



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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December 14, 2018

Peter Davis
GWI Holdings, Inc.
1000 First Avenue, #2201
Seattle, WA 980104

Re: VCP Application for the following Site:

- **Site Name:** Gaco Western
- **Site Address:** 18700 Southcenter Parkway, Tukwila, Washington 98188
- **Cleanup Site ID:** 2979
- **Facility/Site ID:** 2402

Dear Peter:

The Department of Ecology (Ecology) received your Voluntary Cleanup Program (VCP) application for the Gaco Western facility (Site) that included a Remedial Investigation and Feasibility Study (RI/FS) report. We applaud your initiative and appreciate your interest in the VCP. Ecology has determined that this Site is too complex and the application cannot be accepted in the VCP. This determination was based on Ecology's screening of the RI/FS report. The enclosed Checklists identify missing or incomplete information in this report. Please review these Checklists and provide the missing or incomplete information to Ecology. The requested information will help if the Site moves into a formal process of an agreed order or consent decree in the future.

The VCP is designed for simpler sites with few common contaminants that need routine cleanups. In 2016, Ecology issued additional guidance on what is an appropriate site and what is too complex for the VCP program (<https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-process/Cleanup-options/Voluntary-cleanup-program>). A site is not appropriate for VCP if there are:

- Significant or immediate threats to human health or the environment.
- Multiple releases that have commingled.
- Media other than soil or groundwater.
- Multiple parcels of real property.
- Unreasonable restoration timeframes.
- Significant public interests.



Peter Davis
December 14, 2018
Page 2

Examples of sites too complex for VCP include landfill sites, sediment sites, and sites involving area-wide groundwater contamination.

Based on the information provided in the RI/FS report and application, the Site meets several of the conditions that make it too complex for VCP as follows:

- The Site poses a significant risk to the south adjacent property through the vapor intrusion pathway. This risk has not been investigated, and based on the submittal, there are no plans to address it.
- Based on the concentrations of benzene and vinyl chloride in groundwater at the edge of the Green River's levee, there is a significant potential risk for impacts to surface water and sediment that has not been investigated. This makes the site a potential sediment site and unsuitable for VCP.
- There are many recalcitrant and out-of-the-ordinary Chemicals of Concern that are not considered to be few, or routine.
- The Site has potential influences from upgradient sites including the Bow Lake Recycling & Transfer Station and the former Bow Lake Landfill. The RI/FS report indicated that potential off-site sources from the landfill may exist but there was no indication that this was investigated.

In addition to the items above, multiple aquifers, multiple sources, and multiple potentially liable parties make this site unsuitable for VCP. We understand that you are actively working on a solution to remediate groundwater contamination. We hope that you continue with this work whether independently or in a formal Ecology process. To express interest in entering into an Agreed Order or Consent Decree with Ecology or to request a meeting, please contact Bob Warren, the Northwest Regional Office Toxics Cleanup Program Section Manager at (425) 649-7054 or at RWAR461@ecy.wa.gov.

Thank you again for your interest in the VCP. If you have any questions about this letter, please contact me at (425) 649-7233 or at sofe461@ecy.wa.gov.

Sincerely,



Sonia Fernández
VCP Coordinator
Toxics Cleanup Program, NWRO

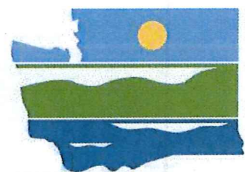
Enclosure (2) RI Checklist and FS Checklist

cc: Brad Helland, Leon Environmental, LLC. (e-mail)
Copy to File

Incomplete Report: A Remedial Investigation should be comprehensive and standalone document presenting all data collected at the site. Tables and Figures are missing some information necessary to evaluate the site. You need to provide a hardcopy of the entire report including data and all appendices. Electronic data submittals are appreciated but not considered a complete submittal. Site characterization is not complete. Additional information needed per below.

2018

Remedial Investigation Checklist Gaco Western



DEPARTMENT OF
ECOLOGY
State of Washington

Toxics Cleanup Program

May 2016

Publication No. 16-09-006

FOR ECOLOGY USE ONLY

FSID: 2402

Report Name: Remedial Investigation and
Feasibility Study Report

Date Submitted: 3/21/18

Reviewed By: S. Fernández

Review Date: 11/9/18

Remedial Investigation (RI) Checklist Guidance

The Model Toxics Control Act (MTCA) regulation Washington Administrative Code (WAC) 173-340-350(7) broadly describes the elements necessary to complete a RI. The purpose of a RI is to collect and evaluate sufficient information to fully characterize the nature and extent of contamination at a site.

This RI checklist is considered guidance based on the MTCA cleanup regulation WAC 173-340. Cleanup project managers with the Washington State Department of Ecology (Ecology) have discretion when reviewing and accepting RI reports as site-specific circumstances dictate the necessary scope and breadth of each report.

Remedial Investigation Report Body

- I. Cover Letter.** Include a letter describing the submittal and specifying the desired department action or response.
- II. Introduction.**
 - a. General Site Information.** Include contact information for project coordinators (Ecology site manager, consultants, potentially liable persons (PLP), and current owner/operator). Include the site name and identification numbers, general description, and location (e.g., GPS coordinates, assessor parcel number, Quarter Section Township Range, address).
 - b. Site History.** Describe site from earliest known time of habitation and/or development. Describe previous owners/operators, past uses of the site, and all potential/known sources (both on-site and off-site) of contamination (e.g., petroleum storage tanks, manufacturing processes, chemical storage, etc.). Include approximate dates or periods of past product and waste spills, identification of the materials spilled, and amount/location of the spill.
 - c. Site Use.** Describe current site uses, land use/zoning, and future use plans.
- III. Field Investigations**
 - a. Previous Environmental Investigations.** Discuss prior work performed, samples obtained, why sampling locations were chosen, etc. Cite any previous environmental reports.
 - b. Site Characterization.** Discuss current site characterization activities for each site media (surface water/sediments, soils, groundwater systems, air, and cultural history/archeology, if applicable). Name site contaminants of concern (COCs) and discuss why they were chosen for analysis. Describe how prior and current work efforts contribute to the understanding of the nature and extent of contamination.

FOR ECOLOGY USE ONLY					Comments
Adequate	Incomplete	Missing	N/A		
		X			Not a critical item for this Site.
X					In application and report.
X					
X					
				X	Based on groundwater results from since 2009, groundwater impacts above above site-specific screening levels extend to levee of Green River. Potential for surface water/sediment impacts not evaluated. Benzene and vinyl chloride impacts above site-specific screening levels extend to south adjacent building. Potential for Vapor Intrusion at adjacent property to the south was not evaluated.

- c. **Sampling/Analytical Results.** Discussion of sampling/analytical results should include contaminants analyzed for in samples from each applicable site media (soil, groundwater, vapor, surface water). Include comparison of the results to the applicable Method (A, B, or C) cleanup level, sampling method, laboratory method, and any special sampling or analytical protocols (silica gel, filtration, etc.). Evaluate the quality of the data.

IV. Conceptual Site Model

- a. **Conceptual Site Model (CSM).** Discuss contaminant release, fate and transport, exposure pathways (surface water, groundwater wells, air, direct contact, etc.), and potential receptors (human, aquatic, terrestrial). Describe typical concerns for this type of environmental contamination, and include a discussion of site specific concerns (hydro-geologic setting, receptors, current or future site zoning/land use etc.).

V. Proposed Cleanup Standards

- a. **General.** Clearly identify proposed cleanup levels for each media and rationale for selected level. Explain/justify mixing MTCA methods for different media. Must include a demonstration of conditions that require a calculated solution if one is to be use (e.g., background calculations, use of Method B or C, etc.) and show calculation of the cleanup level, including a list of the input parameters. Include point(s) of compliance.
- b. **Terrestrial Ecological Evaluation (TEE).** A TEE should be performed, if required, as part of cleanup level selection. Reference WAC 173-340-7491 to see if the site qualifies for an exclusion.

www.ecy.wa.gov/programs/tcp/policies/terrestrial/TEEHome.htm

VI. Summary, Conclusions, and Recommendations

- a. **Summary and Conclusions.** Summarize what is known about the site and contamination (updated CSM). Include discussion of COCs that exceed MTCA or are “indicator hazardous substances.” Ensure conclusions are supported by the tables and figures included with the report.
- b. **Recommendations.** Outline possible interim/remedial actions if appropriate.

Remedial Investigation Figures

General – Figures should include a north arrow, scale, complete legend, measurement units, and annotated clarification as necessary. Figures should not be cluttered and must be legible and explicable. Document text must reference figures and draw conclusions consistent with information presented on figures. Consider using multiple figures when showing large amounts of information.

FOR ECOLOGY USE ONLY				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Report mentions sub-slab soil gas samples but locations are not depicted in Figures and results not discussed in text.				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Will need to be modified to account for the vapor intrusion on the south adjacent and potential surface water/sediment issues along River.				
Adequate	Incomplete	Missing	N/A	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
May need modification based on the potential impacts to Green River which is a salmonid stream.				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Additional information needed to support some of the conclusions for the GW to surface water and VI pathways.				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Figure 14 is missing from report. Location of sub-slab soil gas samples were not depicted in Figures.				

I. Vicinity Map(s)

- a. Show property in relation to surrounding region. Area covered by Vicinity Map should be proportional to site size.
- b. Show other applicable items including (but not limited to): surface topography, natural areas, surrounding land uses, location of groundwater supply and monitoring wells within a one mile radius.

II. Site Map(s)

- a. Show overall site layout with site features and existing well, boring, and sampling locations labeled consistently with current and historical site data and sample names used in the report. If multiple names exist for a sampling location or area of the site indicate this.
- b. Include COC locations, concentrations, and estimated vertical and horizontal extent of contamination for site media, as applicable. Include waste materials present on site as well as hazardous substance treatment, storage, or disposal areas (show current and historical features).
- c. Show geologic/hydrogeologic information including soil types, wells, screened intervals, and water levels (cross sections are useful for showing this information). Show groundwater flow direction and gradient.
- d. Show other relevant information including (but not limited to): site and property boundaries, buildings/facilities on site, historical site features, underground storage tanks (USTs), previous excavation/interim action activity, etc.

III. Conceptual Site Model

- a. Provide figures showing contaminant release(s), fate and transport, exposure pathways, and potential and/or actual receptors. The lateral and vertical extent of contamination, as currently understood, should be clearly conveyed.

Remedial Investigation Tables

General - Tables should include detailed notes that explain any laboratory or other designations, assumptions, and references. All acronyms used in the table should be defined in a section of the notes even if they are defined in the body of the report, so table information can be quickly understood.

- a. **Sampling Information/Laboratory Methods.** Include current and historical sampling methods and numerical cleanup levels, lab methods, reporting limits, and any special sampling protocols with justification or explanation (e.g. silica gel, filtration).
- b. **Cleanup Levels.** Include potentially applicable ARAR values and recommended cleanup levels.

FOR ECOLOGY USE ONLY				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Comments
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Adequate	Incomplete	Missing	N/A	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Although the location of UST banks was depicted, the outline of the final remedial excavations were not shown.				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See previous comments.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other than the missing tank excavations, these are good.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See general comments and comments above.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	See general comments and comments above.
Data tables need to be comprehensive. Need to add historical data form 1991 through 2007 to the tables.				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Include all current and historical data collected at the Site. See previous comments.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

- c. **Site Data.** Include current and historical analytical and field-measured data. Group by media type. For larger data sets, consider making a summary table of exceedances. Tables should include proposed cleanup levels with any contaminant exceedances clearly indicated using bold font or shading. Non-detectible levels should be noted as 'U' with the numerical laboratory reporting limit (RL) provided rather than 'ND'.

Remedial Investigation Appendices

General. Appendices should contain a description of content and explain how to interpret the information for use. Not all of the following suggestions will apply to all sites.

- a. Exploratory logs, well installation diagrams, groundwater sampling logs, and field records.
- b. Analytical laboratory report and Quality Assurance/Quality Control report.
- c. **Limitations.** Explain any limitations that apply to the work.
- d. Details of field and analytical methods used in former and current investigations and remedial activities. If applicable, append Work Plan/Sampling and Analysis Plan/Quality Assurance Project Plan/Health and Safety Plan.
- e. Other documents that provide additional context or contribute to the understanding of the site – see suggested report format for additional information.

Miscellaneous Items

- a. **Environmental Information Management (EIM).** All sampling data must be uploaded into Ecology's EIM database. This allows Ecology to access data, check results, and/or perform additional analyses. For more information, reference: www.ecy.wa.gov/programs/tcp/data_submittal/Data_Requirements.htm
- b. **Certification (Licensed Professional Stamp).** Engineering, geologic, and hydrogeologic work must be performed under seal of an appropriately licensed professional (RCW 18.43 and 18.220).
- c. **Additional information may be requested by Ecology as required to fully define the site.**
- d. **Submittal Requirements:** Ecology requests three copies of reports submitted per WAC 173-340-850. Please contact the cleanup project manager for specific submittal requirements.

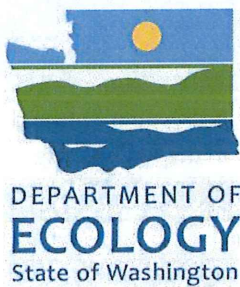
To request ADA accommodation or materials in a format for the visually impaired, call Ecology at 509-454-7834, Relay Service 711, or TTY 877-833-6341.

FOR ECOLOGY USE ONLY			
<input checked="" type="checkbox"/>			
Adequate	Incomplete	Missing	N/A
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Need to provide hardcopies of all Appendices for the file. You can skip previous reports as we have those already.			
<input checked="" type="checkbox"/>			
See previous comment above.			
<input checked="" type="checkbox"/>			
<input checked="" type="checkbox"/>			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Site manager will identify any additional needs once Site is evaluated.			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Submittal of data to EIM is required before final closure is completed. Closure will not be issued until the data is in EIM.			
<input checked="" type="checkbox"/>			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Site manager will identify any additional needs once Site is evaluated.			
<input checked="" type="checkbox"/>			
Only <u>one</u> hardcopy and a an electronic copy of each report is needed.			

Incomplete Report: Characterization of the Site is incomplete and additional data has not been submitted so the information provided is likely to change. Remedial alternatives do not take into account VI risks for the south adjacent property and the Green River from the groundwater to surface water pathway. Ecology does not consider 30 years a Reasonable Restoration Timeframe.

2018

Feasibility Study Checklist Gaco Western



Toxics Cleanup Program

May 2016

Publication No. 16-09-006

FOR ECOLOGY USE ONLY

FSID: 2402

Report Name: Remedial Investigation and Feasibility Study Report

Date Submitted: 3/21/18

Reviewed By: S. Fernández

Review Date: 11/9/18

Feasibility Study (FS) Checklist Guidance

The Model Toxics Control Act (MTCA) regulation Washington Administrative Code (WAC) 173-340-350(8) broadly describes the elements necessary to complete an FS. The purpose of an FS is to develop and evaluate cleanup action alternatives to enable a cleanup action to be selected for the site. At this point in the cleanup process, all remedial investigation (RI) work should be completed and the site should be fully characterized. When selecting cleanup alternatives, make sure remedies are not selected or dismissed prematurely; the FS process should be performed objectively without a preferred remedy in mind.

This FS checklist is considered guidance based on the MTCA cleanup regulation WAC 173-340. Cleanup project managers with the Washington State Department of Ecology (Ecology) have discretion when reviewing and accepting FS reports as site-specific circumstances dictate the necessary scope and breadth of each report.

Note: This document assumes that an FS and disproportionate cost analysis (DCA) are necessary for the site. If concentrations of hazardous substances do not exceed the cleanup level at a standard point of compliance, no further action is necessary, and an FS is not required. If a potentially liable person (PLP) meets the eligibility criteria and appropriately follows the requirements for use of a model remedy, they are not required to conduct an FS or a DCA. If a PLP and Ecology agree on a permanent remedy a DCA is not required [WAC 173-340-360(3)(d)].

In addition, there may be circumstances where selection of the appropriate remedy is straightforward or where a comprehensive remedial action will be implemented so that MTCA Method A cleanup levels are ultimately met throughout the site. If either of these situations apply, Ecology encourages PLPs to discuss their preferred approach with a cleanup project manager.

Feasibility Study Report Body

I. Cover Letter

Include a letter describing the submittal and specifying the desired department action or response.

II. Introduction

For a stand-alone FS, the introduction should include a brief summary of the RI results and previous site investigations; this summary should include the following information, updated with the most recent data:

- a. Brief background of the site, site investigations, and any interim actions.
- b. Results of any additional investigations conducted since completion of the RI.
- c. Conceptual Site Model (CSM). Describe the location, extents, estimated amount, and concentration distribution of contaminants of concern (COC) greater than proposed screening levels for each affected medium.
- d. Preliminary cleanup levels for indicator hazardous substances in each medium.
- e. Proposed point of compliance for each affected medium, if different from the standard.
- f. Applicable local, state, and federal laws

FOR ECOLOGY USE ONLY				Comments
Adequate	Incomplete	Missing	N/A	
		X		Not a critical item for this Site.
X				With comments and suggested changes in the RI Checklist.
X				
X				With comments and suggested changes in the RI Checklist.
X				
X				
X				

III. Alternatives

- a. **Identify Remedial Action Objectives.** Describe the cleanup objectives and their compliance with MTCA.
- b. **Identify a Reasonable Number and Type of Alternatives.** Include a brief description of each alternative. Ecology recommends evaluating at least **three** alternatives, taking into account the characteristics and complexity of the facility, including current site conditions and physical constraints. Include at least one permanent alternative, at least one alternative with a standard point of compliance, and a no action alternative if applicable (see WAC 197-11-440(5)). Do not include alternatives that clearly do not meet the minimum requirements per WAC 173-340-360, do not pass the DCA per WAC 173-340-360(3)(e), or are technically impossible to implement.

Note: For sites conducting an FS under an order or decree, Ecology makes the final determination of which alternatives must be evaluated in detail in the FS.

IV. Detailed Evaluation and Selection of Alternatives

- a. **Threshold and Other Requirements** [see WAC 173-340-360(2)]. Describe in detail how each alternative meets the criteria outlined below. Alternatives must meet the threshold requirements and use permanent solutions to the maximum extent practicable. If an alternative does not meet these criteria, it should be eliminated from further consideration.
 - i. **Protect human health and the environment.** This is a critical requirement. Consider to what degree the alternative reduces risk, how much time it will take to meet cleanup standards, and any on-site or off-site risks related to implementing the cleanup. If necessary, evaluate residual threats posed by each alternative, and determine if remedies that are protective of human health are also protective of ecological receptors.
 - ii. **Comply with cleanup standards.** See WAC 173-340-700 through 173-340-760.
 - iii. **Comply with applicable state and federal laws.** See WAC 173-340-710.
 - iv. **Provide for compliance monitoring.** See WAC 173-340-410 and WAC 173-340-720 through 173-340-760.
 - v. **Reasonable Restoration Time Frame.** Describe the estimated restoration time frame for each alternative and the basis for this estimate. Discuss the reasonableness of this time frame using the criteria in WAC 173-340-360(4).
- b. **DCA Ranking Criteria.** Compare and contrast each alternative for each of the following criterion [WAC 173-340-360(3)(f)]. Rank each alternative from most to least permanent, based on the evaluation of the criteria below.
 - i. **Protectiveness.** Overall protectiveness of human health and the environment.

FOR ECOLOGY USE ONLY				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Comments
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Several alternatives identified but all are very similar to each other. Gold standard alternative (all impacts excavated and groundwater fully mitigated) was not included.				
Adequate	Incomplete	Missing	N/A	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Some of the alternatives do not meet all criteria per below. Comments are preliminary. Site manager will evaluate fully.				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
None of the four alternatives deal with the VI issue on the south adjacent property and the potential impacts to surface water/sediment. Risks for these two pathways are not mitigated under either of the alternatives				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Groundwater and VI screening levels will not likely be met under any of the scenarios.				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Based on previous comment, MTCA will not be met.				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ecology does not consider thirty years to be a reasonable restoration timeframe (RRT). Ecology considers 5 years or less as a RRT.				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Appendix F.				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
With VI and GW to surface water pathway impacts, alternatives are not protective.				

- ii. **Permanence.** The degree to which the alternative permanently reduces the toxicity, mobility, or volume of hazardous substances. Consider treatment capability, reduction of releases, management of the sources of release, degree of irreversibility of treatment, and the quantity and quality of treatment wastes.
- iii. **Cost.** The cost to implement the alternative. Includes present capital costs, future capital costs, indirect costs, and operation and maintenance costs.
- iv. **Effectiveness over the long-term.** Consider the degree of certainty for cleanup success, long-term reliability, magnitude of residual risk, management of treatment wastes, and management of wastes left untreated.
- v. **Management of short-term risks.** Assess the risk to human health and the environment associated with the alternative during construction and implementation.
- vi. **Technical and administrative implementability.** Ability to be implemented including consideration of whether the alternative is technically and administratively possible.
- vii. **Consider public concerns.** Provide a narrative regarding whether the community has concerns regarding the alternative and, if so, the extent to which the alternative addresses those concerns.

V. Remedy Selection

Detail the rationale behind the selection of the preferred alternative. Detail how the alternative meets the expectations in WAC 173-340-370 and addresses public concerns.

Feasibility Study Figures

General – Figures should include a north arrow, scale, complete legend, measurement units, and annotated clarification as necessary. Figures should not be cluttered and must be legible and explicable. Document text must reference figures and draw conclusions consistent with information presented on figures. Consider using multiple figures when showing large amounts of information.

I. Vicinity Map(s)

- a. Show property in relation to surrounding region. Area covered by Vicinity Map should be proportional to site size.
- b. Show other applicable items including (but not limited to): surface topography, natural areas, surrounding land uses, location of groundwater supply and monitoring wells within a one mile radius.

II. Site Map(s)

- a. Show overall site layout with site features and existing well, boring, and sampling locations labeled consistently with current and historical site data and sample names used in the report. If multiple names exist for a sampling location or area of the site indicate this.

FOR ECOLOGY USE ONLY				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Comments
Alternatives will eventually provide permanence but does not mean they are appropriate. Site manager to evaluate.				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Appendix F.				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
As long as the entire source is not removed and/or treated, it is unlikely that the remedy would be effective.				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
VI and GW to surface water pathway risks not managed.				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Provided rationale, does not mean that is a reasonable alternative. Site manager will evaluate.				
Adequate	Incomplete	Missing	N/A	
Refer to comments on the RI checklist.				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
See comments on the RI checklist.				

- b. Include COC locations, concentrations, and estimated vertical and horizontal extent of contamination for site media, as applicable. Include any waste materials present on site as well as hazardous substance treatment, storage, or disposal areas (show current and applicable historical features).
- c. Show geologic/hydrogeologic information including soil types, wells, screened intervals, and water levels (cross sections are useful for showing this information). Show groundwater flow direction and gradient.
- d. Show other relevant information including (but not limited to): site and property boundaries, buildings/facilities on site, historical site features, underground storage tanks (USTs), previous excavation/interim action activity, etc.

III. Conceptual Site Model

Provide figures showing contaminant release(s), fate and transport, exposure pathways, and potential and/or actual receptors. The lateral and vertical extent of contamination, as currently understood, should be clearly conveyed.

Feasibility Study Tables

General - Tables should include detailed notes that explain any assumptions or references. All acronyms used in the table should be defined in a section of the notes even if they are defined in the body of the report so table information can be quickly understood.

- I. **ARARs.** Include potentially applicable ARAR values, their sources, and whether or not they apply to each alternative.
- II. **Evaluation of Remedial Alternatives.** Include description of each alternative, compliance with the MTCA threshold criteria, and alternative ranking for each DCA criteria.
- III. **Cost/Quantity Summary.** Include any quantity or cost assumptions made for each alternative.
- IV. **Cost Detail for Alternatives.** Itemize costs for each alternative, including (but not limited to) permitting, oversight, labor, disposal, transportation of materials, material costs, incidentals, operations and maintenance, and reporting costs, and provide a total cost for each alternative.
- V. If additional site investigations were conducted after completion of the RI, include sampling information, laboratory methods, applicable cleanup levels, and analytical and field measured data. Group by media type. For larger data sets, consider making a summary table to exceedances. Tables should include cleanup or proposed cleanup levels with any contaminant exceedances clearly indicated using bold font or shading. Non-detectable levels should be noted as "U" with the numerical laboratory reporting limit (RL) provided rather than "ND".

FOR ECOLOGY USE ONLY				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Comments</u>
See comments on the RI checklist.				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
See comments on the RI checklist.				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
See comments on the RI checklist.				
Adequate	Incomplete	Missing	N/A	
See comments on the RI checklist.				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Information is provided but alternatives may not meet requirements.				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Summary table with totals provided.				
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Appendix F.				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Results of Phytoremediation Pilot Study have not been provided.				

Feasibility Study Appendices

General. Appendices should contain a description of content and explain how to interpret the information for use. Not all of the following suggestions will apply to all sites.

- VI. Contractor bids or other documents showing how quantity and/or cost estimates were made.
- VII. If additional site investigations were conducted after completion of the RI, include exploratory logs, well installation diagrams, field records, analytical laboratory reports, details of field and analytical methods, and any applicable Work Plans, Sampling and Analysis Plans, etc.
- VIII. **Limitations.** Explain any limitations that apply to the work.
- IX. Other documents that provide additional context or contribute to the understanding of the site or remedial alternatives; see suggested report format for additional information.

Miscellaneous Items

- X. **Certification (Licensed Professional Stamp).** Engineering, geologic, and hydrogeologic work must be performed under the seal of an appropriately licensed professional, as required by RCW 18.43 and 18.220.
- XI. **Environmental Information Management (EIM).** All sampling data must be uploaded into Ecology's EIM database. This allows Ecology to access data, check results, and/or perform additional analyses. For more information, reference: Submittal Data Requirements.
- XII. Additional information may be requested by Ecology as required to fully assess remedial alternatives.
- XIII. **Submittal Requirements:** Ecology requests three copies of reports submitted per WAC 173-340-850. Please contact the cleanup project manager for specific submittal requirements.

FOR ECOLOGY USE ONLY				Comments
Adequate	Incomplete	Missing	N/A	
	X			Supporting information not provided.
	X			Results of Phytoremediation Pilot Study have not been provided.
			X	
			X	Site manager will determine.
X				
	X			Submittal of data to EIM is required before final closure is completed. Closure will not be issued until the data is in EIM.
			X	
X				Only <u>one</u> hardcopy and a an electronic copy of each report is needed.

To request ADA accommodation or materials in a format for the visually impaired, call Ecology at 509-454-7834, Relay Service 711, or TTY 877-833-6341.