STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

In the Matter of Remedial Action by:	AGREED ORDER
City of Bothell at Bothell Riverside MTCA Site - HVOC Area	No. DE 21531

TO: Kyle Stannert
City Manager
City of Bothell
18415 101st Avenue NE
Bothell, WA 98011

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EXHIBIT D List of Permits Required

I. INTRODUCTION

The mutual objective of the State of Washington, Department of Ecology (Ecology) and the City of Bothell (the City) under this Agreed Order (Order) is to provide for remedial action at a facility where there has been a release or threatened release of hazardous substances. This Order requires the City to implement the Cleanup Action Plan (Exhibit B). Ecology believes the actions required by this Order are in the public interest.

II. JURISDICTION

This Order is issued pursuant to the Model Toxics Control Act (MTCA), RCW 70A.305.050(1).

III. PARTIES BOUND

This Agreed Order shall apply to and be binding upon the Parties to this Order, their successors and assigns. The undersigned representative of each Party hereby certifies that he or she is fully authorized to enter into this Order and to execute and legally bind such Party to comply with this Order. The City agrees to undertake all actions required by the terms and conditions of this Order. No change in ownership or corporate status shall alter the City's responsibility under this Order. The City shall provide a copy of this Order to all agents, contractors, and subcontractors retained to perform work required by this Order, and shall ensure that all work undertaken by such agents, contractors, and subcontractors complies with this Order.

IV. DEFINITIONS

Unless otherwise specified herein, the definitions set forth in RCW 70A.305, WAC 173-204 and WAC 173-340 shall control the meanings of the terms in this Order.

A. Site: The Site is referred to as Bothell Riverside-HVOC Site. The Site constitutes a facility under RCW 70A.305.020(8). The Site is defined by where a hazardous substance, other than a consumer product in consumer use, has been deposited, stored, disposed of, or placed, or otherwise come to be located. Based upon factors currently known to Ecology, the Remedial Action Location Diagram (Exhibit A) shows where the remedial action will be implemented. The

Site description and remedial action are more fully described in the Cleanup Action Plan (Exhibit B).

B. Parties: Refers to the State of Washington, Department of Ecology and the City.

C. Potentially Liable Persons (PLP(s)): Refers to the City.

D. Agreed Order or Order: Refers to this Order and each of the exhibits to this Order. All exhibits are integral and enforceable parts of this Order.

V. FINDINGS OF FACT

Ecology makes the following findings of fact, without any express or implied admissions of such facts by the City:

A. Based upon factors currently known to Ecology, the Site is generally located at Woodinville Drive (SR 522) and NE 180th Street, Bothell, WA. The anticipated location of the remedial action is shown on the Remedial Action Location Diagram (Exhibit A). The location is contaminated by halogenated volatile organic compounds in soil and groundwater. The Site description and remedial action are more fully described in the Cleanup Action Plan (Exhibit B).

B. The City acquired the property in 1990. The Site is now part of King County Tax Parcel No. 0826059120.

C. The Site is currently used for parking and access to a public park and the Burke-Gilman Trail.

D. Ecology entered into Agreed Order No. DE 6295 with the City, effective February 3, 2009, to address concentrations of TPH and HVOC at the Site. Under Agreed Order No. DE 6295 and Agreed Order No. DE 16541, the City was to perform a Remedial Investigation, Feasibility Study, Interim Actions, and complete a preliminary draft Cleanup Action Plan.

E. The City has completed several studies of the Site under Agreed Order No. DE 6295 and Agreed Order No. DE 16541 that document the release of hazardous substances which present a threat to human health or the environment. These documents, and other reports related to the Site, are available at Ecology's Northwest Regional Office and include: HWA Geosciences, *Final Remedial Investigation Report, Bothell Riverside Site, Bothell, WA* (Oct. 9, 2015), HWA

Geosciences, *Ground Water Monitoring Results Year 4, Quarter 1 - April 2017, Riverside HVOC Site, Bothell, WA* (May 8, 2017), and Kane Environmental, *Supplemental Remedial Investigation and Feasibility Study, Riverside HVOC Site, Bothell, WA* (February 2, 2022).

F. Under Agreed Order No. DE 6295 Amendments No. 1 and 2, the City conducted interim actions at the Site. Under Agreed Order No. DE 6295, Amendment No. 1, the City excavated TPH soil contamination. Under Agreed Order No. DE 6295, Amendment No. 2, the City installed wells to control the groundwater gradient where groundwater is contaminated by HVOCs. The groundwater pumping system is intended to prevent HVOCs in groundwater from discharging to the Sammamish River. Pumped water continues to be discharged to the King County sanitary sewer system for treatment pursuant to King County Wastewater Discharge Authorization No. 4268-02 (expires Oct. 9, 2023).

G. In 2019, Ecology and the City split the Riverside Site into two Sites: the Riverside-TPH Site and the Riverside-HVOC Site. Ecology removed the Riverside-TPH Site from the Hazardous Sites List in December 2019 and issued a determination that no further remedial action is necessary to clean up contamination at the Riverside-TPH Site.

H. On December 5, 2019, Ecology and the City entered into Agreed Order 16541, to provide for a Supplemental Remedial Investigation, Feasibility Study, Draft Cleanup Action Plan, and continued groundwater pumping at the remaining Riverside-HVOC Site.

I. Under Agreed Order No. DE 16541, the City continued the groundwater pumping interim action to address HVOCs at the Riverside-HVOC Site. The City performed a Remedial Investigation and Feasibility Study, and prepared a preliminary draft Cleanup Action Plan to address the remaining HVOC contamination.

VI. ECOLOGY DETERMINATIONS

Ecology makes the following determinations, without any express or implied admissions of such determinations (and underlying facts) by the City.

A. The City is an "owner or operator" as defined in RCW 70A.305.020(22) of a "facility" as defined in RCW 70A.305.020(8).

B. Based upon all factors known to Ecology, a "release" or "threatened release" of "hazardous substance(s)" as defined in RCW 70A.305.020(32), (13), respectively, has occurred at the Site.

C. Based upon credible evidence, Ecology issued a PLP status letter to the City dated November 20, 2008, pursuant to RCW 70A.305.040, .020(26), and WAC 173-340-500. By letter dated November 25, 2008, the City voluntarily waived its rights to notice and comment and accepted Ecology's determination that the City is a PLP under RCW 70.105D.040.

D. Pursuant to RCW 70A.305.030(1), .050(1), Ecology may require PLPs to investigate or conduct other remedial actions with respect to any release or threatened release of hazardous substances, whenever it believes such action to be in the public interest. Based on the foregoing facts, Ecology believes the remedial actions required by this Order are in the public interest.

E. Ecology has determined that it is appropriate to address the release of TPH and the release of HVOC at the property under separate administrative orders. This Agreed Order will address the release of HVOC at the Site. The requirements of Agreed Order No. 16541 are deemed satisfied by Ecology, and thus is and terminated upon the effective date of this Order.

F. As documented in the Cleanup Action Plan (CAP) (Exhibit B), Ecology has chosen a final cleanup action to be implemented at the Riverside-HVOC Site.

VII. WORK TO BE PERFORMED

Based on the Findings of Fact and Ecology Determinations, it is hereby ordered that the City take the following remedial actions at the Site. The area within the Site where remedial action is necessary under RCW 70A.305 is described in the Remedial Action Location Diagram (Exhibit A). These remedial actions must be conducted in accordance with WAC 173-340:

A. The City will implement the Cleanup Action Plan (Exhibit B) and Schedule (Exhibit C), and all other requirements of this Order.

B. If the City learns of a significant change in conditions at the Site, including but not limited to a statistically significant increase in contaminant and/or chemical concentrations in any

media, the City, within seven (7) days of learning of the change in condition, shall notify Ecology in writing of said change and provide Ecology with any reports or records (including laboratory analyses, sampling results) relating to the change in conditions.

C. The City shall submit to Ecology written quarterly Progress Reports that describe the actions taken during the previous quarter to implement the requirements of this Order. All Progress Reports shall be submitted by the tenth (10th) day of the month in which they are due after the effective date of this Order. Unless otherwise specified by Ecology, Progress Reports and any other documents submitted pursuant to this Order shall be sent by certified mail, return receipt requested, to Ecology's project coordinator. The Progress Reports shall include the following:

1. A list of on-site activities that have taken place during the quarter.
2. Detailed description of any deviations from required tasks not otherwise documented in project plans or amendment requests.
3. Description of all deviations from the Scope of Work and Schedule (Exhibit C) during the current quarter and any planned deviations in the upcoming quarter.
4. For any deviations in schedule, a plan for recovering lost time and maintaining compliance with the schedule.
5. All raw data (including laboratory analyses) received during the previous quarter (if not previously submitted to Ecology), together with a detailed description of the underlying samples collected.
6. A list of deliverables for the upcoming quarter.

D. Pursuant to WAC 173-340-440(11), the City shall maintain sufficient and adequate financial assurance mechanisms to cover all costs associated with the operation and maintenance of the remedial action at the Site, including institutional controls, compliance monitoring, and corrective measures.

1. Within sixty (60) days of the effective date of this Order, the City shall submit to Ecology for review and approval an estimate of the costs under this Order for operation and maintenance of the remedial actions at the Site, including

institutional controls, compliance monitoring and corrective measures. Within sixty (60) days after Ecology approves the aforementioned cost estimate, the City shall provide proof of financial assurances sufficient to cover all such costs in a form acceptable to Ecology.

2. The City shall adjust the financial assurance coverage and provide Ecology's project coordinator with documentation of the updated financial assurance for:
   a. Inflation, annually, within thirty (30) days of the anniversary date of the entry of this Order; or if applicable, the modified anniversary date established in accordance with this section, or if applicable, ninety (90) days after the close of the City's fiscal year if the financial test or corporate guarantee is used.
   b. Changes in cost estimates, within thirty (30) days of issuance of Ecology's approval of a modification or revision to the cleanup action plan (CAP) that result in increases to the cost or expected duration of remedial actions. Any adjustments for inflation since the most recent preceding anniversary date shall be made concurrent with adjustments for changes in cost estimates. The issuance of Ecology's approval of a revised or modified CAP will revise the anniversary date established under this section to become the date of issuance of such revised or modified CAP.

E. As detailed in the Cleanup Action Plan, institutional controls are required at the Site. Environmental (Restrictive) Covenants will be used to implement the institutional controls.

1. In consultation with the City, Ecology will prepare the Environmental (Restrictive) Covenants consistent with WAC 173-340-440, RCW 64.70, and any policies or procedures specified by Ecology. The Environmental (Restrictive) Covenants shall restrict future activities and uses of the Site as agreed to by Ecology and the City.
2. After approval by Ecology, the City shall record the Environmental (Restrictive) Covenant for affected properties it owns with the office of the King County Auditor as detailed in the Schedule (Exhibit C). The City shall provide Ecology with the

original recorded Environmental (Restrictive) Covenants within thirty (30) days of the recording date.

F. All plans or other deliverables submitted by the City for Ecology's review and approval under the Cleanup Action Plan (Exhibit B) and Schedule (Exhibit C) shall, upon Ecology's approval, become integral and enforceable parts of this Order. The City shall take any action required by such deliverable.

G. If Ecology determines that the City has failed to make sufficient progress or failed to implement the remedial action, in whole or in part, Ecology may, after notice to the City, perform any or all portions of the remedial action or at Ecology's discretion allow the City opportunity to correct. In an emergency, Ecology is not required to provide notice to the City, or an opportunity for dispute resolution. The City shall reimburse Ecology for the costs of doing such work in accordance with Section VIII.A (Payment of Remedial Action Costs). Ecology reserves the right to enforce requirements of this Order under Section X (Enforcement).

H. Except where necessary to abate an emergency situation or where required by law, the City shall not perform any remedial actions at the Site outside those remedial actions required by this Order to address the contamination that is the subject of this Order, unless Ecology concurs, in writing, with such additional remedial actions pursuant to Section VIII.J. (Amendment of Order). In the event of an emergency, or where actions are taken as required by law, the City must notify Ecology in writing of the event and remedial action(s) planned or taken as soon as practical but no later than within twenty-four (24) hours of the discovery of the event.

I. Ecology hereby incorporates into this Order the previous remedial actions described in Section V (Findings of Fact). Reimbursement for specific project tasks under a grant agreement with Ecology is contingent upon a determination by Ecology's Toxics Cleanup Program that the retroactive costs are eligible under WAC 173-322A-320(6), the work performed complies with the substantive requirements of WAC 173-340, and the work is consistent with the remedial actions required under this Order. The costs associated with Ecology's determination on the past

independent remedial actions described in Section V (Findings of Fact), are recoverable under this Order.

VIII. TERMS AND CONDITIONS

A. Payment of Remedial Action Costs

The City shall pay to Ecology costs incurred by Ecology pursuant to this Order and consistent with WAC 173-340-550(2). These costs shall include work performed by Ecology or its contractors for, or on, the Site under RCW 70A.305, including remedial actions and Order preparation, negotiation, oversight, and administration. These costs shall include work performed both prior to and subsequent to the issuance of this Order. Ecology's costs shall include costs of direct activities and support costs of direct activities as defined in WAC 173-340-550(2). For all Ecology costs incurred, the City shall pay the required amount within thirty (30) days of receiving from Ecology an itemized statement of costs that includes a summary of costs incurred, an identification of involved staff, and the amount of time spent by involved staff members on the project. A general statement of work performed will be provided upon request. Itemized statements shall be prepared quarterly. Pursuant to WAC 173-340-550(4), failure to pay Ecology's costs within ninety (90) days of receipt of the itemized statement of costs will result in interest charges at the rate of twelve percent (12%) per annum, compounded monthly.

In addition to other available relief, pursuant to RCW 19.16.500, Ecology may utilize a collection agency and/or, pursuant to RCW 70A.305.060, file a lien against real property subject to the remedial actions to recover unreimbursed remedial action costs.

B. Designated Project Coordinators

The project coordinator for Ecology is:

Sunny Becker
Department of Ecology
PO Box 330316
Shoreline, WA 98133-9716
Phone: (206) 594-0107
Email: sunny.becker@ecy.wa.gov

The project coordinator for the City is:

Ryan Roberts
Supervising Civil Engineer
City of Bothell, Public Works Department
18415 - 101st Avenue NE
Bothell, WA 98011
Phone: (425) 806-6823
Email: Ryan.Roberts@bothellwa.gov

Each project coordinator shall be responsible for overseeing the implementation of this Order. Ecology's project coordinator will be Ecology's designated representative for the Site. To the maximum extent possible, communications between Ecology and the City, and all documents, including reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Order shall be directed through the project coordinators. The project coordinators may designate, in writing, working level staff contacts for all or portions of the implementation of the work to be performed required by this Order.

Any Party may change its respective project coordinator. Written notification shall be given to the other Party at least ten (10) calendar days prior to the change.

C. Performance

All geologic and hydrogeologic work performed pursuant to this Order shall be under the supervision and direction of a geologist or hydrogeologist licensed by the State of Washington or under the direct supervision of an engineer registered by the State of Washington, except as otherwise provided for by RCW 18.43 and 18.220.

All engineering work performed pursuant to this Order shall be under the direct supervision of a professional engineer registered by the State of Washington, except as otherwise provided for by RCW 18.43.130.

All construction work performed pursuant to this Order shall be under the direct supervision of a professional engineer or a qualified technician under the direct supervision of a professional engineer. The professional engineer must be registered by the State of Washington, except as otherwise provided for by RCW 18.43.130.

Any documents submitted containing geologic, hydrogeologic, or engineering work shall be under the seal of an appropriately licensed professional as required by RCW 18.43 and 18.220.

The City shall notify Ecology in writing of the identity of any engineer(s) and geologist(s), contractor(s), subcontractor(s), and other key personnel to be used in carrying out the terms of this Order, in advance of their involvement at the Site.

D. Access

Ecology or any Ecology authorized representative shall have access to enter and freely move about all property at the Site that the City either owns, controls, or has access rights to at all reasonable times for the purposes of, *inter alia*: inspecting records, operation logs, and contracts related to the work being performed pursuant to this Order; reviewing the City's progress in carrying out the terms of this Order; conducting such tests or collecting such samples as Ecology may deem necessary; using a camera, sound recording, or other documentary type equipment to record work done pursuant to this Order; and verifying the data submitted to Ecology by the City. Ecology or any Ecology authorized representative shall give reasonable notice before entering any Site property owned or controlled by the City unless an emergency prevents such notice. All persons who access the Site pursuant to this section shall comply with any applicable health and safety plan(s). Ecology employees and their representatives shall not be required to sign any liability release or waiver as a condition of Site property access.

The City shall make best efforts to secure access rights for those properties within the Site not owned or controlled by the City where remedial activities or investigations will be performed pursuant to this Order. As used in this Section, "best efforts" means the efforts that a reasonable person in the position of the City would use so as to achieve the goal in a timely manner, including the cost of employing professional assistance and the payment of reasonable sums of money to secure access and/or use restriction agreements, as required by this Section. If, within 60 days after the effective date of this Order, the City is unable to accomplish what is required through "best efforts," the City shall notify Ecology, and include a description of the steps taken to comply with the requirements. If Ecology deems it appropriate, it may assist the City, or take independent action, in obtaining such access and/or use restrictions. Ecology reserves the right to seek payment

from the City for all costs, including cost of attorneys' time, incurred by Ecology in obtaining such access or agreements to restrict land, water, or other resource use.

E. Sampling, Data Submittal, and Availability

With respect to the implementation of this Order, the City shall make the results of all sampling, laboratory reports, and/or test results generated by it or on its behalf available to Ecology. Pursuant to WAC 173-340-840(5), all sampling data shall be submitted to Ecology in both printed and electronic formats in accordance with Section VII (Work to be Performed), Ecology's Toxics Cleanup Program Policy 840 (Data Submittal Requirements), and/or any subsequent procedures specified by Ecology for data submittal.

If requested by Ecology, the City shall allow Ecology and/or its authorized representative to take split or duplicate samples of any samples collected by the City pursuant to implementation of this Order. the City shall notify Ecology seven (7) days in advance of any sample collection or work activity at the Site. Ecology shall, upon request, allow the City and/or its authorized representative to take split or duplicate samples of any samples collected by Ecology pursuant to the implementation of this Order, provided that doing so does not interfere with Ecology's sampling. Without limitation on Ecology's rights under Section VIII.D (Access), Ecology shall notify the City prior to any sample collection activity unless an emergency prevents such notice.

In accordance with WAC 173-340-830(2)(a), all hazardous substance analyses shall be conducted by a laboratory accredited under WAC 173-50 for the specific analyses to be conducted, unless otherwise approved by Ecology.

F. Public Participation

Ecology shall maintain the responsibility for public participation at the Site. However, the City shall cooperate with Ecology, and shall:

1. If agreed to by Ecology, develop appropriate mailing lists and prepare drafts of public notices and fact sheets at important stages of the remedial action, such as the submission of work plans, remedial investigation/feasibility study reports, cleanup action

plans, and engineering design reports. As appropriate, Ecology will edit, finalize, and distribute such fact sheets and prepare and distribute public notices of Ecology's presentations and meetings.

2. Notify Ecology's project coordinator prior to the preparation of all press releases and fact sheets, and before meetings related to remedial action work to be performed at the Site with the interested public and/or local governments. Likewise, Ecology shall notify the City prior to the issuance of all press releases and fact sheets related to the Site, and before meetings related to the Site with the interested public and local governments. For all press releases, fact sheets, meetings, and other outreach efforts by the City that do not receive prior Ecology approval, the City shall clearly indicate to its audience that the press release, fact sheet, meeting, or other outreach effort was not sponsored or endorsed by Ecology.

3. When requested by Ecology, participate in public presentations on the progress of the remedial action at the Site. Participation may be through attendance at public meetings to assist in answering questions or as a presenter.

4. When requested by Ecology, arrange and maintain a repository to be located at:

a. King County Bothell Library
18215 98th Ave. NE
Bothell, WA 98011

b. Ecology's Northwest Regional Office
Washington Department of Ecology
15700 Dayton Ave N
Shoreline, WA 98133

Call for an appointment:
Sally Perkins
E-mail: nwro_public_request@ecy.wa.gov

c. City of Bothell – City Hall
18415 – 101st Ave NE
Bothell, WA 98011
Phone: (425) 486-7811

At a minimum, copies of all public notices, fact sheets, and documents relating to public comment periods shall be promptly placed in these repositories. A copy of all documents related to this Site shall be maintained in the repository at Ecology's Northwest Regional Office in Shoreline, Washington.

G. Access to Information

The City shall provide to Ecology, upon request, copies of all records, reports, documents, and other information (including records, reports, documents, and other information in electronic form) (hereinafter referred to as "Records") within the City's possession or control or that of their contractors or agents relating to activities at the Site or to the implementation of this Order, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information regarding the work. The City shall also make available to Ecology, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the work.

Nothing in this Order is intended to waive any right the City may have under applicable law to limit disclosure of Records protected by the attorney work-product privilege and/or the attorney-client privilege. If the City withholds any requested Records based on an assertion of privilege, the City shall provide Ecology with a privilege log specifying the Records withheld and the applicable privilege. No Site-related data collected pursuant to this Order shall be considered privileged, including: (1) any data regarding the Site, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, radiological, biological, or engineering data, or the portion of any other record that evidences conditions at or around the Site; or (2) the portion of any Record that Respondents are required to create or generate pursuant to this Order.

Notwithstanding any provision of this Order, Ecology retains all of its information gathering and inspection authorities and rights, including enforcement actions related thereto, under any other applicable statutes or regulations.

H. Retention of Records

During the pendency of this Order, and for ten (10) years from the date of completion of the work performed pursuant to this Order, the City shall preserve all records, reports, documents, and underlying data in its possession relevant to the implementation of this Order and shall insert a similar record retention requirement into all contracts with project contractors and subcontractors.

I. Resolution of Disputes

1. In the event that the City elects to invoke dispute resolution the City must utilize the procedure set forth below.

a. Upon the triggering event (receipt of Ecology's project coordinator's written decision or an itemized billing statement), the City has fourteen (14) calendar days within which to notify Ecology's project coordinator in writing of its dispute (Informal Dispute Notice).

b. The Parties' project coordinators shall then confer in an effort to resolve the dispute informally. The Parties shall informally confer for up to fourteen (14) calendar days from receipt of the Informal Dispute Notice. If the project coordinators cannot resolve the dispute within those fourteen (14) calendar days, then within seven (7) calendar days Ecology's project coordinator shall issue a written decision (Informal Dispute Decision) stating: the nature of the dispute; the City's position with regards to the dispute; Ecology's position with regards to the dispute; and the extent of resolution reached by informal discussion.

c. The City may then request regional management review of the dispute. The City must submit this request (Formal Dispute Notice) in writing to the Northwest Region Toxics Cleanup Section Manager within seven (7) calendar days of receipt of Ecology's Informal Dispute Decision. The Formal Dispute Notice shall include a written statement of dispute setting forth: the nature of the dispute; the City's position with respect to the dispute; and the information relied upon to support its position.

d. The Section Manager shall conduct a review of the dispute and shall endeavor to issue a written decision regarding the dispute (Decision on Dispute) within thirty (30) calendar days of receipt of the Formal Dispute Notice. The Decision on Dispute shall be Ecology's final decision on the disputed matter.

2. The Parties agree to only utilize the dispute resolution process in good faith and agree to expedite, to the extent possible, the dispute resolution process whenever it is used.

3. Implementation of these dispute resolution procedures shall not provide a basis for delay of any activities required in this Order, unless Ecology agrees in writing to a schedule extension.

4. In case of a dispute, failure to either proceed with the work required by this Order or timely invoke dispute resolution may result in Ecology's determination that insufficient progress is being made in preparation of a deliverable, and may result in Ecology undertaking the work under Section VII.I (Work to be Performed) or initiating enforcement under Section X (Enforcement).

J. Extension of Schedule

1. The City's request for an extension of schedule shall be granted only when a request for an extension is submitted in a timely fashion, generally at least thirty (30) days prior to expiration of the deadline for which the extension is requested, and good cause exists for granting the extension. All extensions shall be requested in writing. The request shall specify:

a. The deadline that is sought to be extended.

b. The length of the extension sought.

c. The reason(s) for the extension.

d. Any related deadline or schedule that would be affected if the extension were granted.

2. The burden shall be on the City to demonstrate to the satisfaction of Ecology that the request for such extension has been submitted in a timely fashion and that good cause exists for granting the extension. Good cause may include, but may not be limited to:

a. Circumstances beyond the reasonable control and despite the due diligence of the City including delays caused by unrelated third parties or Ecology, such as (but not limited to) delays by Ecology in reviewing, approving, or modifying documents submitted by the City.

b. A shelter in place or work stoppage mandated by state or local government order due to public health and safety emergencies.

c. Acts of God, including fire, flood, blizzard, extreme temperatures, storm, or other unavoidable casualty.

d. Endangerment as described in Section VIII.K (Endangerment).

However, neither increased costs of performance of the terms of this Order nor changed economic circumstances shall be considered circumstances beyond the reasonable control of the City.

3. Ecology shall act upon the City's written request for extension in a timely fashion. Ecology shall give the City written notification of any extensions granted pursuant to this Order. A requested extension shall not be effective until approved by Ecology. Unless the extension is a substantial change, it shall not be necessary to amend this Order pursuant to Section VIII.J (Amendment of Order) when a schedule extension is granted.

4. At the City's request, an extension shall only be granted for such period of time as Ecology determines is reasonable under the circumstances. Ecology may grant schedule extensions exceeding ninety (90) days only as a result of one of the following:

a. Delays in the issuance of a necessary permit which was applied for in a timely manner.

b. Other circumstances deemed exceptional or extraordinary by Ecology.

c. Endangerment as described in Section VIII.K (Endangerment).

K. Amendment of Order

The project coordinators may verbally agree to minor changes to the work to be performed without formally amending this Order. Minor changes will be documented in writing by Ecology within seven (7) days of verbal agreement.

Except as provided in Section VIII.L (Reservation of Rights), substantial changes to the work to be performed shall require formal amendment of this Order. This Order may only be formally amended by the written consent of both Ecology and the City. Ecology will provide its written consent to a formal amendment only after public notice and opportunity to comment on the formal amendment.

When requesting a change to the Order, the City shall submit a written request to Ecology for approval. Ecology shall indicate its approval or disapproval in writing and in a timely manner after the written request is received. If Ecology determines that the change is substantial, then the Order must be formally amended. Reasons for the disapproval of a proposed change to this Order shall be stated in writing. If Ecology does not agree to a proposed change, the disagreement may be addressed through the dispute resolution procedures described in Section VIII.H (Resolution of Disputes).

L. Endangerment

In the event Ecology determines that any activity being performed at the Site under this Order is creating or has the potential to create a danger to human health or the environment on or surrounding the Site, Ecology may direct the City to cease such activities for such period of time as it deems necessary to abate the danger. The City shall immediately comply with such direction.

In the event the City determines that any activity being performed at the Site under this Order is creating or has the potential to create a danger to human health or the environment, the City may cease such activities. The City shall notify Ecology's project coordinator as soon as possible, but no later than twenty-four (24) hours after making such determination or ceasing such activities. Upon Ecology's direction, the City shall provide Ecology with documentation of the basis for the determination or cessation of such activities. If Ecology disagrees with the City's cessation of activities, it may direct the City to resume such activities.

If Ecology concurs with or orders a work stoppage pursuant to this section, the City's obligations with respect to the ceased activities shall be suspended until Ecology determines the danger is abated, and the time for performance of such activities, as well as the time for any other

work dependent upon such activities, shall be extended in accordance with Section VIII.I (Extension of Schedule) for such period of time as Ecology determines is reasonable under the circumstances.

Nothing in this Order shall limit the authority of Ecology, its employees, agents, or contractors to take or require appropriate action in the event of an emergency.

M. Reservation of Rights

This Order is not a settlement under RCW 70A.305. Ecology's signature on this Order in no way constitutes a covenant not to sue or a compromise of any of Ecology's rights or authority. Ecology will not, however, bring an action against the City to recover remedial action costs paid to and received by Ecology under this Order. In addition, Ecology will not take additional enforcement actions against the City regarding remedial actions required by this Order, provided the City complies with this Order.

Ecology nevertheless reserves its rights under RCW70A.305, including the right to require additional or different remedial actions at the Site should it deem such actions necessary to protect human health or the environment, and to issue orders requiring such remedial actions. Ecology also reserves all rights regarding the injury to, destruction of, or loss of natural resources resulting from the release or threatened release of hazardous substances at the Site.

By entering into this Order, the City does not admit to any liability for the Site. Although the City is committing to conducting the work required by this Order under the terms of this Order, the City expressly reserves all rights available under law, including but not limited to the right to seek cost recovery or contribution against third parties, and the right to assert any defenses to liability in the event of enforcement.

N. Transfer of Interest in Property

No voluntary conveyance or relinquishment of title, easement, leasehold, or other interest in any portion of the Site shall be consummated by the City without provision for continued implementation of all requirements of this Order and implementation of any remedial actions found to be necessary as a result of this Order.

Prior to the City's transfer of any interest in all or any portion of the Site, and during the effective period of this Order, the City shall provide a copy of this Order to any prospective purchaser, lessee, transferee, assignee, or other successor in said interest; and, at least thirty (30) days prior to any transfer, the City shall notify Ecology of said transfer. Upon transfer of any interest, the City shall notify all transferees of the restrictions on the activities and uses of the property under this Order and incorporate any such use restrictions into the transfer documents.

O. Compliance with Applicable Laws

1. *Applicable Laws.* All actions carried out by the City pursuant to this Order shall be done in accordance with all applicable federal, state, and local requirements, including requirements to obtain necessary permits or approvals, except as provided in RCW 70A.305.090. The permits or specific federal, state, or local requirements that the agency has determined are applicable and that are known at the time of the execution of this Order have been identified in Exhibit D. The City has a continuing obligation to identify additional applicable federal, state, and local requirements which apply to actions carried out pursuant to this Order, and to comply with those requirements. As additional federal, state, and local requirements are identified by Ecology or the City, Ecology will document in writing if they are applicable to actions carried out pursuant to this Order, and the City must implement those requirements.

2. *Relevant and Appropriate Requirements.* All actions carried out by the City pursuant to this Order shall be done in accordance with relevant and appropriate requirements identified by Ecology. The relevant and appropriate requirements that Ecology has determined apply have been identified in Exhibit D. If additional relevant and appropriate requirements are identified by Ecology or the City, Ecology will document in writing if they are applicable to actions carried out pursuant to this Order and the City must implement those requirements.

3. Pursuant to RCW 70A.305.090(1), the City may be exempt from the procedural requirements of RCW 70A.15, 70A.205, 70A.300, 77.55, 90.48, and 90.58 and of any laws requiring or authorizing local government permits or approvals. However, the City shall comply with the substantive requirements of such permits or approvals. For permits and approvals covered

under RCW 70A.305.090(1) that have been issued by local government, the Parties agree that Ecology has the non-exclusive ability under this Order to enforce those local government permits and/or approvals. The exempt permits or approvals and the applicable substantive requirements of those permits or approvals, as they are known at the time of the execution of this Order, have been identified in Exhibit D.

4. The City has a continuing obligation to determine whether additional permits or approvals addressed in RCW 70A.305.090(1) would otherwise be required for the remedial action under this Order. In the event either Ecology or the City determines that additional permits or approvals addressed in RCW 70A.305.090(1) would otherwise be required for the remedial action under this Order, it shall promptly notify the other Party of its determination. Ecology shall determine whether Ecology or the City shall be responsible to contact the appropriate state and/or local agencies. If Ecology so requires, the City shall promptly consult with the appropriate state and/or local agencies and provide Ecology with written documentation from those agencies of the substantive requirements those agencies believe are applicable to the remedial action. Ecology shall make the final determination on the additional substantive requirements that must be met by the City and on how the City must meet those requirements. Ecology shall inform the City in writing of these requirements. Once established by Ecology, the additional requirements shall be enforceable requirements of this Order. The City shall not begin or continue the remedial action potentially subject to the additional requirements until Ecology makes its final determination.

Pursuant to RCW 70A.305.090(2), in the event Ecology determines that the exemption from complying with the procedural requirements of the laws referenced in RCW 70A.305.090(1) would result in the loss of approval from a federal agency that is necessary for the state to administer any federal law, the exemption shall not apply and the City shall comply with both the procedural and substantive requirements of the laws referenced in RCW 70A.305.090(1), including any requirements to obtain permits or approvals.

P. Periodic Review

So long as remedial action continues at the Site, the Parties agree to review the progress of remedial action at the Site, and to review the data accumulated as a result of monitoring the Site as often as is necessary and appropriate under the circumstances. Unless otherwise agreed to by Ecology, at least every five (5) years after the initiation of cleanup action at the Site the Parties shall confer regarding the status of the Site and the need, if any, for further remedial action at the Site. At least ninety (90) days prior to each periodic review, the City shall submit a report to Ecology that documents whether human health and the environment are being protected based on the factors set forth in WAC 173-340-420(4). Ecology reserves the right to require further remedial action at the Site under appropriate circumstances. This provision shall remain in effect for the duration of this Order.

Q. Indemnification

The City agrees to indemnify and save and hold the State of Washington, its employees, and agents harmless from any and all claims or causes of action (1) for death or injuries to persons, or (2) for loss or damage to property, to the extent arising from or on account of acts or omissions of the City, its officers, employees, agents, or contractors in entering into and implementing this Order. However, the City shall not indemnify the State of Washington nor save nor hold its employees and agents harmless from any claims or causes of action to the extent arising out of the negligent acts or omissions of the State of Washington, or the employees or agents of the State, in entering into or implementing this Order.

IX. SATISFACTION OF ORDER

The provisions of this Order shall be deemed satisfied upon the City's receipt of written notification from Ecology that the City has completed the remedial activity required by this Order, as amended by any modifications, and that the City has complied with all other provisions of this Agreed Order.

X. ENFORCEMENT

Pursuant to RCW 70A.305.050, this Order may be enforced as follows:

A. The Attorney General may bring an action to enforce this Order in a state or federal court.

B. The Attorney General may seek, by filing an action, if necessary, to recover amounts spent by Ecology for investigative and remedial actions and orders related to the Site.

C. A liable party who refuses, without sufficient cause, to comply with any term of this Order will be liable for:

1. Up to three (3) times the amount of any costs incurred by the State of Washington as a result of its refusal to comply.

2. Civil penalties of up to twenty-five thousand dollars ($25,000) per day for each day it refuses to comply.

D. This Order is not appealable to the Washington Pollution Control Hearings Board. This Order may be reviewed only as provided under RCW 70A.305.070.

Effective date of this Order: 3/22/23

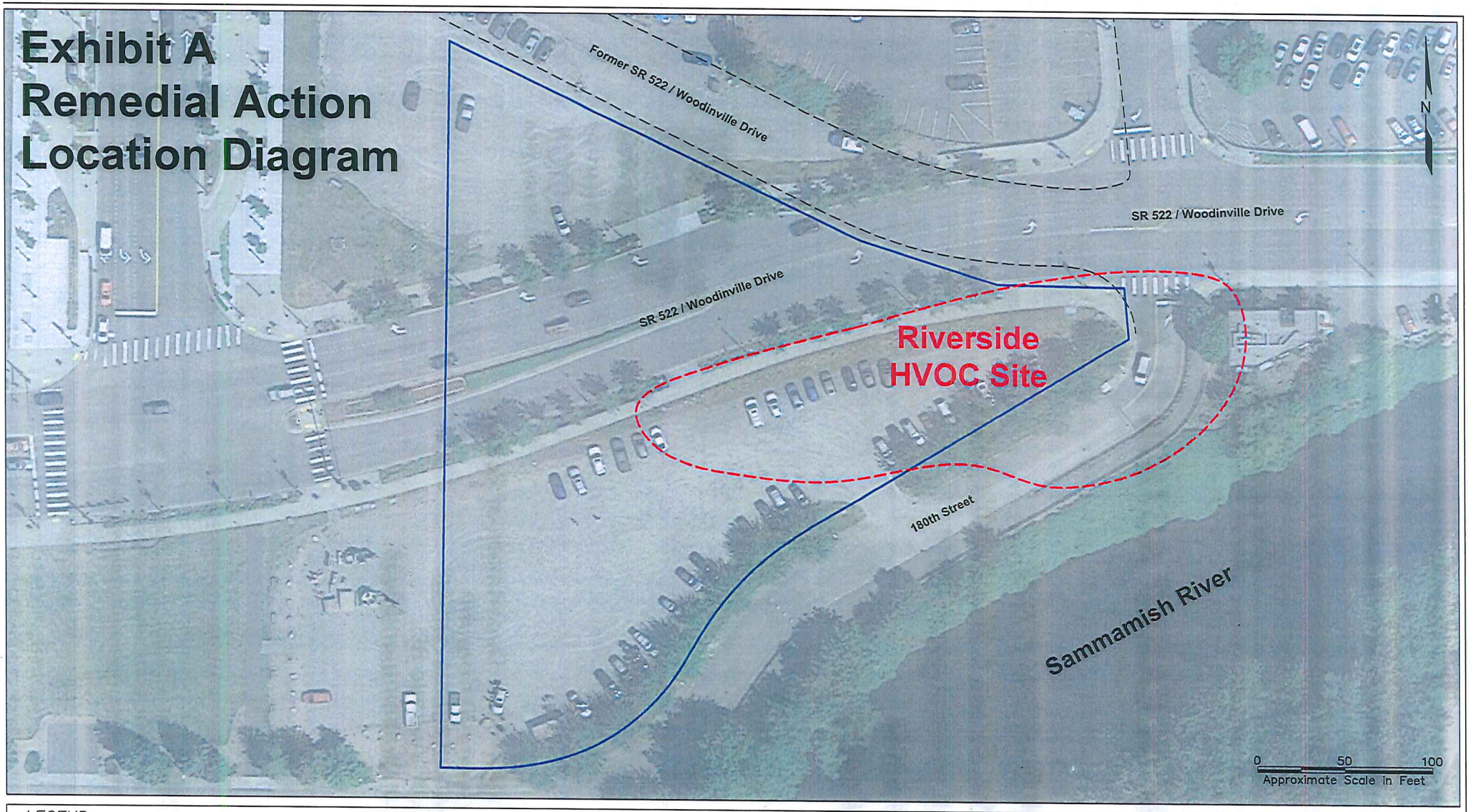
CITY OF BOTHELL

Kyle Stannert
City Manager
City off Bothell

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Robert W. Warren
Section Manager
Toxics Cleanup Program
Northwest Regional Office

Exhibit A
Remedial Action
Location Diagram



LEGEND

- Approximate location of historical Riverside property
- Approximate location of Riverside HVOC Site Boundary

EXHIBIT B

FINAL CLEANUP ACTION PLAN

Bothell Riverside HVOC
NE 180th Street & Woodinville Drive
Bothell, Washington 98011
FSID # 93061
CSID # 14970

DEPARTMENT OF
ECOLOGY
State of Washington

Issued By:

Washington State Department of Ecology
Toxics Cleanup Program
Northwest Regional Office
3190 160th Avenue SE
Bellevue, Washington 98008

March 2023

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1.0 INTRODUCTION

This Cleanup Action Plan (CAP) report was prepared by Kane Environmental, Inc., (Kane Environmental) on behalf of the City of Bothell (the City) for submission to the Washington State Department of Ecology (Ecology) to clean up the area of soil and groundwater contamination associated with releases of solvents at the contaminated site known as the Bothell Riverside Halogenated Volatile Organic Compounds (HVOC) Site located in Bothell, Washington (herein referred to as Riverside HVOC; Site). A vicinity map is shown as Figure 1. This CAP has been prepared to meet the requirements of the Model Toxics Control Cleanup Act (MTCA) administered by Ecology under Chapter 173-340 of the Washington Administrative Code (WAC). This CAP describes Ecology's proposed cleanup action for this site and sets forth the requirements that the cleanup must meet.

The Riverside HVOC Site is located on the eastern end of King County Assessor's parcel, 082605-9120, which is presently owned by the City of Bothell. The parcel containing the Site is currently vacant and utilized as a City of Bothell Park and as a public gravel parking lot. The Site is bounded to the north by State Route (SR) 522 and bounded to the south by the Sammamish River. See Figure 2 for an area Site plan, showing the Site boundaries with respect to the surrounding properties.

Kane Environmental completed a Draft Supplemental Remedial Investigation and Feasibility Study (RI/FS) for the Site dated February 22, 2022. The Remedial Investigation (RI) delineated the extent of HVOC impacts to both soil and groundwater at the Site. The primary source of current HVOC contamination on the Site is most likely associated with releases from historical machine shop operations on the Site. The Contaminants of Concern (COCs) in soil and groundwater are: Tetrachloroethene (PCE), Trichloroethene (TCE), (cis)-1,2 Dichloroethene (DCE) and Vinyl Chloride (VC).

Five remedial alternatives were evaluated in the draft Feasibility Study (FS) and are summarized below:

Alternative 1 – Alternative 1 – Limited Source Soil Excavation and EOS© Bioremediation

Alternative 1 includes excavation and off-site disposal of contaminated soils followed by supplemental bioremediation injection. The proposed excavation area for Alternative 1, which is the contaminant source area, is shown in the Supplemental RI/FS Figure 11. Prior to excavation, a geotechnical soldier pile wall, or similar, will be installed on the Riverside HVOC Site along the sidewalk of Highway 522 to provide structural support on the northern side of the excavation. Excavation to the east, south and west can be completed using a 1:1 excavation slope. Excavation activities will focus on vadose zone soils and will extend to approximately 15 feet below ground surface (bgs). Soil will be disposed of at an appropriate licensed landfill and clean imported fill material will be placed on the Site.

Following source soil removal activity, an array of groundwater injection wells at varying depths from 10 feet to 30 feet bgs, will be installed on the Riverside HVOC Site. An emulsified oil product, EOS©, which is an emulsion of lactate, soybean oil and nutrients that stimulates the growth of anaerobic bacteria to treat the groundwater plume through reductive dechlorination, will be injected into the groundwater. EOS© will be injected into wells at the source area and in downgradient wells. During bacterial respiration, electrons from the EOS® are transferred to the chlorinated compounds via the bacteria, releasing chlorine ions and eventually degrading to ethane and hydrogen gas.

Alternative 2 – Alternative 2 – Bioremediation with Carbstrate© and Groundwater Recirculation

This alternative involves the pumping of groundwater from existing and new extraction wells located at the Site, treatment of this water with a bioremediation product, and reinjection of this treated groundwater into the Site subsurface via injection wells. Proposed well locations associated with this alternative are shown in Figure 12 of the Supplemental RI/FS.

Currently, an array of six (6) 4-inch diameter groundwater extraction wells, are present at the Riverside HVOC Site. Several of these wells will be utilized to continue extraction while at least two new extraction wells will be installed on the site. These extraction wells will provide hydraulic control of the contaminant plume.

Extracted groundwater pumped from the extraction wells will be amended with a bioremediation product, Carbstrate©, or similar bioremediation product, a nutrient-amended electron donor substrate, pH adjusted if necessary, and then re-injected into the aquifer through vertical injection wells, to stimulate anaerobic bioremediation of PCE and its' breakdown products. Injection wells would need to be placed at different depths, and over a large area to cover the entire plume. Injection wells would be installed with a rotosonic drill rig to reduce smearing of fine grained material if possible. This will reduce the chance of the injection wells being biofouled. Two of the existing extraction wells and one existing monitoring well will be converted to injection wells.

Alternative 3 – Air Sparging and Soil Vapor Extraction (AS/SVE)

Alternative 3 includes a combination of air sparging and soil vapor extraction throughout the Site. See Figure 13 of the Supplemental RI/FS for the proposed air sparge and soil vapor extraction well location. Air sparging involves introducing compressed air into the groundwater. The introduction of air below the groundwater table enhances volatilization of contaminants dissolved in groundwater and sorbed onto saturated soils. Volatilized contaminants are then recovered via vapor extraction of the overlying vadose zone. Low molecular weight, volatile compounds such as PCE, TCE, DCE and vinyl chloride are generally amenable to air sparging. Air sparging would be combined with soil vapor extraction to remove

the contaminants. Soil vapor extraction is the process of removing contaminants from the soil in the vapor phase, usually by applying a vacuum to the subsurface. This is done through the use of a series of wells which are placed throughout the area of contamination and screened above the groundwater table. The wells are connected to an air blower, which draws a vacuum. With the reduced pressure, air begins to move through the subsurface drawing out the contaminant vapors. The withdrawn air will likely require treatment, depending on contaminant concentrations. Common processes for remediating this air include vapor phase carbon adsorption, catalytic converters, or thermal converters (oxidizers).

The vapors are run through a remediation system, and then discharged into the atmosphere under state and local permit requirements. This action is enhanced when the surface is covered by a cap of asphalt and/or concrete, minimizing the amount of ambient air drawn into the system.

Alternative 4 – Excavation and Monitored Natural Attenuation (MNA)

Alternative 4 includes excavation and off-site disposal of all contaminated soils followed by monitored natural attenuation (MNA). The proposed excavation areas are the contaminant source areas in the northern and southern portions of the Site down to its furthest vertical extent of 30 feet bgs near RMW-12 and 25 feet bgs near RMW-14 as depicted in the Supplemental RI/FS Figure 14. Prior to excavation, a geotechnical soldier pile wall, or similar, will be installed on the entire excavation boundary due to the depth of excavation.

Soil will be excavated up to 30 feet bgs and disposed of at an appropriate licensed landfill. Clean, compacted imported fill material will replace the excavated contaminated soil. Following source soil removal activity, MNA would be implemented. MNA is the practice of allowing natural (physical, chemical and biological) processes in soil and groundwater to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in those media. MNA requires first establishing that conditions are favorable for those processes and monitoring to ensure they are occurring.

MNA processes include biodegradation, dispersion, dilution, adsorption, volatilization, and chemical or biological stabilization or destruction of contaminants. MNA is a viable approach where dissolved contaminant concentrations in groundwater are low, potential receptors are not in danger of being affected, and natural attenuation of contaminants is known or likely.

Alternative 5 – Bioremediation with Carbstrate© and Groundwater Recirculation Combined with Soil Vapor Extraction

This alternative combines elements of Alternative 2 and Alternative 3. Soil vapor extraction (SVE) is the process of removing contaminants from the soil in the vapor phase, by applying a vacuum to the

subsurface. An SVE system consisting of a network of shallow wells connected to an air blower will be installed on the Site. The SVE system and associated wells will specifically target the vadose zone soil in the northern portion of the Site. Well spacings for an SVE system are typically 15-25 feet for the subsurface conditions found at the Site.

Groundwater treatment will be accomplished through bioremediation with Carbstrate© or similar bioremediation product, and groundwater recirculation. This alternative involves the pumping of groundwater from existing and new extraction wells at the Site, treatment of this water with a bioremediation product, and reinjection of this treated groundwater into the Site subsurface via injection wells. This method will also serve as the treatment of saturated soils which extend down to a depth of approximately 30 feet bgs. Proposed well locations associated with this alternative are shown in Supplemental RI/FS Figure 15.

Extracted groundwater pumped from the extraction wells will be amended with a bioremediation product, Carbstrate©, a nutrient-amended electron donor substrate, pH adjusted if necessary, and then re-injected into the aquifer through vertical injection wells, to stimulate anaerobic bioremediation of PCE and its' breakdown products. Injection wells would need to be placed at different depths, and over a large area to cover the entire plume. Injection wells would be installed with a rotosonic drill rig to reduce smearing of fine grained material if possible. This will reduce the chance of the injection wells being biofouled. Two of the existing extraction wells and one existing monitoring well will be converted to injection wells

Preferred Alternative

Alternative 5 – Bioremediation with Carbstrate© and Groundwater Recirculation Combined with Soil Vapor Extraction.

Based on the results of the Remedial Investigation and Feasibility Study conducted under MTCA and the application of the selection of remedy criteria, the Preferred Alternative chosen is Alternative 5, Bioremediation with Carbstrate© or similar bioremediation product, and Groundwater Recirculation Combined with Soil Vapor Extraction, developed in accordance with WAC 173-340-350 through 173-340-390.

1.1 Purpose

This document is the Cleanup Action Plan (CAP) for the Riverside HVOC Site located in Bothell, Washington. The general location of the Site is shown in Figures 1 and 2. A CAP is required as part of the site cleanup process under Chapter 173-340 WAC, Model Toxics Control Act (MTCA) Cleanup Regulations. The purpose of the CAP is to describe the preferred cleanup alternative for the Site determined from the Supplemental RI/FS. More specifically, this plan:

- Describes the Site;
- Summarizes current site conditions;
- Summarizes the cleanup action alternatives considered in the remedy selection process;
- Describes the selected cleanup action for the Site and the rational for selecting this alternative;
- Identifies site-specific cleanup levels and points of compliance for each hazardous substance and medium of concern for the proposed cleanup action;
- Identifies applicable state and federal laws for the proposed cleanup action;
- Identify residual petroleum contamination remaining on the Site after cleanup, if present and potential restrictions on future uses and activities to ensure continued protection of human health and the environment;
- Discusses performance and compliance monitoring requirements and plans; and
- Presents the schedule for implementing the CAP.

Under the terms of the Agreed Order with Ecology and the City of Bothell, a preliminary determination that a cleanup conducted in conformance with this CAP will comply with the requirements for selection of a remedy under WAC 173-340-360.

1.2 Previous Studies

This section contains summaries of previous environmental investigations conducted at the Riverside HVOC Site.

Years 1990-2009

During initial investigations on the Riverside property conducted in the early 1990s, petroleum contamination was discovered in the northwestern portions of the Riverside property, reportedly associated with historical gas station operations in this area (SEACOR, 1990; SEACOR 1991). Remedial excavations were conducted throughout the early 1990s which removed approximately 4,700 cubic yards of petroleum contaminated soil (RZA AGRA, 1992; GTI, 1993a; GTI, 1993b). Petroleum contaminated soils were treated

on property using a bioremediation cell, and post-treatment soils were used to backfill the remedial excavation.

During 2008 site investigation activities, HWA discovered the presence of halogenated volatile organic compounds (HVOCs), specifically tetrachloroethylene (PCE), trichloroethylene (TCE), (cis) 1,2-dichloroethylene ((cis) 1,2-DCE), and vinyl chloride (VC) in groundwater above their respective Model Toxics Control Act (MTCA) Method A or Method B cleanup levels (HWA, 2008).

PCE was also detected in soils from location BC-3 at a concentration of 5.9 parts per million (ppm) and at location R-4 at a concentration of 9 ppm (see Figure 3 for locations of borings). The MTCA Method A cleanup level for PCE in soil is 0.05 ppm. HWA noted that these detections were collected from saturated soils and attributed the detections to groundwater contamination. HWA also stated that the HVOC contaminated groundwater was most likely migrating from an upgradient source.

An investigation was conducted by CDM in 2009 to assess soil and groundwater conditions along the former State Route (SR) 522, which at the time, bounded the Riverside property to the north-northeast. Groundwater samples collected north and northwest of the Riverside property along the former SR 522 reported concentrations of HVOCs in groundwater above their respective state cleanup levels (MTCA Method A cleanup levels). However, the CDM report noted that these detections were several orders of magnitude less than the HVOC contamination on the Riverside HVOC Site. CDM determined that the source of the HVOC contamination was associated with an unknown source located on-property and not associated with upgradient sources (CDM, 2009).

Supplemental groundwater sampling confirmed the presence of HVOC contamination in groundwater (Parametrix, 2009).

Years 2013-2018

A groundwater extraction/treatment system was installed and activated in January of 2013. The system originally consisted of four groundwater extraction wells (EW-1 through EW-4), screened over intervals ranging from 11 to 35 feet bgs. Two additional extraction wells were added in December 2016 (EW-5 and EW-6). Extraction wells were installed with approximately 40 foot spacing, dedicated submersible pumps, and connected to an enclosure via sub-grade piping within the Riverside HVOC Site. The extracted groundwater was then discharged to sanitary sewer. HWA noted that the total discharge is sampled quarterly prior to entering the sanitary sewer system to ensure that the effluent meets the King County sanitary sewer discharge limits for HVOCs and settleable solids.

Quarterly groundwater monitoring on the Riverside HVOC Site was resumed in 2014 following the installation of the groundwater treatment system and included sampling of the extraction wells in addition to the monitoring wells. Groundwater HVOC concentrations reportedly decreased over time although there were seasonal fluctuations noted as well.

HWA performed a Remedial Investigation (RI) report for the Riverside HVOC Site dated December 18, 2017 (HWA, 2017b) in which the original "Riverside Site", which encompassed the Riverside property, was delineated into two areas: the Riverside TPH Site and the Riverside HVOC Site. The report detailed the supplemental groundwater sampling as well as the implementation of a groundwater extraction system acting as an interim measure to prevent HVOC contaminated groundwater from entering the Sammamish River to the southeast. HWA also reportedly conducted a passive soil gas survey (HWA, 2016) in which a concentrated area of PCE was detected in the vicinity of RMW-12. The results suggested that there was potentially a source located near RMW-12.

HWA conducted a reconnaissance groundwater sampling study in 2017 to delineate the extent of the Ultra Custom Cleaners (an up-gradient cleanup site) HVOC groundwater plume (HWA, 2017a). One of the goals of the study was to determine if the Ultra Custom Cleaners site was a potential source for HVOC groundwater contamination on the Riverside HVOC Site. Ten borings were reportedly advanced to depths ranging between 40 and 45.5 feet bgs. Groundwater samples were collected from shallow (1-20 feet bgs), intermediate (18-34 feet bgs), and deep (35-45 feet bgs) intervals from each boring. Results indicated that the Ultra Custom Cleaners groundwater HVOC plume extended further southeast than expected, but concluded that it was unlikely to be the source of the HVOC groundwater contamination on the Riverside HVOC Site. The RI concluded that due to the absence of HVOCs detected above their respective cleanup levels in unsaturated soils, that there were no contaminants of concern (COCs) for Riverside HVOC Site soils.

However, the RI report confirmed the presence of PCE, TCE, (cis) 1,2-DCE, and vinyl chloride as COCs in groundwater, and stated that the "impacts are being addressed by the on-going second interim action (pump and treat)". While not explicitly explained in the text, the groundwater analytical tables listed Riverside HVOC Site specific cleanup levels for the groundwater COCs. The cleanup levels used were 0.69 parts per billion (ppb) for PCE, 2.5 ppb for TCE, 16 ppb for (cis) 1,2-DCE, and 0.2 ppb for vinyl chloride.

HWA completed a Draft Feasibility Study Report (dFS) for the Riverside HVOC Site dated February 7, 2018 (HWA, 2018a). The report outlined the primary source of contamination as a "small release of PCE to the ground somewhere at the north (upgradient) end of the Riverside HVOC area". The report stated that the primary exposure route was HVOC contaminated groundwater migrating into the Sammamish River (surface water), where pathways included dermal contact and ingestion of water or ingestion of aquatic

species by both human (recreational users) and ecological (aquatic species) receptors. Soil was not considered as a potential exposure pathway due to the absence of any soils detected above applicable cleanup levels and vapor was not considered due to the absence of present or planned buildings in the area.

According to the dFS report, due to the proximity of the HVOC contaminated groundwater to the Sammamish River, surface water cleanup levels were proposed by HWA. The dFS report also noted that the surface water MTCA Method B cleanup level for human health of 0.69 ppb was listed for PCE, per the U.S. EPA Clean Water Act §304 Federal Ambient Water Quality Criteria applicable or relevant and appropriate requirements (ARARs). For TCE, the surface water MTCA Method B cleanup level for human health – fresh water of 2.5 ppb was listed, also per the U.S. EPA Clean Water Act §304 Federal Ambient Water Quality Criteria ARARs. The groundwater MTCA Method B non-carcinogen cleanup level of 16 ppb was listed for (cis) 1,2-DCE. For vinyl chloride, HWA selected 0.2 ppb as the cleanup level due to the value being the "practical quantitation limit / reporting limits achievable by local accredited labs".

The dFS report also evaluated several remedial alternatives. In-situ groundwater treatment technologies evaluated included chemical oxidation, chemical reduction, bioremediation, air sparging, and soil vapor extraction. Pump and treat alternatives were also considered with various treatment methods including carbon adsorption, air stripping, and discharge to sanitary sewer, and the concepts of recirculating extracted groundwater versus discharge were also considered. Permeable reactive barriers were considered as was monitored natural attenuation. Ultimately, HWA determined that the recommended remedial alternative was to pump and treat groundwater with discharge to sanitary sewer. The proposed final cleanup action would be to continue the interim action which began in 2014.

Additional Soil and Groundwater Sampling – HWA November 9, 2018

Following the RI and Draft FS, HWA completed an *Additional Soil and Groundwater Sampling* report dated November 9, 2018 (HWA, 2018b). In October of 2018, HWA advanced eight borings on the Riverside HVOC Site for collection of soil and groundwater samples. Each boring location was also surveyed so that groundwater elevation could be calculated, and hydraulic control of the groundwater treatment system could be assessed across the Site.

At boring location RB-25, PCE and TCE were detected in a soil sample collected at 13 feet bgs at concentrations (0.46 ppm and 0.052 ppm, respectively) above their MTCA Method A cleanup levels (0.05 ppm and 0.03 ppm, respectively). The sample was reportedly collected in unsaturated soils which were identified as "fill material". Temporary groundwater samples collected from the boring locations reported relatively high concentrations of HVOCs in groundwater with PCE detections ranging between 200 ppb to

0.56 ppb. The PCE groundwater cleanup level proposed by HWA in this report was 0.69 ppb and the proposed TCE groundwater cleanup level was 2.5 ppb.

The highest concentration of PCE in groundwater was collected from RB-25 (where soil exceedances were noted) with a reported concentration of 200 ppb. Elevated concentrations of PCE in groundwater were also noted at RB-32 (110 ppb) and the highest concentration of vinyl chloride was reported at RB-31 (13 ppb) both located just down gradient (southeast) of EW-2. Groundwater results are included in Table 2. Boring locations were surveyed, and a groundwater gradient was calculated to flow generally to the southeast. The water elevation survey also noted groundwater drawdown around the extraction wells EW-1 through EW-4, and EW-6. The report stated that this suggested that "from somewhere east of EW-1 to RMW-6 (west of EW-4), which encompasses the east-west extents of the HVOC plume is effectively captured by pumping wells."

Interim Action Report – Kane Environmental December 31, 2019

Kane Environmental completed an *Interim Action Report* for the Site dated December 31, 2019. The report reviewed additional historical information regarding potential source areas on the Site, summarized soil and groundwater data, responded to Ecology comments, and evaluated the effectiveness of the pump and treat system operating on the Site.

The report stated that a structure was constructed on the eastern end of Riverside HVOC Site in 1944 for use as a machine shop, pump repair, and "fixit" shop, and operated through at least 1960. The report concluded that the former machine shop located on the Riverside HVOC Site represented a potential source for the HVOC contamination in both soil and groundwater at the Site.

Groundwater samples were also collected from all monitoring wells and operational extraction wells located on the Site. Detectable concentrations of PCE ranged from 16 ppb to 0.51 ppb, detectable concentrations of TCE ranged between 4.7 ppb and 0.39 ppb, detectable concentrations of (cis) 1,2-DCE ranged between 33 ppb to 0.22 ppb, and detectable concentrations of vinyl chloride ranged between 27 ppb and 0.57 ppb. Based on these results, and after a review of historical groundwater results for the Site, the report determined that the pump and treat system on the Site was "not an effective remedial strategy to consider moving forward". Kane Environmental recommended evaluating other remedial strategies in a Supplemental FS

The report also evaluated the cleanup levels proposed for Site groundwater in the 2018 dFS following comments from Ecology. The report concluded that several updates to federal and state Applicable or Relevant and Appropriate Requirements (ARARs) had not been considered by the 2018 dFS, and therefore

the cleanup levels proposed were not valid. Kane Environmental recommended revaluating the federal and state ARARs in a Supplemental FS.

1.3 Regulatory Framework

The Riverside HVOC Site is currently listed in Ecology's database as Facility Number 93061 and CSID # 14970. The Site is currently listed as Agreed Order site DE 16541. However, a new Agreed Order will be completed for the Site following the completion of the CAP.

2.0 SITE DESCRIPTION

2.1 Site History

The City acquired a two-acre property (historical Riverside property) in 1990 which included King County Assessor tax parcels 082605-9120, 082605-0284, and 082605-0031. Following the relocation of SR 522, the area was re-parceled. The Site is located on the eastern portion of parcel 082605-9120 which is currently utilized as a vacant gravel parking lot and City of Bothell park.

Based on the available information, a structure was constructed on the eastern end of Riverside HVOC Site in 1944 for use as a machine shop, pump repair, and "fixit" shop, and operated through at least 1960. Due to the operations conducted during that time period, it is possible that halogenated solvents were used on the Riverside HVOC Site and over time, releases may have occurred, adversely impacting the subsurface. The historical presence of a machine shop on the Riverside HVOC Site represents a potential source for the HVOC contamination in both soil and groundwater at the Riverside HVOC Site (Kane Environmental, 2019).

2.2 Human Health and Environmental Concerns

The Supplemental RI/FS identified exposure pathways of contaminants of concern (COCs) at the Site. Based on the nature and the extent of contamination, the likely greatest potential risks to human receptors are dermal contact of soil and/or groundwater to construction workers during soil-disturbing activities and dermal contact of surface water to recreational users. Another most likely exposure risk is inhalation of vapors during soil-disturbing activities or by commercial workers and/or residents.

These risks can be mitigated under a cleanup action that either removes the contaminants to levels that are protective to receptors which is preferred by the MTCA, or that places institutional or engineering controls to prevent exposure, following MTCA requirements.

Based on the nature and extent of contamination, the likely greatest potential risk to ecological receptors include incidental soil ingestion and dermal contact, as well as ingestion and direct contact with

groundwater and surface water. Based on the exposure pathways analysis, the land use on the Site and the surrounding area make wildlife exposure possible, so a Simplified Terrestrial Ecological Evaluation (TEE) was completed for the Riverside HVOC Site. Based on the results of the Simplified TEE, the Riverside HVOC Site does not require a site-specific ecological evaluation.

See Figures 4 and 5 for the human health and ecological exposure Conceptual Site Models.

2.3 Cleanup Standards

The COCs in soil and groundwater for Riverside HVOC are described below.

The selected cleanup levels for the identified Contaminants of Concern in soil are as follows:

MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses (WAC 173-340-900, Table 740-1) and MTCA Method B (WAC 173-340-900, Equations 740-1 and 740-2):

- PCE 0.05 mg/kg
- TCE 0.03 mg/kg
- (cis) 1,2-DCE 160 mg/kg (Method B)
- VC 0.67 mg/kg (Method B)

Due to the proximity of the Site to the Sammamish River, the groundwater cleanup levels selected for Site COCs are protective of surface water, where applicable. The selected cleanup levels for the identified Constituents of Concern in groundwater are as follows:

MTCA Cleanup Levels for Groundwater based on Surface Water Standards– Human Health Fresh Water (WAC 173-201A) and MTCA Method B Noncancer (WAC 173-340-900, Equation 720-1):

- PCE 4.9 ug/L
- TCE 0.38 ug/L
- (cis) 1,2-DCE 16 ug/L (Method B, no surface water cleanup level)
- VC 0.02 ug/L

The points of compliance are the locations at which cleanup levels for the Contaminants of Concern (COCs) must be attained to meet the requirements of MTCA and support issuance of an NFA determination for the

Site. In accordance with WAC 173-340-740(6), the point of compliance for soil is all vadose zone soil within the boundaries of the Site. In accordance with WAC 173-340-720(8), the point of compliance for groundwater is all groundwater within the boundaries of the Site. The point of compliance for saturated soils is all groundwater within the boundaries of the site.

3.0 DESCRIPTION OF SELECTED REMEDY

3.1 General Description of the Cleanup Action

Based on the results of the Supplemental Remedial Investigation and Feasibility Study conducted under MTCA (Kane Environmental, 2022) and the application of the selection of remedy criteria, the Preferred Alternative is Alternative 5 (Bioremediation with Carbstrate© and Groundwater Recirculation Combined with Soil Vapor Extraction), developed in accordance with WAC 173-340-350 through 173-340-390. Alternative 5 will be implemented as the primary alternative for source control and plume remediation. Alternative 5 was chosen because it is an active remedial action by 24/7 dosing of remediation product through injection wells directly into the groundwater, resulting in reduction of COC concentrations within months of project startup. Furthermore, the active groundwater recirculation system will maintain hydraulic control of the existing contaminant plume within its current extent, while over time reducing its size through active bioremediation.

3.2 Bioremediation with Carbstrate© and Groundwater Recirculation Combined with Soil Vapor Extraction

This alternative combines SVE with bioremediation to effectively remediate HVOC contamination in soil and groundwater.

The Site currently contains an interim action groundwater pump and treat system where groundwater is pumped from several extraction wells and discharged to sanitary sewer. During the implementation of the preferred remedial action, infrastructure associated with this system will either be decommissioned or retrofitted for use in the preferred remedial action described below.

3.2.1 Soil Vapor Extraction

Soil vapor extraction (SVE) is the process of removing contaminants from the soil in the vapor phase, by applying a vacuum to the subsurface. This is done through the use of a series of wells which are placed throughout the area of contamination and screened in unsaturated soils (vadose zone) above the groundwater table. The SVE system will specifically target the vadose zone soil contamination in the northern portion of the Site.

SVE wells will be installed to depths of approximately 15 feet bgs throughout the northern portion of the Site. Screened intervals will vary depending on subsurface conditions. Proposed locations of SVE wells associated with this alternative are shown in Figure 6. Well spacings for an SVE system are typically 15-25 feet for the subsurface conditions found at the Site. Any investigation derived waste (IDW) generated during the installation of the SVE wells will be contained in 55-gallon steel drums and disposed of off-Site at an appropriate licensed disposal facility.

The SVE wells are connected via subsurface conveyance lines to an air blower, which draws a vacuum. With the reduced pressure, air begins to move through the subsurface drawing out the contaminant vapors. Based on the known concentrations of COCs in soil and groundwater, the withdrawn air will not require an air discharge permit. The vapors are run through a remediation system, and then discharged into the atmosphere under state and local permit requirements. The process of soil vapor extraction is enhanced when the surface is covered by a cap of asphalt and/or concrete, minimizing the amount of ambient air drawn into the system. Due to the elevation change in the northern portion of the Site and its current use as a gravel parking lot, installation of a concrete or asphalt cap may be infeasible. The SVE system including the blower, air treatment, and discharge, will be located near or within the remedial enclosure currently located on the Site.

The SVE system will be monitored throughout operation. Periodically, influent vapor samples will be collected from the SVE combined extraction inlet. Samples will be collected using a photoionization detector (PID) or using tedlar bags for laboratory analysis. Performance air sampling will be conducted on a monthly basis until concentrations have achieved asymptotic conditions. Once air concentrations have stabilized, confirmation soil sampling will be conducted on the Site using a drill rig. Detailed engineering specifications will be provided in the Engineering Design Report.

The estimated restoration timeframe for the SVE component of this alternative is two to three years.

3.2.2 Bioremediation with Carbstrate© and Groundwater Recirculation

Groundwater treatment will be accomplished through bioremediation with Carbstrate© or similar bioremediation product, and groundwater recirculation. This alternative involves the pumping of groundwater from existing and new extraction wells at the Site, treatment of this water with a bioremediation product, and reinjection of this treated groundwater into the Site subsurface via injection wells. This method will also serve as the treatment of saturated soils which extend down to a depth of approximately 30 feet bgs. Proposed well locations associated with this alternative are shown in Figure 6.

Extracted groundwater pumped from the extraction wells will be amended with a bioremediation product, Carbstrate©, or similar bioremediation product, a nutrient-amended electron donor substrate, pH adjusted

if necessary, and then re-injected into the aquifer through vertical injection wells, to stimulate anaerobic bioremediation of PCE and its' breakdown products. Figure 6 depicts a simplified injection path from the proposed injection wells, along with the approximate capture radius of the proposed extraction wells.

Injection and extraction wells will need to be placed at different depths, and over a large area to cover the entire plume. The proposed bioremediation and groundwater recirculation well network will consist of approximately nine total injection wells and four total extraction wells. Of the nine injection wells, six will be newly installed, two will be former extraction wells (EW-3 and EW-1) converted into injection wells, and one will be the former monitoring well RMW-14, converted into an injection well. Of the four extraction wells, two will be newly installed in the area to the southeast of current extraction wells EW-5 and EW-6 (which will be repurposed as monitoring wells), and two will be the existing extraction wells EW-2 and EW-4. All new and existing injection and extraction wells will be 4-inch diameter PVC wells, variously screened between 10 and 35 feet bgs. Any IDW generated during the installation of the injection or extraction wells will be contained in 55-gallon steel drums and disposed of off-Site at an appropriate licensed disposal facility.

The groundwater recirculation system will be operated using aboveground equipment housed either in the current remediation enclosure located on Site or a separate secure weatherproof enclosure. Equipment contained within this enclosure will include: a 200-gallon poly tank to contain the concentrated Substrate injection solution ("solution tank"); an air compressor; a programmable logic controller (PLC) system; and injection and extraction manifolds, with their respective pressure gauges, ball valves, flow meters and sampling ports. In addition, two 500-gallon polyethylene tanks to hold the extracted groundwater ("holding tanks") and a 150-gallon activated carbon drum will be located immediately outside the enclosure. Groundwater extracted through the extraction wells will be pumped through underground conveyance lines to the pre-treatment holding tank. The pre-treatment holding tank will contain a high/high, high, and low float for logic control. A transfer pump will pump the groundwater from the pre-treatment tank through a GAC vessel, and into the post-treatment holding tank (also containing three floats for logic control). The in-situ delivery (ISD) system will pull treated groundwater from the post-treatment holding tank, and amend it automatically using a metering peristaltic pump connected to a small substrate solution/mixing tank located inside the remediation enclosure. The concentrated substrate solution will be metered into the injection header at a specified rate when the system is in the injection mode. The ISD system will inject the groundwater containing the substrate to the desired injection wells via subsurface conveyance lines, based on set times and rates dictated by the operator. The proposed injection schedule, and the performance and confirmation monitoring plans will be included in the Engineering Design Report. Weekly visits to the Site to monitor flow rates, pump operation, and add substrate material to the solution tank will be required.

Prior to activation of the bioremediation and groundwater recirculation system, the quantification of Dehalococcoides, the only known bacterial group capable of complete reductive dechlorination of PCE to ethene, will be conducted. This is an important component of assessment, remedy selection, and performance monitoring at sites impacted by chlorinated solvents. Kane Environmental proposes to sample up to 5 wells using the QuantArray®-Chlor prepared by Microbial Insights of Knoxville, Tennessee. Quantifying Dehalococcoides will determine the amount of Carbstrate© product needed, instead of applying the same amount of product in each cell, resulting in a focused and cost-savings approach to our remedial strategy. Other not currently known bacteria may also be found at the Site from these analyses, which will assist in the remediation design.

Due to the public nature of the Site, security fencing will need to be erected around the remedial enclosure(s) and associated above ground poly tanks to be installed on the Site. This will prevent damage to equipment and limit public exposure to any materials contained within.

In order to monitor the progress of the bioremediation and groundwater recirculation system, groundwater samples will be collected from Site monitoring wells on a quarterly basis and analyzed for Site COCs and additional chemical parameters. Quarterly performance monitoring will be conducted at the Site for one year, after which, bi-annual performance monitoring will be conducted for the remainder of the system operation. Bi-annual Performance monitoring will be conducted until the Site-specific cleanup levels have been achieved for all Site COCs. After the completion of performance monitoring, two years of quarterly groundwater compliance monitoring will be conducted. Once groundwater compliance has been achieved, and with the concurrence of Ecology, Site groundwater monitoring wells, and injection and extraction wells, will then be decommissioned. The performance and compliance groundwater monitoring plan will be included in the Engineering Design Report.

The estimated restoration timeframe for the bioremediation and groundwater recirculation component of this alternative is five years.

3.3 Post-Remediation

The Bioremediation with Carbstrate© or similar bioremediation product, and Groundwater Recirculation Combined with Soil Vapor Extraction is expected to attain MTCA cleanup levels for Site COCs in soil and groundwater within approximately five years. If areas of the Site are not in compliance with cleanup levels despite remediation efforts in the CAP, engineering and/or institutional controls (environmental covenant) in order to be protective, may be added to compliance groundwater monitoring. This alternative is protective of human health and the environment, considers public concerns through a public comment period, complies with applicable state and federal laws, includes performance and compliance monitoring, provides a

permanent solution to the maximum extent practicable at the Site within a reasonable timeframe, and was evaluated using disproportionate cost analysis.

3.4 Permitting

The installation of the SVE and bioremediation and groundwater recirculation systems will be properly permitted through the appropriate regulatory agencies. The Site already receives electrical service for the interim action pump and treat system currently located on the Site. Any alterations to this service to facilitate implementation of the SVE and groundwater bioremediation and recirculation system will be properly permitted. In addition, UIC registration and approval from the Washington State Department of Ecology will be required to re-inject extracted and treated groundwater containing Carbstrate®.

3.5 System Performance Criteria and Performance Monitoring

During the operation of the SVE system, air samples will periodically be collected and analyzed for:

- Halogenated volatile organic compounds (HVOCs) by EPA Method TO15;

For baseline and bioremediation and groundwater recirculation system performance monitoring data, groundwater samples will be collected from the Site monitoring wells and analyzed for the following:

- HVOCs by EPA Method 8260;
- Ammonia-nitrogen by EPA Method 350.1;
- Sulfate-sulfur (EPA 375.4 MOD).
- Methane/ethene/ethane
- Total organic carbon (TOC).
- Dissolved iron and chloride

In addition, groundwater quality parameters including temperature, conductivity, oxidation reduction potential (ORP), dissolved oxygen (DO) and pH should be taken during sampling events.

4.0 HEALTH AND SAFETY PLAN

A Site-Specific Health and Safety Plan (HASP) will be followed when performing field activities. The HASP will comply with the requirements of Title 29 of the Code of Federal Regulations, Part 1910 (20 CFR 1910), collectively referred to as "Hazardous Waste Operations and Emergency Response (HAZWOPER)". The HASP identifies physical, industrial, chemical and biological hazards, establishes hazard monitoring action levels, specifies the required Personal Protective Equipment (PPE), and includes a map showing the route to the nearest hospital with an emergency medical facility. The HASP will be in the Engineering Design Report. A copy of the HASP will be maintained at the work area, and all visitors will be provided a health and safety briefing prior to commencing with their activities.

5.0 APPLICABLE, RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS)

Potential ARARs were identified for each medium of potential concern. The primary ARARs relating to the cleanup action include:

- Cleanup Regulations, WAC 173-340;
- Clean Water Act, 33 U.S.C. §1251 et seq.;
- Dangerous Waste Regulations, WAC 173-303;
- Clean Air Act (42 USC 7401);
- Safe Drinking Water regulations, 40 CFR 141; and,
- Washington Underground Injection Control Program, WAC 173-218.

These primary ARARs are anticipated to be the most applicable to the cleanup action because they provide the framework for the cleanup action, including applicable and relevant regulatory guidelines, cleanup standards, waste disposal criteria, references for additional ARARs, and standards for documentation of the cleanup action.

Other applicable ARARs and guidance documents for cleanup of the Site may include:

- Washington Clean Air Act and Implementing Regulations, (RCW 70.94); WAC 173-400; WAC 173-460; WAC 173-490; WAC 173-340-750;
- Occupational Safety and Health Act, Part 1910 of Title 29 of the Code of Federal Regulations (29 USC 653, 655, 657 and WAC 296-62;
- Safety Standards for Construction Work, WAC 296-155; and Washington Industrial Safety & Health Act (RCW 49.17);
- Resource Conservation and Recovery Act (42 USC 6921-6949a: 40 CFR Part 268, Subtitles C and D);
- Solid Waste Disposal Act (42 USC Sec. 325103259, 6901-6991;40 CFR 257,258) and Federal Land Disposal Requirements (40 CFR part 268);
- Solid Waste Management, Reduction and Recycling, RCW 70.95;
- Minimum Functional Standards for Solid Waste Handling, WAC 173-304;
- Criteria for Municipal Solid Waste Landfills, WAC 173-350 and 173-351;
- Minimum Standards for Construction and Maintenance of Wells, WAC 173-160;

- Accreditation of Environmental Laboratories, WAC 173-50;
- National Recommended Water Quality Standards (40 CFR 131)
- Regulation and Licensing of Well Contractors and Operators (WAC 173-162);
- Drinking Water Standards – State MCLs (WAC 246-290-310);
- Washington State Maximum Contaminant Levels (WAC 246-290-310), and
- SEPA Rules (RCW 43.21C, WAC 197-11);
- Exemption from Substantial Development Permit (City of Bothell), and
- Right of Way Permit (City of Bothell).

6.0 RESTORATION TIMEFRAME

The SVE and bioremediation and groundwater recirculation system components of the remedial action will be conducted simultaneously. Performance air sampling and groundwater monitoring will be conducted during the remedial action activity. Compliance soil sampling will be conducted following the completion of the SVE portion of the remedial activity and compliance groundwater monitoring will be conducted after completion of the performance groundwater monitoring. The estimated timeframe for the SVE portion of the remedial action is two to three years. The estimated timeframe for the bioremediation and groundwater recirculation system portion of the remedial action is five years.

7.0 PERFORMANCE AND COMPLIANCE MONITORING

Performance air sampling and groundwater monitoring will be conducted during the remedial action activity. Confirmation soil sampling will be conducted following the conclusion of the SVE portion of the remedial action and confirmation groundwater sampling will be conducted following the conclusion of the bioremediation and groundwater recirculation portion of the remedial action.

During the SVE system operation, influent vapor samples will be collected from the SVE combined extraction inlet prior to treatment. Samples will be collected using a photoionization detector (PID) or using tedlar bags for laboratory analysis. Performance air sampling will be conducted on a monthly basis until concentrations have stabilized to asymptotic conditions. Once vapor concentrations have reached the asymptotic lower limit, confirmation soil sampling will be conducted within the area of the SVE system. Soil borings will be advanced using a direct push drill rig and vadose zone soils samples will be collected for analysis to confirm that HVOC concentrations have been reduced to concentrations below their cleanup levels in Site vadose zone soils.

Quarterly groundwater performance monitoring will be conducted in Site wells during the first year of operation of the bioremediation and groundwater recirculation system. After the first year of quarterly groundwater performance monitoring, bi-annual groundwater performance monitoring will be conducted for the remainder of the system operation. Groundwater samples will be analyzed for Site COCs as well as analytes used to monitor Site groundwater conditions and asses the progress of the anaerobic breakdown. Once performance groundwater samples indicate that concentrations of Site COCs have decreased to below their Site-specific cleanup levels, groundwater compliance monitoring will be conducted quarterly for two years. If Site COCs remain in groundwater at concentrations greater than Site-specific cleanup levels following two years of compliance groundwater sampling, a contingency for one additional year of quarterly sampling will be introduced. If Site COC groundwater cleanup levels have still not been achieved after the one additional year of compliance monitoring, an environmental covenant be placed on the Site which will include a compliance sampling event every five years for periodic review for the duration of the environmental covenant.

The results of the remedial action and subsequent compliance monitoring will be documented in a Site Cleanup Action Report, which will be submitted to Ecology.

8.0 SCHEDULE FOR REMEDIATION SYSTEMS IMPLEMENTATION

The proposed schedule is provided in Table 1 below:

Table 1
Site Schedule of Work and Deliverables

	Deliverables	Due (Calendar Days)
	A. Administrative	
A.1	Effective Date	Date Agreed Order is signed by Ecology
A.2	Progress Reports	Quarterly on the 10th of the month beginning after the Effective Date
	B. Design	
B.1	Draft Pre-Remedial Design Investigation (PRDI) Project Plans [1]	Within 60 days of the Effective Date
B.2	Draft PRDI Data Report and Draft Engineering Design Report (EDR) [2]	Within 90 days of Ecology approval of Final PRDI Project Plans
B.3	Final PRDI Data Report and EDR Report	Within 30 days of receipt of Ecology's final comments on the Draft PRDI Data and EDR Reports[3]
B.4	90 % Plans and Specs [per WAC 173-340-400(4)(b)]	Within 30 days of receipt of Ecology final comments on Final EDR Report
B.5	100 % Plans and Specs	Within 15 days of receipt of Ecology final comments on 90% plans and specifications
	C. System Construction and Operation	
C.1	Phase 1 Remedial Action Construction: Install and begin operation of Soil Vapor Extraction and Initial Phase of Bioremediation/Groundwater Recirculation System	Within 180 days following receipt of Ecology final comments on 90% plans and specifications
C.2	Install compliance monitoring well network	Within 180 days following receipt of Ecology final comments on 90% plans and specifications
C.3	Phase 1 Construction Summary and As-Built Drawings	90 days following Phase 1 Construction
C.4	Contingent Phase 2 Remedial Action Construction	Contingent on results of evaluation[5] of Phase 1 compliance, performance, and confirmation sampling. If Phase 2 is determined to be necessary, initiate within 120 days following evaluation of Phase 1 to proceed.
C.5	Cleanup Action Report and As-Built Drawings and Report; Draft Environmental Covenant(s); and an updated Title Report	Within 120 days of Construction Completion[4]

D. Post Construction Work		
D.1	Final Environmental Covenant(s)	Within 30 days of receipt of Ecology comments on the Draft Environmental Covenant.
D.2	Record Final Environmental Covenant(s) with King County Auditor	Within 15 days after Ecology's signature as grantee of the Final Environmental Covenant
D.3	<u>Performance Groundwater Monitoring</u> Quarterly Performance Monitoring Biannual Performance Monitoring	 Quarterly performance groundwater monitoring for one year starting Fall 2023 After completing one year of quarterly performance groundwater monitoring, biannual performance groundwater monitoring until groundwater meets applicable cleanup levels in CAP
D.4	Decommission Soil Vapor Extraction and Bioremediation/Groundwater Recirculation system	Upon attainment of cleanup levels in performance groundwater monitoring wells
D.5	<u>Groundwater Confirmation Monitoring</u> Quarterly Compliance Monitoring	 Quarterly for two years following completion of performance monitoring.
D.6	Five Year Compliance Monitoring and Periodic Review reports	To follow Groundwater compliance monitoring (D.5). Groundwater monitoring required once every five years for the duration of the institutional controls on groundwater (if present) under the environmental covenant.

1) *Project Plans include the following: Work Plan, Sampling and Analysis Plan, Quality Assurance Project Plan, and Health and Safety Plan, to be submitted for Ecology review and approval. All plans will include a schedule for implementation as applicable.*

2) *The Engineering Design Report includes: Construction Quality Assurance Project Plan, Compliance Monitoring and Contingency Response Plan, Proposed Best Management Practices, Water Quality Monitoring Plan, and Substantive Requirements of Procedurally Exempt Permits. Ecology will not approve the Final EDR until the required permits have been obtained.*

3) *Note: Assume 30-days for each round of Ecology comments for draft and final documents*

4) *Construction completion is defined as: completion of Phase 1 construction and compliance, performance, and confirmation sampling and evaluation or completion of contingency Phase 2 construction, if Phase 2 is determined to be necessary.*

5) *Timing of the Phase 1 Evaluation will be determined and presented in the EDR.*

A groundwater compliance sampling contingency, which would extend the groundwater compliance monitoring for one year, will be started at the end of the proposed compliance monitoring if Site COC groundwater cleanup levels have not been reached. After the one additional year, if Site COC groundwater cleanup levels have still not been reached, an environmental covenant will include a compliance sampling event every five years for periodic review for the duration of the environmental covenant.

9.0 INSTITUTIONAL/ENGINEERING CONTROLS

If COCs remain in Site soil or groundwater after cleanup, or any of the other criteria for triggering an institutional control under WAC 173-340-440 are met, institutional controls may be implemented, which may include an environmental covenant. Vapor intrusion risks will be addressed by the active remediation of contaminated soil and groundwater at the site. Engineering controls, such as vapor barriers, or other vapor intrusion mitigation methods, will be implemented for development of new structures and included in the environmental covenant.

10.0 PUBLIC PARTICIPATION

This criterion considers whether the community has concerns regarding the alternative and, if so, the extent to which the alternative addresses those concerns. This process includes concerns from individuals, community groups, local governments, federal and state agencies, or any other organization that may have an interest in or knowledge of the Site. A Public Participation Plan and Fact Sheet for the 30-day comment period will be prepared for review for the amended Agreed Order as required under MTCA.

11.0 REFERENCES

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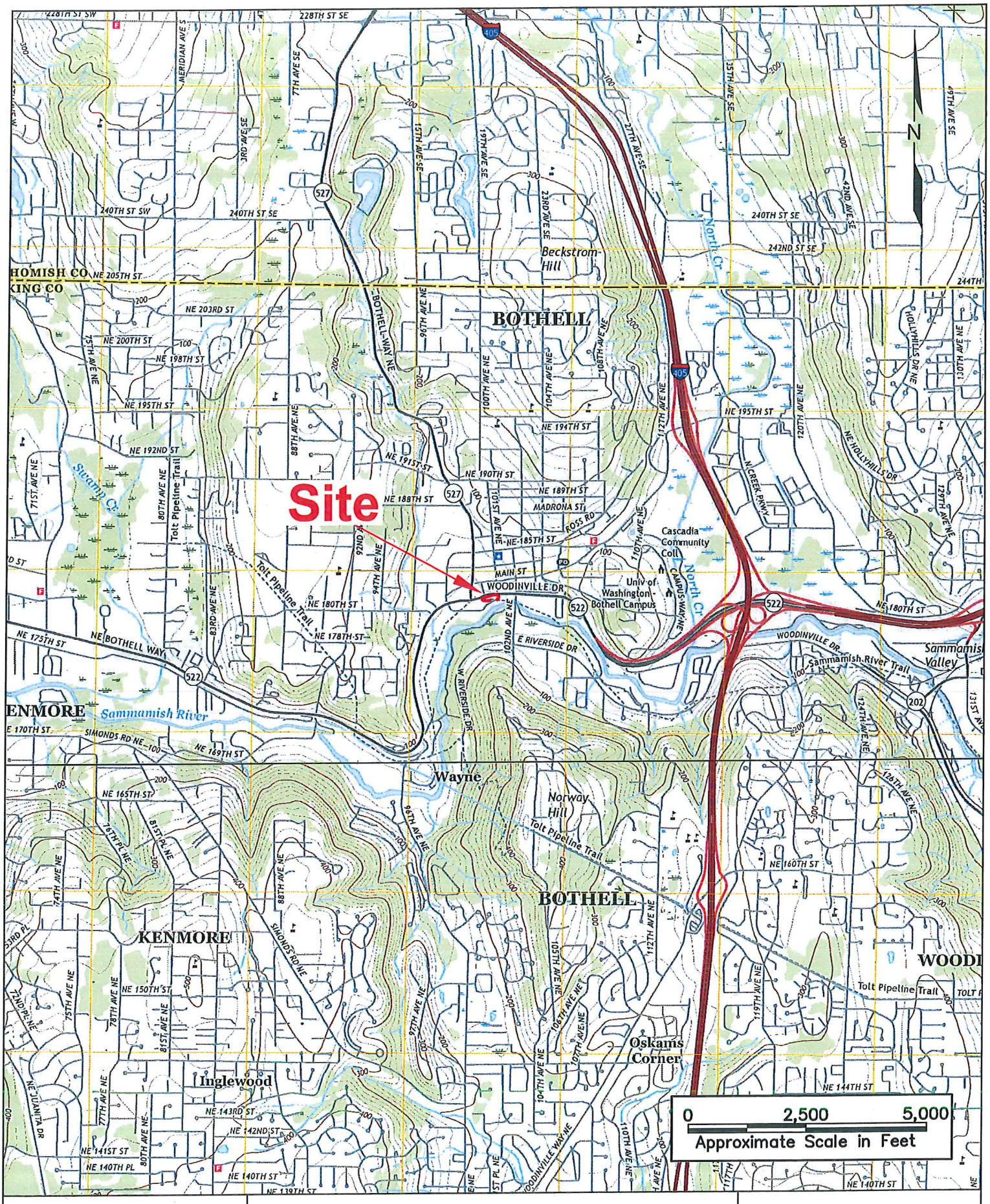
Figures



Cleanup Action Plan
Riverside HVOC Site
Bothell, Washington 98011

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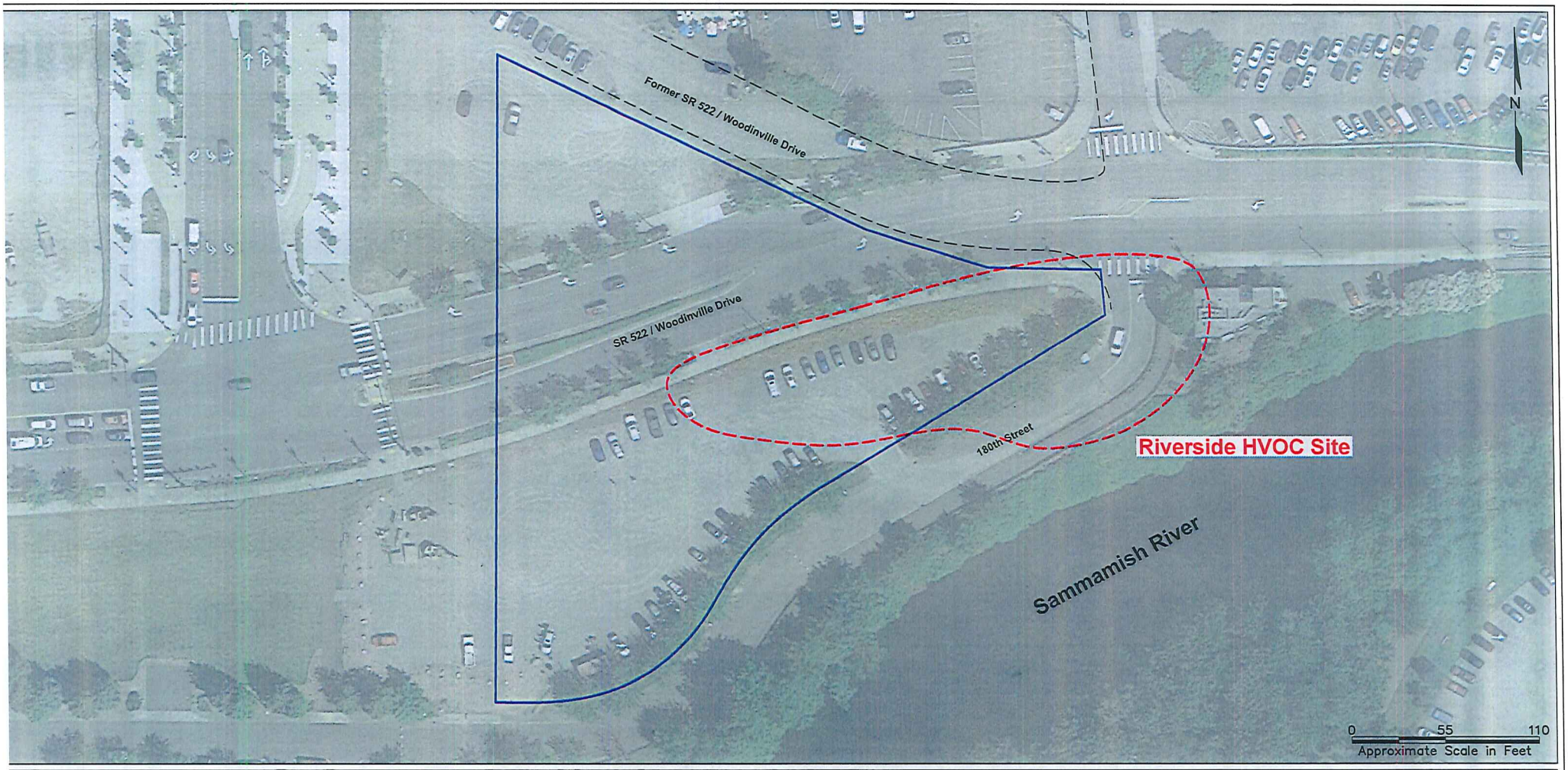
Figure 1
Vicinity Map



LEGEND

- Approximate location of historical Riverside property
- Approximate location of Riverside HVOC Site Boundary

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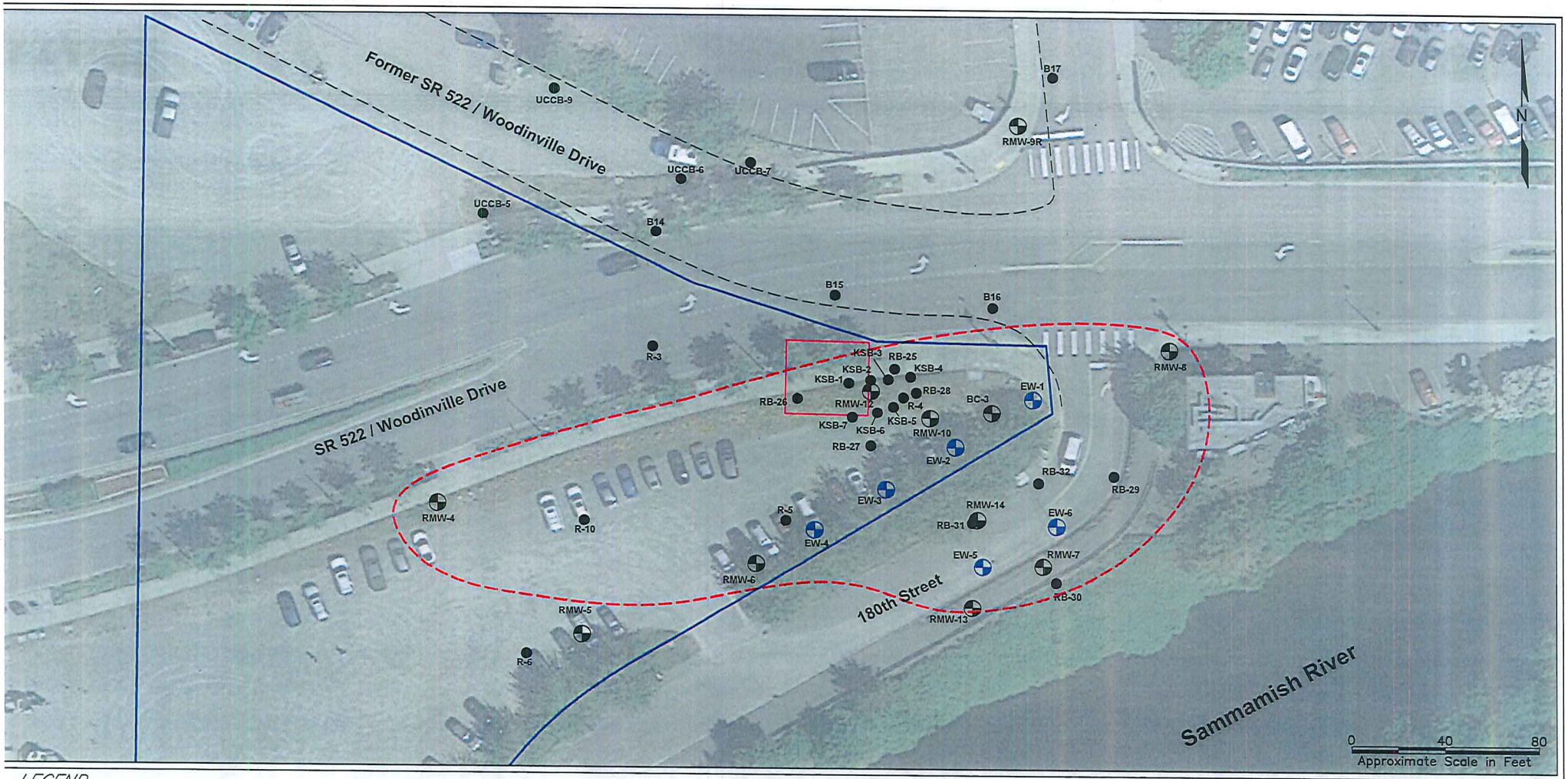
Cleanup Action Plan
Riverside HVOC Site
Bothell, Washington 98011

Figure 2
Area Site Plan



LEGEND

- Approximate location of monitoring well
- Approximate location of extraction well
- Approximate location of soil boring
- Approximate location of historical machine shop
- Approximate location of historical Riverside property
- Approximate location of Riverside HVOC Site Boundary

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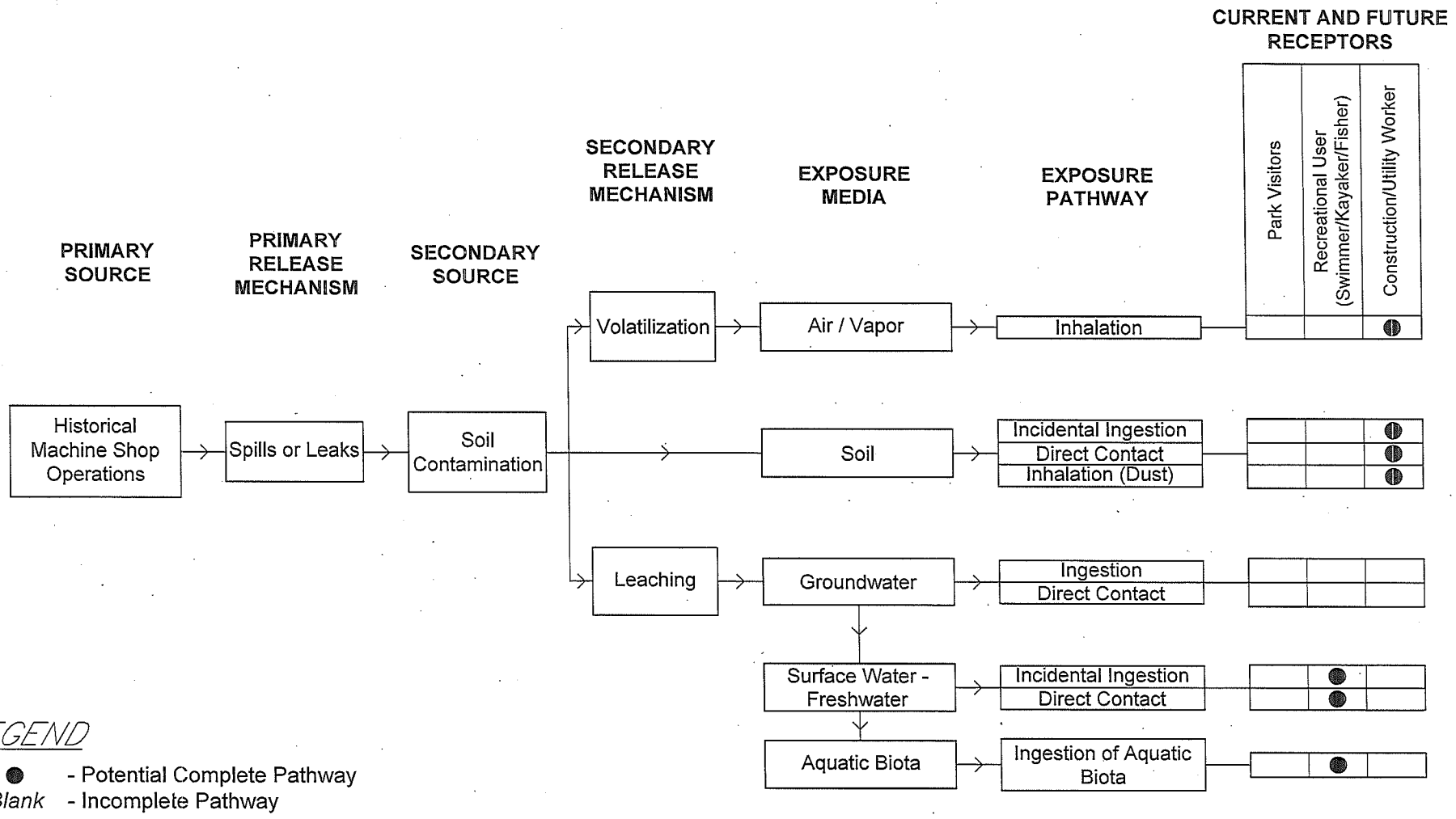
Cleanup Action Plan
Riverside HVOC Site
Bothell, Washington 98011

Figure 3
Site Plan



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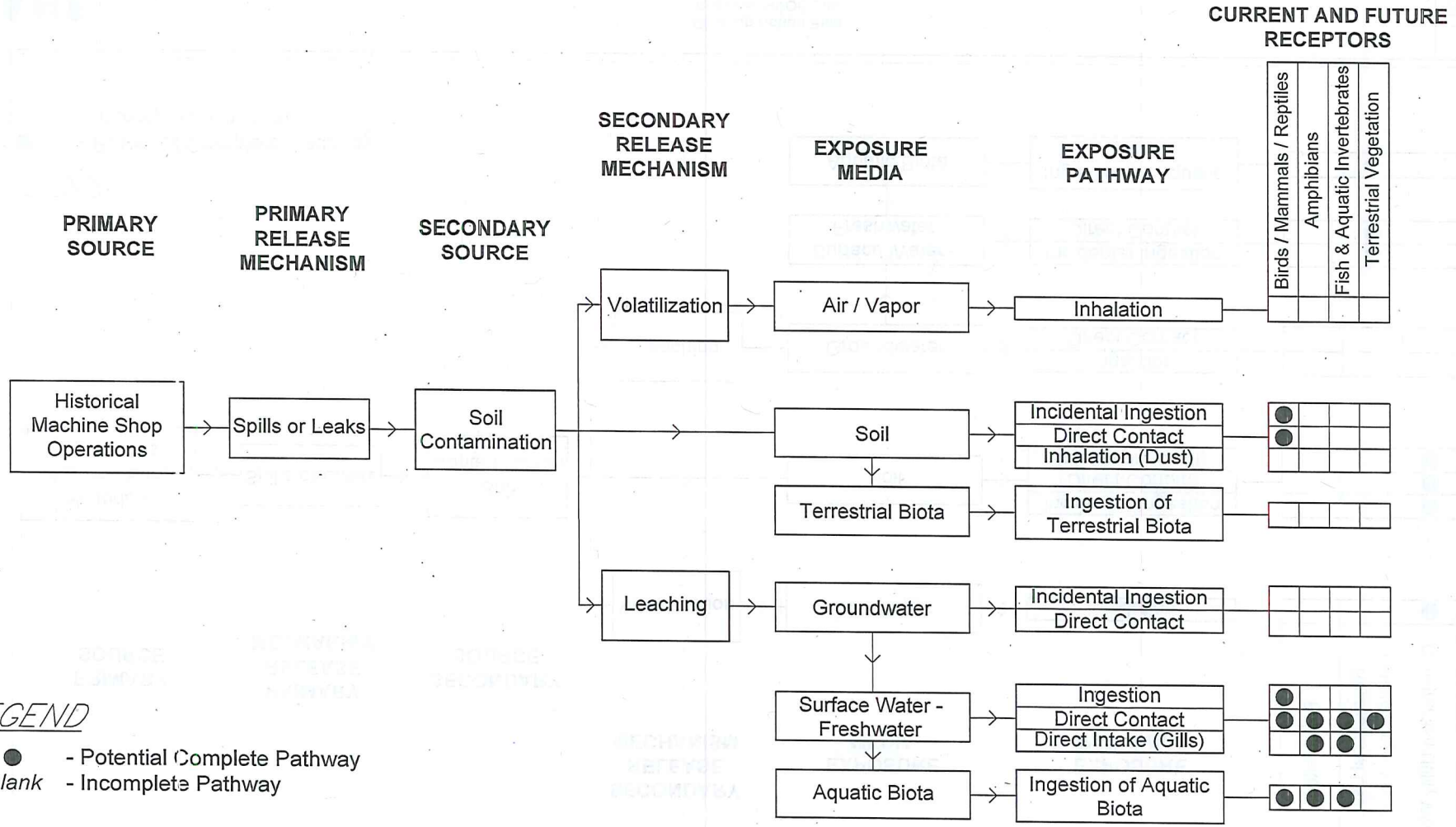
Cleanup Action Plan
Riverside HVOC Site
Bothell, Washington 98011

Figure 4
Conceptual Site Model
For Human Exposures



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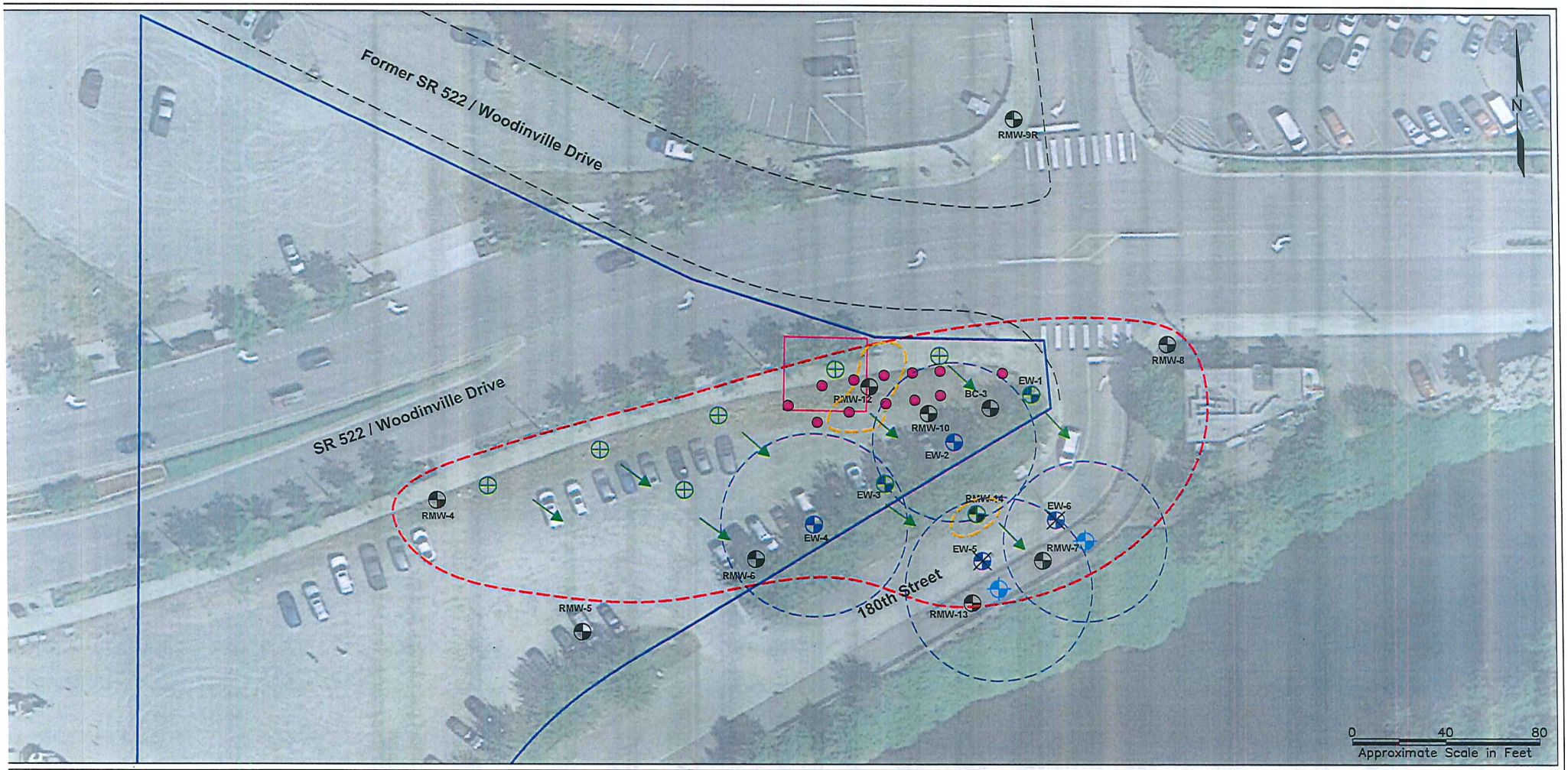
Cleanup Action Plan
Riverside HVOC Site
Bothell, Washington 98011

Figure 5
Conceptual Site Model
For Ecological
Exposures



LEGEND

- Approximate location of monitoring well
- Approximate location of extraction well
- Approximate location of historical machine shop
- Approximate location of historical Riverside property
- Approximate location of Riverside HVOC Site Boundary and approximate extent of groundwater containing HVOCs contaminants above Site-specific cleanup levels
- Approximate extent of soil containing HVOC contaminants at concentrations exceeding MTCA Method A/B Cleanup Levels
- Approximate location of new bioremediation injection well
- Approximate location of existing monitoring/extraction well to be converted to bioremediation injection well
- Approximate location of existing extraction well to be used as monitoring well
- Approximate location of new extraction well
- Approximate location of soil vapor extraction well
- Simulated groundwater injection product path
- Simulated groundwater extraction radius of influence

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Cleanup Action Plan
Riverside HVOC Site
Bothell, Washington 98011

Figure 6
Preferred Remedial Alternative

Exhibit C

Site Schedule of Work and Deliverables

	Deliverables	Due (Calendar Days)
	A. Administrative	
A.1	Effective Date	Date Agreed Order is signed by Ecology
A.2	Progress Reports	Quarterly on the 10th of the month beginning after the Effective Date
	B. Design	
B.1	Draft Pre-Remedial Design Investigation (PRDI) Project Plans [1]	Within 60 days of the Effective Date
B.2	Draft PRDI Data Report and Draft Engineering Design Report (EDR) [2]	Within 90 days of Ecology approval of Final PRDI Project Plans
B.3	Final PRDI Data Report and EDR Report	Within 30 days of receipt of Ecology's final comments on the Draft PRDI Data and EDR Reports[3]
B.4	90 % Plans and Specs [per WAC 173-340-400(4)(b)]	Within 30 days of receipt of Ecology final comments on Final EDR Report
B.5	100 % Plans and Specs	Within 15 days of receipt of Ecology final comments on 90 % plans and specifications
	C. System Construction and Operation	
C.1	Phase 1 Remedial Action Construction: Install and begin operation of Soil Vapor Extraction and Initial Phase of Bioremediation/Groundwater Recirculation System	Within 180 days following receipt of Ecology final comments on 90% plans and specifications
C.2	Install compliance monitoring well network	Within 180 days following receipt of Ecology final comments on 90% plans and specifications
C.3	Phase 1 Construction Summary and As-Built Drawings	90 days following Phase 1 Construction
C.4	Contingent Phase 2 Remedial Action Construction	Contingent on results of evaluation[5] of Phase 1 compliance, performance, and confirmation sampling. If Phase 2 is determined to be necessary, initiate within 120 days following evaluation of Phase 1 to proceed.
C.5	Cleanup Action Report and As-Built Drawings and Report; Draft Environmental Covenant(s); and an updated Title Report	Within 120 days of Construction Completion[4]

D. Post Construction Work		
D.1	Final Environmental Covenant(s)	Within 30 days of receipt of Ecology comments on the Draft Environmental Covenant.
D.2	Record Final Environmental Covenant(s) with King County Auditor	Within 15 days after Ecology's signature as grantee of the Final Environmental Covenant
D.3	<u>Performance Groundwater Monitoring</u> Quarterly Performance Monitoring Biannual Performance Monitoring	 Quarterly performance groundwater monitoring for one year starting activation of bioremediation/groundwater recirculation system After completing one year of quarterly performance groundwater monitoring, biannual performance groundwater monitoring until groundwater meets applicable cleanup levels in CAP
D.4	Decommission Soil Vapor Extraction and Bioremediation/Groundwater Recirculation system	Upon attainment of cleanup levels in performance groundwater monitoring wells
D.5	<u>Groundwater Confirmation Monitoring</u> Quarterly Compliance Monitoring	 Quarterly for two years following completion of performance monitoring.
D.6	Five Year Compliance Monitoring and Periodic Review reports.	To follow Groundwater compliance monitoring (D.5). Groundwater monitoring required once every five years for the duration of the institutional controls on groundwater (if present) under the environmental covenant.

1) *Project Plans include the following: Work Plan, Sampling and Analysis Plan, Quality Assurance Project Plan, and Health and Safety Plan, to be submitted for Ecology review and approval. All plans will include a schedule for implementation as applicable.*

2) *The Engineering Design Report includes: Construction Quality Assurance Project Plan, Compliance Monitoring and Contingency Response Plan, Proposed Best Management Practices, Water Quality Monitoring Plan, and Substantive Requirements of Procedurally Exempt Permits. Ecology will not approve the Final EDR until the required permits have been obtained.*

3) *Note: Assume 30-days for each round of Ecology comments for draft and final documents*

4) *Construction completion is defined as: completion of Phase 1 construction and compliance, performance, and confirmation sampling and evaluation or completion of contingency Phase 2 construction, if Phase 2 is determined to be necessary.*

5) *Timing of the Phase 1 Evaluation will be determined and presented in the EDR.*

Exhibit D
List of ARARs and Permits

Standard, Requirement, or Limitation	Description	Permit Required?
Action-Specific Requirements (1)		
Construction and Maintenance of Wells		
Washington Administrative Code: UIC Program (WAC 173-218)	Establishes requirements to protect groundwater by regulating the discharge of fluids from injection wells. The UIC program is administered under Title 40 CFR parts 144, 145, 146, and 147 and authorized by the SDWA.	Yes
Washington Administrative Code: Minimum Standards for Construction and Maintenance of Wells (WAC 173-160)	Establishes requirements for construction, abandonment, and decommissioning of monitoring wells and soil borings.	No
Washington Administrative Code: Regulation and Licensing of Well Contractors and Operators (WAC 173-162)	Establishes requirements for licensing and training well contractors and operators.	No
Upland Disposal of Investigation-Derived Waste		
Resource Conservation and Recovery Act (42 USC 6921-6949a; 40 CFR Part 268, Subtitles C and D)	Establishes requirements for the identification, handling, and disposal of hazardous and nonhazardous waste.	No
Dangerous Waste Regulations (RCW 70.105; WAC 173-303)	Establishes regulations that are the state equivalent of RCRA requirements for determining whether a waste is a state dangerous waste. This regulation also provides requirements for the management of dangerous wastes.	No
Solid Waste Disposal Act (42 USC Sec. 325103259, 6901-6991; 40 CFR 257,258) Federal Land Disposal Requirements (40 CFR part 268)	Protects health and the environment and promotes conservation of valuable material and energy resources.	No
Minimum Functional Standards for Solid Waste Handling (WAC 173-304)	Sets minimum functional standards for the proper handling of all solid waste materials originating from residences, commercial, agricultural, and industrial operations as well as other sources.	No
Solid Waste Handling Standards (WAC 173-350 and WAC 173-351)	Establishes minimum standards for handling and disposal of solid waste. Solid waste includes wastes that are generated by site remediation, including contaminated soils, construction and demolition wastes, and garbage. Soils classified as "contained-in-waste" must be delivered to a solid waste landfill permitted under WAC 173-351 inside Washington State.	Yes; contained-in determination from Ecology required
Worker Safety		
Occupational Health and Safety Standards: Hazardous Waste Operations and Emergency Response/General Occupational Health Standards (Health and Safety 29 CFR 1901.120; and WAC 296-62)	The HAZWOPER standard regulates health and safety operations for hazardous waste sites. The health and safety regulations describe federal requirements for health and safety training for workers at hazardous waste sites.	No
Occupational Safety and Health Act (29 USC 653, 655, 657) Occupational Safety and Health Standards (29 CFR 1910)	Employee health and safety regulations for construction activities and general construction standards as well as regulations for fire protection, materials handling, hazardous materials, personal protective equipment, and general environmental controls. Hazardous waste site work requires employees to be trained prior to participation in site activities, medical monitoring, monitoring to protect employees from excessive exposure to hazardous substances, and decontamination of personnel and equipment.	No
Washington Industrial Safety and Health Act (RCW 49.17) Washington Safety Standards for Construction Work/General Occupational Health Standards (WAC 296-62, WAC 296-155)	Adopts the OSHA standards that govern the conditions of employment in all workplaces. The regulations encourage efforts to reduce safety and health hazards in the workplace and set standards for safe work practices for dangerous areas such as trenches, excavations, and hazardous waste sites.	No
Federal, State, and Local Air Quality Protection Programs State Implementation of Ambient Air Quality Standards NWAPA Ambient and Emission Standards Regional Standards for Fugitive Dust Emissions Toxic Air Pollutants	Regulations promulgated under the federal Clean Air Act (42 USC 7401) and the Washington State Clean Air Act (RCW 70.94) govern the release of airborne contaminants from point and non-point sources. Local air pollution control authorities such as the PSCAA have also set forth regulations for implementing these air quality requirements. These requirements may be applicable to the Site for the purposes of dust control should the selected remedial alternatives require excavation activities. WAC 173-340-750 establishes air cleanup standards, which applies to concentrations of hazardous substances in the air originating from a remedial action at the Site.	No
Chemical-Specific Requirements (2)		
Groundwater Requirements		
Drinking Water Standards—State MCLs (WAC 246-290-310)	Establishes standards for contaminant levels in drinking water for water system purveyors.	No
National Recommended Water Quality Standards 40 CFR 131 and Safe Drinking Water Regulation, 40 CFR 141	These water quality standards define the water quality goals of the water body by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses. States adopt water quality standards from 40 CFR 131 to protect public health or welfare, enhance the quality of water, and serve the purposes of the CWA. Washington State water quality standards (MCLs) are presented in WAC.	No
Washington State Maximum Contaminant Levels (MCLs) (WAC 246-290-310)		No
City of Bothell Permits		
Exemption from Substantial Development Permit	No development to be considered	No
Right of Way Permit	Permit to drill in roadway	Yes

Notes:

1 Action-specific requirements are applicable to certain types of activities that occur or technologies that are used during the implementation of cleanup actions.
2 Chemical-specific requirements are applicable to the types of contaminants present at the Site. The cleanup of contaminated media at the Site must meet the CULs developed under MTCA; these CULs are considered chemical-specific requirements.

Abbreviations:

BMC	Bothell Municipal Code
CFR	Code of Federal Regulations
CWA	Clean Water Act
HAZWOPER	Health and Safety for Hazardous Waste Operations and Emergency Management
MCL	Maximum Contaminant Level
MTCA	Model Toxics Control Act
NFPA	National Fire Protection Association
NPDES	National Pollutant Discharge Elimination System
NWAPA	Northwest Air Pollution Authority
OSHA	Occupational Safety and Health Act
PSCAA	Puget Sound Clean Air Authority
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
SDWA	Safe Drinking Water Act
SEPA	State Environmental Policy Act
Site	Ultra Custom Care Cleaners Site

UIC	Underground Injection Control
USC	United States Code
WAC	Washington Administrative Code