environmental benefit at a cost that is not disproportionate and is selected as the preferred alternative.

Please contact me if you have any questions regarding this letter at (425) 649-7280 or lima461@ecy.wa.gov

Sincerely,



Li Ma, PhD, LHG
Project Manager
Hazardous Waste and Toxics Reduction Program

Enclosure: Attachment A

Sent by Certified Mail: 9171 9690 0935 0214 2485 30

ecc: Katie Moxley, The Boeing Company
Sarah Fees, LG, Landau Associates, Inc.
Marc Chalfant, PE, Aspect Consulting, LLC
Jeremy Porter, PE, Aspect Consulting, LLC
Christa Colouzis, PE, Ecology
Raman Iyer, Ecology

Attachment A: Suggested edits to Section 4 of the DSFS

4.0 DEVELOPMENT OF ADDITIONAL CLEANUP ACTION ALTERNATIVES – AOC A-14

The draft FS report evaluated five cleanup action alternatives for cleanup of TCE and VC in Site-wide groundwater and TCE in Facility soil. Ecology concluded that the MNA alternative (Alternative D1) selected as the recommended remedy in the draft FS report should be evaluated against three additional alternatives in this SFS (Ecology 2020d). The additional alternatives evaluated for the SFS are to differentiate the effects of enhanced *in situ* bioremediation (EISB) on different focus areas within the plumes. The focus areas were selected to provide additional downgradient treatment to plume areas with higher CVOC concentrations, areas that have longer projected restoration time frames, or areas that warrant special attention due to potential exposure pathways or consideration of public concerns. The three areas include:

- **Algona Focus Area:** This is an area of Algona along Milwaukee Avenue where treatment could target groundwater upgradient of the Chicago Avenue ditch and northeastern residential neighborhood. Treatment in this area would be an expansion of the Algona Enhanced *In Situ* Bioremediation pilot test treatment area. Concentrations of CVOCs in groundwater in this area ~~are relatively low~~exceed screening levels protective of the vapor intrusion pathway, although substantial work evaluating this pathway has not indicated an unacceptable risk under current Site conditions. ~~; however, t~~In addition, CVOCs have been detected above surface water standards in the adjacent Chicago Avenue ditch and Auburn 400 Stormwater detention basins, which flow directly into Mill Creek. . This area is included as a focus area because of potential public concerns ~~or perceptions~~ due to its location underlying a residential area at the Site and to provide additional certainty that potential exposure pathways are protected now and in the future. ~~There are also no complete exposure pathways in this area, except for potential incidental direct contact exposure at a stormwater ditch (Chicago Avenue ditch). Concentrations of COCs detected in water in the ditch are below health-based screening criteria for children or workers (WDOH 2013, 2014). Additionally, because of the nature of the water (urban stormwater runoff) and steeply sloped banks of the ditch, it is unlikely for the public to be regularly accessing/contacting the water.~~
- **17-07 Property Boundary Focus Area:** This is an area along the Boeing property boundary ~~where treatment could target an area~~ with one of the highest TCE concentrations (AGW145; TCE concentration of 6.2 ug/L in 2018) at the Site. ~~The concentration at this well (TCE concentration of 6.2 ug/L in 2018) represents a small portion of the plume and there are no complete exposure pathways in this focus area~~This area is included as a focus area because of the potential for treatment in this area to reduce the Site restoration timeframe and prevent recontamination of areas downgradient of the Property Boundary that undergo treatment.

- **The Outlet Collection Focus Area:** The Outlet Collection mall parking lot on the southern, northern, and western sides of the main mall building where treatment could target an area with some of the highest CVOC concentrations and longer restoration time frames at the Site, and that are located near to the area where Site groundwater discharges to Mill Creek. While this area has a relatively large area with higher CVOC concentration, there are no currently complete exposure pathways in this focus area. Due to the depth, extent, and location of this area (a large portion of which is located underneath the expansive Outlet Collection mall building), groundwater treatment covering the entire area is considered ~~technically~~ infeasible.