1340 Treat Boulevard
Suite 550
Walnut Creek, CA, 945974

T +1 925 946 0455
F +1 925 946 9968

erm.com

Mary Lou Helix
Helix Family Trust
1102 Northridge Court
Concord, CA 94518

Scott Selken
Union Pacific Railroad Company
14 Douglas Street STOP 1030
Omaha, NE 68179

Maureen Toms
Contra Costa County
Department of Conservation and Development
30 Muir Road
Martinez, CA 94553

DATE
1 October 2024

SUBJECT
Work Authorization for Groundwater Injection Remediation 2024

REFERENCE
552537

Dear M. Helix, S. Selken, and M. Toms:

Environmental Resources Management, Inc. (ERM) has prepared this Work Authorization Request for additional environmental services at the Hookston Station site in Pleasant Hill, California (site). ERM's previous work at this site has been performed on behalf of the Hookston Parties, which consist of Union Pacific Railroad Company (UPRR); Mary Lou Helix, Karen Hook, Debbie Hook, and Blake Pucell (represented by the Helix Family Trust); and Contra Costa County. The site is currently regulated under Regional Water Quality Control Board (RWQCB) Order No. R2-2023-0015, dated 29 September 2023 (Order). This Work Authorization has been issued under the existing Consulting Services Agreement between ERM and the Hookston Parties, dated 14 December 2021.

This proposed scope of work includes items to satisfy Task 1b of the Order, which includes the execution of remedial actions outlined in the *Revised Feasibility Study/Remedial Design and Implementation Plan*, dated 28 December 2023 (FS/RDIP). Additional Tasks listed in the Order will be included in separate Work Authorization requests.

This Work Authorization describes the implementation of the groundwater injection remediation program, as described in the FS/RDIP. This Work Authorization covers the following tasks:

- Task 1 – Pre-field preparations, including permitting, health and safety planning, subcontractor coordination, and regulatory agency communication
- Task 2 – Performance of groundwater injection field work:
  - Installation of 22 injection wells and 7 performance monitoring wells, including well development and surveying
  - Performance of baseline groundwater sampling (prior to the implementation of groundwater injections) at 41 performance monitoring wells
  - Performance of groundwater injections
  - Performance of first post-injection groundwater performance monitoring event at 41 performance monitoring wells
- Task 3 – Preparation and submission of groundwater injection completion report

The following sections provide a rationale for the proposed work, a brief description of the scope of work, and a cost estimate for performing the tasks outlined above.

1. SCOPE

A description of work to be performed under each task is provided below. All proposed work is required by the current Order.

TASK 1 – PRE-FIELD PREPARATIONS

This task will cover the pre-field preparation activities, which will include:

- Preparation of groundwater monitoring well installation permit and soil boring permit applications with the Conta Costa County Environmental Health Department (CCCEHD). Per CCCEHD policy, one permit will need to be procured for each of the seven performance groundwater monitoring wells and 22 groundwater injections wells described in the FS/RDIP. Two soil boring permits will need to be procured for the Source Area injection gallery and the Downgradient Alignment #2 Area gallery of direct push injection points.
- Preparation of an encroachment permit with the City of Pleasant Hill for the installation of groundwater monitoring/injections wells and direct push injection borings in the public right of way at the Downgradient Alignment #1 and Downgradient Alignment #2 Areas.
- ERM will update the existing site-specific Health and Safety Plan (HASP) for the proposed remedial activities. The HASP will address worker health and safety at the site in accordance with Occupational Safety and Health Administration Title 29, Code of Federal Regulations, Section 1910.120; and California Division of Occupational Safety and Health Title 8 of the California Code of Regulations, Section 5192. The HASP will provide details on employee training and medical surveillance requirements, procedural and engineering controls, personal protective

equipment, monitoring and documentation requirements, and emergency response procedures.

- ERM will coordinate the project schedule with the subcontractors selected to execute the groundwater injection scope of work outlined in the FS/RDIP.
- ERM will communicate with the RWQCB, providing updates on the status of the project schedule.

TASK 2 – GROUNDWATER INJECTION FIELD WORK

ERM will execute the scope of work for groundwater injections as outlined in the FS/RDIP.

INSTALLATION, DEVELOPMENT, AND SURVEYING OF GROUNDWATER MONITORING AND INJECTION WELLS

The scope of work includes:

- Perform subsurface utility clearance activities, including notification to Underground Services Alert North (US North) members, maintaining a USA North ticket number for the duration of the field assessment project, and performance of a private utility location event to sweep the site for the presence of subsurface utility lines.
- Advancement of 31 soil borings using hollow stem auger drilling technology. Soil samples will be collected at 5-foot intervals using a California modified spilt-spoon for field screening and soil logging purposes.
- Installation of seven groundwater monitoring wells (three A-Zone wells, three A2-Zone wells, and one B-Zone well) and 22 injections wells (12 A-Zone and A2-Zone wells, and 10 B-Zone wells).
- Groundwater monitoring and injection well development
- Site surveying by a professional land surveyor/engineer
- Disposal of waste soil and water generated during well installation activities.

ERM has included the following assumptions for this task:

- Field work is anticipated to take 38 days to complete. ERM proposes a project schedule with one air knife vacuum rig, one drill rig, and one development rig working on an overlapping schedule to complete the scope of work in 18 working days.
- ERM will perform subsurface clearance activities prior to advancing soil borings, that will include notification to Underground Services Alert North members and the use of private utility location contractor to sweep the site for the presence of subsurface utility lines. Each soil boring will be first advanced with an air knife/vacuum rig to a depth of 5 to 8 feet below ground surface (bgs) to protect against damaging unidentified subsurface utility lines.

- Soil borings will be advanced to depths of approximately 30 feet bgs in the A-Zone, 40 feet bgs in the B-Zone, and 60 feet bgs in the B-Zone.
- ERM anticipates that approximately three, 20-ton capacity roll-off bins will be used to containerize soil cutting waste generated during site investigation activities and that the waste stream will be characterized as non-hazardous material for disposal.
- ERM anticipates that a 5,000-gallon capacity water tank will be used to containerize purged groundwater and decontamination rinsate water generated during site investigation activities and that the waste stream will be characterized as non-hazardous material for disposal.
- One member of the Hookston Parties will provide final approval of the waste disposal facility and will sign all waste manifests as the generator.

PERFORMANCE OF BASELINE GROUNDWATER SAMPLING

The scope of work includes:

- A total of 41 groundwater monitoring wells will be included in the performance monitoring program.
- Groundwater samples will be collected using low-flow sampling techniques and water quality parameters will be measured through a flow cell. Field water quality parameters measured will include dissolved oxygen, oxygen reduction potential, pH, specific conductivity, and temperature.
- The groundwater samples will be analyzed for the presence of sulfate and nitrate by United States Environmental Protection Agency (USEPA) Method 300.1, chlorinated VOCs by USEPA Method 8260, total organic carbon by USEPA Method 5310B, iron by USEPA Method 6010B, and dissolved gasses (methane, ethane, and ethene) by low-level Method RSK 175.
- The following quality assurance/quality control measures will be applied to the collection of soil and groundwater samples:
    - Duplicate groundwater samples will be collected at a rate of 10% of samples collected, with a minimum of one duplicate sample per sampling event.
    - A trip blank sample will be supplied by the laboratory to accompany each cooler that is shipped to the laboratory containing soil or groundwater samples to be analyzed for VOCs.
    - The duplicate and trip blank samples will be analyzed for the same constituents of concern as the original sample.

PERFORMANCE OF GROUNDWATER INJECTIONS

ERM will perform wellhead and direct-push ISBR injections in the Source Area, Mid-Plume Area, and Downgradient Area. The anticipated injection methodology is outlined below; however, it may be modified in the field to optimize reagent delivery:

- Source Area injection methodology:
  - A-Zone will have seven direct-push points with a target treatment depth from 15 to 40 feet bgs and a total target reagent volume of 17,952 gallons. Each direct-push point will receive 2,565 gallons of 1.3% weight per weight (w/w) reagent mix.
  - A2-Zone will have wellhead injections using four existing injection wells (INJ-1 through INJ-4) with screened intervals from 36 to 46 feet bgs and a total target reagent volume of 7,183 gallons. Each well will receive 1,795 gallons of 1.3% w/w reagent mix.
  - B-Zone will have wellhead injections using five existing injection wells (INJ-5 through INJ-9) with screened intervals from 49 to 56 feet bgs and a total target reagent volume of 42,423 gallons. Each well will receive 8,482 gallons of 1.3% w/w reagent mix.
- Mid-Plume Area injection methodology:
  - A-Zone and A2-Zones will have wellhead injections from six newly installed injection wells with screened intervals from 15 to 25 feet bgs and 30 to 40 feet bgs, and a total target reagent volume of 34,791 gallons. Each well will receive 5,797 gallons of 1.3% w/w reagent mix (2,899 gallons to each screened interval).
  - B-Zone will have wellhead injections from four injection wells to be installed with screened intervals from 40 to 55 feet bgs and a total target reagent volume of 187,873 gallons. Each well will receive 46,956 gallons of 1.3% w/w reagent mix.
- Downgradient Area Alignment #1 injection methodology:
  - A-Zone and A2-Zones will have wellhead injections from six newly installed injection wells with screened intervals from 15 to 25 feet bgs and 30 to 40 feet bgs, and a total target reagent volume of 34,791 gallons. Each well will receive 5,797 gallons of 1.3% w/w reagent mix (2,899 gallons to each screened interval).
  - B-Zone will have well injections from six injection wells with a screened interval from 40 to 55 feet bgs and a total target reagent volume of 393,927 gallons. Each well will receive 65,637 gallons of 1.3% w/w reagent mix.
- Downgradient Area Alignment #2 injection methodology:
  - A-Zone and A2-Zones will have 13 direct-push injections with a total target treatment depth of 15 to 40 feet bgs, and a total target reagent volume of 44,892 gallons. Each direct-push point will receive 3,452 gallons of 1.3% w/w reagent mix.

Details regarding the reagent composition and implementation are below:

- Field work is anticipated to take 66 days to complete. ERM proposes a project schedule with two injection/mixing rig setups working on an overlapping schedule to complete the scope of work in 34 working days.
- Groundwater will be extracted from injection/extraction wells and pre-treated to create anoxic conditions in a frac-tank or equivalent. This water will then be mixed with reagent to create the ISBR solution to be injected. If sufficient groundwater cannot be extracted from the aquifer for reagent mixing, clean potable water will be procured from the fire hydrant closest to the injection wells.
- The reagent solution will be prepared with the pre-treated water and will be injected into each well under pressure via a hose and cam lock system.
- The reagent, consisting of carbon substrate and DHC microbial culture, will be emplaced in a volumetric proportion of between 4 and 6% of the pore volume at an injection strength of 2% w/w reagent solution, and designed to achieve a carbon substrate concentration of 1,000 to 2,000 milligrams per liter within the target treatment zone.
- As prescribed above, a total of approximately 764,000 gallons of mixed reagent and 196 liters of microbial culture will be emplaced in the A-Zone and B-Zone aquifers.
- Direct-push injections will be performed with a Geoprobe 8040 or equivalent in a 'top-down' progression with approximately 5-foot injection intervals.
- Injection pressures will be monitored and managed to achieve the reagent delivery rate while optimizing distribution, minimizing loss from surfacing, and preventing over-pressurization of injection equipment. A flow rate of approximately 2 to 5 gallons per minute is anticipated for the A-Zone injection intervals based on Site lithology and ERM experience. A flow rate of 10 to 15 gallons per minute is anticipated for the B-Zone based on injection flow rates observed during previous in situ chemical oxidation injections performed in B-Zone groundwater.
- Following reagent injections, each well will be flushed with anoxic water.

PERFORMANCE OF FIRST POST-INJECTION PERFORMANCE GROUNDWATER SAMPLING

The first post-injection performance monitoring sampling event will be performed three months after the completion of groundwater injection activities. The scope of work will the same as baseline groundwater sampling activities outlined above.

TASK 3 – PREPARATION AND SUBMISSION OF GROUNDWATER INJECTION COMPLETION REPORT

Upon completion of the well installation and initial groundwater injection activities, a Construction Completion Report will be submitted to the RWQCB. The report will document baseline groundwater sampling results, injection well installation details, the initial round of injections, and the initial performance monitoring event. The report will

provide a detailed description of the findings, including tabulated data, copies of laboratory analytical reports, soil boring logs, and a site map.

ERM will provide a draft report for the Hookston Parties' review. ERM will revise the report based on one round of comments and submit to the RWQCB on behalf of the Hookston Parties. In addition, this task includes preparing a response to the regulatory agency's comments on the report and finalizing the document. ERM has assumed finalization of the report based on one round of agency comments. ERM will provide the final report to the Hookston Parties for one round of comments and submit to the RWQCB on behalf of the Hookston Parties following incorporation of any revisions.

2. SCHEDULE

ERM is prepared to start the scope of work outlined above immediately upon approval of this Work Authorization by the Hookston Parties. ERM has prepared a projected project schedule, which is included as Attachment A. ERM anticipates being able to complete the injection field work within an approximately 3-month time period, the reporting within an approximately 2 month time period after completion of injection field work, and the first performance monitoring event 3 months after the completion of injection field work.

3. ESTIMATED PROBABLE COST

The estimated probable cost to perform the proposed scope of work is $1,477,049, as summarized in the table included as Attachment B. This budget is being proposed on a time-and-materials basis of hourly charges for ERM personnel, plus direct expenses. Only those costs incurred will be charged and will not exceed the estimated cost without prior approval by the Hookston Parties. The estimated cost is an estimated maximum, which we fully expect will cover the services described herein, but no guarantee is made or implied.

A cost summary by task is provided in the following table.

Task	Description	Total
1	Pre-Field Preparations	$53,012
2	Groundwater Injection Field Work	$1,399,193
3	Reporting	$24,844
Estimated Probable Cost		**$1,477,049**

The subcontractor costs for monitoring and injection well drilling, and groundwater injections based on bids solicited by ERM during a competitive request for proposal process that was initiated on 24 June 2024. ERM presented the proposals received from three qualified subcontractors to the Hookston Parties for review and discussion during a conference call meeting on 8 August 2024. After conferring with an additional

subcontractor at the request of the Hookston Parties, ERM presented our final recommendation for subcontractor selection (Cascade Drilling for monitoring well and injection well installations and Legacy Remediation, Inc. for groundwater injections) on 22 August 2024. Copies of Cascade Drilling's and Legacy Remediation, Inc.'s proposals are included as Attachment C.

4. TERMS AND CONDITIONS

ERM proposes to perform this scope of work in accordance with the Consulting Services Agreement between the Hookston Parties and ERM dated 14 December 2021 ("Contract"; attached by reference).

5. ORDER OF PRECEDENCE

Unless otherwise agreed in the Contract referenced above (in which case the order of precedence of the Contract shall control), this proposal, attachments, and exhibits hereto, including the Contract's terms and conditions and all referenced documents, constitute the entire agreement between the parties with respect to the matters herein, and integrate, merge, and supersede all prior negotiations, representations, or agreements relating thereto, whether written or oral, except to the extent they are expressly incorporated herein. These provisions and the accompanying documents shall be construed and interpreted consistently. Unless otherwise stated elsewhere in this proposal, any conflicts in this proposal and the accompanying documents shall be resolved in accordance with the following, in order of precedence.

1. The fully executed proposal referencing the terms and conditions of the Consulting Services Agreement between the Hookston Parties and ERM dated 14 December 2021 and its fully executed amendments.
2. Any subsequent purchase orders / work authorizations issued.

6. AUTHORIZATION

If this proposal is acceptable, please have a duly authorized representative of your organization sign in the space provided below and return a copy to ERM for our files.

The above-referenced offer is valid for 90 days, contingent upon your acceptance of the proposed terms and conditions. Any counteroffers must be transparent, fully negotiated, and agreed upon by both parties prior to ERM rendering any services.

Environmental Resources Management, Inc.

DocuSigned by:
Brian Bjorklund
9566C6F6AEEC430...
Signature

Brian Bjorklund
Name

Partner
Title

Oct 1, 2024 | 18:11 EDT
Date

CLIENT:

UPRR Representative

DocuSigned by:
3F33629CC1CF4C0...
Signature

SCOTT SELKEN
Name

Senior Manager Site Remediation
Title

Oct 2, 2024 | 06:45 PDT
Date

Contra Costa County Representative

Signed by:
Maureen Toms
70567E33A7EE4E5...
Signature

Maureen Toms
Name

Deputy Director
Title

Oct 10, 2024 | 12:48 EDT
Date

Helix Family Trust

DocuSigned by:
Marilu Elliott
AE32BC2992CE42F...
Signature

Marilu Elliott
Name

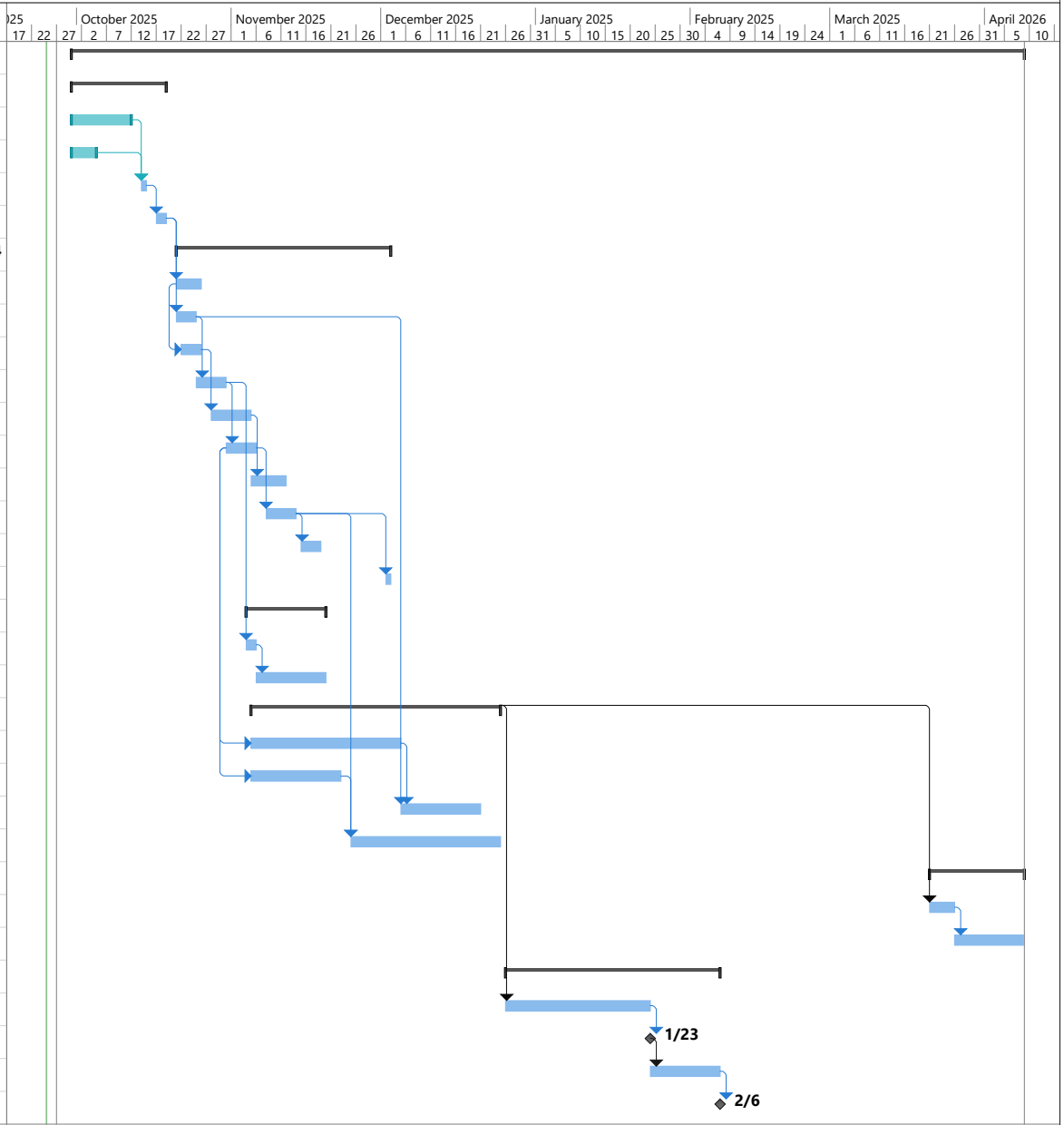
Property Manager
Title

Oct 13, 2024 | 12:59 PDT
Date

ATTACHMENT A PROJECTED PROJECT SCHEDULE

Hookston Groundwater Injection Calendar

ID	Task Mode	Task Name	Duration	Start
1		**Groundwater Injection Program**	**133 days**	**Mon 9/30/24**
2		**Pre-Field Planning**	**15 days**	**Mon 9/30/24**
3		Permitting - Boring and Encroachment	10 days	Mon 9/30/24
4		HASP Updates	5 days	Mon 9/30/24
5		Public Utility Markout	1 day	Mon 10/14/24
6		Private Utility Markout	2 days	Thu 10/17/24
7		**Drilling**	**29 days**	**Mon 10/21/24**
8		Well Clearance - Air Knife	5 days	Mon 10/21/24
9		Source Area Well Development	4 days	Mon 10/21/24
10		Performance Well Installation	4 days	Tue 10/22/24
11		Performance Well Development	4 days	Fri 10/25/24
12		Downgradient Inj Well Installation	6 days	Mon 10/28/24
13		Downgradient Inj Well Development	4 days	Thu 10/31/24
14		Mid-Plume Inj Well Installation	5 days	Tue 11/5/24
15		Mid-Plume Inj Well Development	4 days	Fri 11/8/24
16		Surveying	2 days	Fri 11/15/24
17		Waste Disposal	1 day	Mon 12/2/24
18		**Baseline Well Sampling**	**12 days**	**Mon 11/4/24**
19		Sampling	2 days	Mon 11/4/24
20		Laboratory Analysis	10 days	Wed 11/6/24
21		**Injection Field Work**	**34 days**	**Tue 11/5/24**
22		Dowgradient Wells	20 days	Tue 11/5/24
23		Downgradient DPT	14 days	Tue 11/5/24
24		Source Area DPT/Wells	12 days	Thu 12/5/24
25		Mid-Plume Wells	20 days	Mon 11/25/24
26		**First Performance Monitoring Event**	**13 days**	**Fri 3/21/25**
27		Sampling	3 days	Fri 3/21/25
28		Laboratory Analysis	10 days	Wed 3/26/25
29		**Reporting**	**30 days**	**Thu 12/26/24**
30		Draft Report	20 days	Thu 12/26/24
31		Submit Draft to Client	0 days	Thu 1/23/25
32		Client Review	10 days	Fri 1/24/25
33		Report Submission	0 days	Thu 2/6/25



Project: Hookston Project 2024
Date: Wed 9/25/24

Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone

ATTACHMENT B EPC SUMMARY TABLE AND ERM 2024 LABOR RATES

Summary of Estimated Costs

PROJECT PHASES & TASKS		Labor	Expenses	Laboratory	Subcontractor	TOTAL (Price)
1	**Field Preparation and Planning**	**27,353.00**	**25,658.85**	**0.00**	**0.00**	**53,011.85**
1.01	Health and Safety (HASP, PLAN)	4,642.00	0.00	0.00	0.00	**4,642.00**
1.02	Permitting (Drilling, Encroachment)	2,348.00	25,658.85	0.00	0.00	**28,006.85**
1.03	SSC Plan Development	2,398.00	0.00	0.00	0.00	**2,398.00**
1.04	Subcontractor Coordination	3,490.00	0.00	0.00	0.00	**3,490.00**
1.05	Project Management (Reg/Client Comms)	14,475.00	0.00	0.00	0.00	**14,475.00**
	Subtotal:	**27,353.00**	**25,658.85**	**0.00**	**0.00**	**53,011.85**
2	**Field Implementation**	**245,273.00**	**320,850.60**	**25,662.00**	**807,408.00**	**1,399,193.60**
2.01	SSC	4,266.00	220.50	0.00	3,150.00	**7,636.50**
2.02	Well Installation and Development	130,665.00	9,266.25	0.00	367,500.00	**507,431.25**
2.03	Baseline Sampling Event	4,050.00	1,065.75	10,964.10	9,954.00	**26,033.85**
2.04	Injection Implementation	98,092.00	308,901.60	0.00	378,525.00	**785,518.60**
2.05	Surveying	3,064.00	220.50	0.00	4,200.00	**7,484.50**
2.06	Waste Manangement	540.00	110.25	3,733.80	34,125.00	**38,509.05**
2.07	Performance Monitoring Event (Rnd 1)	4,596.00	1,065.75	10,964.10	9,954.00	**26,579.85**
	Subtotal:	**245,273.00**	**320,850.60**	**25,662.00**	**807,408.00**	**1,399,193.60**
3	**Completion Report**	**24,844.00**	**0.00**	**0.00**	**0.00**	**24,844.00**
3.01	Data Entry and QA/QC	9,334.00	0.00	0.00	0.00	**9,334.00**
3.02	Draft Report	11,766.00	0.00	0.00	0.00	**11,766.00**
3.03	Finalize and Submit	3,744.00	0.00	0.00	0.00	**3,744.00**
	Subtotal:	**24,844.00**	**0.00**	**0.00**	**0.00**	**24,844.00**
	TOTALS	**297,470.00**	**346,509.45**	**25,662.00**	**807,408.00**	**1,477,049.45**

2024 Labor Rates Table
Hookston Station Site, Pleasant Hill, California

ERM Labor Categories	Hourly Rate
1.1 - Principal Consultant	$215
1.2 - Program Director	$198
1.3 - Senior Consultant	$182
1.4 - Lead Consultant	$155
1.5 - Project Manager	$135
1.6 Staff Engineer/Scientist	$135
1.7 - Senior Field Technician	$129
1.8 - Field Technician	$106
1.9 - Project Coordinator	$69
1.10 - Administrative Support	$69

ATTACHMENT C DRILLING AND GROUNDWATER INJECTION SUBCONTRACTOR PROPOSALS

Optimized In Situ Remediation Solutions

CASCADE



Estimate and Proposal

Groundwater Remediation Proposal

Hookston Station - Pleasant Hill, California

Prepared For
ERM
July 23, 2024

Contents

Date: 23 July 2024

Matthew Battin
ERM
Sacramento, CA
matthew.battin@erm.com

Re: Cascade Remediation Services Cost Estimate and Proposal – Drilling and Injection Services

Dear Matthew,

Thank you for your interest in Cascade Remediation Services (Cascade) for your project. We are the largest provider of in situ remediation services in the country and have worked on sites similar to yours. Our technical experts have developed this best cost approach to achieve your remediation objectives.

We are pleased to enclose our proposal to perform Well Installation and Injection Services at the Hookston Station Project Site located in Pleasant Hill, California (Site).

Cascade is offering a veteran team of management, technical and field service professionals to ensure the timely success of this important project. We have successfully executed numerous projects with similar scope of work, and we are confident in our ability to meet your remediation performance objectives for this site. Cascade is best suited to support this project. With nine remediation offices across the United States, we have the most resources in equipment and experienced personnel. With a nearby office staffed with a dedicated maintenance and field support team we can ensure the project stays on track through any challenges.

Based on Cascade's previous experience and the information provided; we can safely complete you're the drilling and remediation requested in the bid form to make the project a success.

After reviewing our proposal, please feel free to set up a proposal debrief with us to help expedite your review and comparison to other options received.

We look forward to working with your team. I can be reached at (510) 772-0841.

Sincerely,

Chris Tatum
Business Unit Manager

INTRODUCTION

Cascade Remediation Services (Cascade) is pleased to present this Technical Proposal and Cost Estimate for Drilling and Injection Services to ERM (Client) at the Hookston Station Project site located in Pleasant Hill, California (Site). Cascade's proposal provides for Value-Added Planning and Project Implementation Services supporting ERM's injection design workplan (See Attachments).

Project Schedule

Cascade will mobilize from our Richmond, California office and assumes 10-hours on site per day, 5-day shifts (5 days on and 2 days off). We estimate the remediation scope will take up to 12 days (Source Area), 31 days (mid plume), and 9 days (DPT DG #2) and 26 days (Wells DG #1) to complete. Cascade can perform drilling and injections at multiple areas at the same time to shorten the overall duration of the project to meet remedial goal deadlines with local and state oversight agencies. Cascade and ERM will collaborate prior to mobilization to evaluate access to injection and drilling areas.

The following is a typical 5-day shift schedule:

Day 1 thru 5: Field work (10-hrs onsite time)
Day 6 thru 7: Off days
We are prepared to mobilize shortly after notice to proceed. Additional considerations for mobilization are dependent upon amendment lead times based on current supply chain conditions.

SUMMARY OF WORK

It is our understanding that the scope of work includes:

Well Installation and Development

- Clear locations using hand auger or air-lance vacuum rig to 125% of borehole diameter and to a minimum depth of 5 feet below ground surface (bgs),
    - Certain locations may require asphalt and concrete coring/removal prior to clearance activities.
- Installation of seven performance monitoring wells across the Source Area, Mid-Plume Area, and Downgradient Areas with boreholes reamed using a track or truck mounted hollow steam auger technology with 8-inch outer-diameter augers, see Attachment 1 (Figures 4, 9, 10, and 11) for locations.
    - Collect split-spoon samples at 5-foot intervals for field screening and soil logging purposes.
    - There are three (3) monitoring wells in the A-Zone, constructed using 2-inch Schedule 40 polyvinyl chloride (PVC) blank casing with a 0.020-inch slotted PVC well screen. The screened interval will be from 15 to 30 feet bgs.

  - There are three (3) monitoring wells in the A2-Zone, constructed using 2-inch Schedule 40 PVC blank casing with a 0.020-inch slotted PVC well screen. The screened interval will be from 30 to 40 feet bgs.

  - There is one (1) monitoring well in the B-Zone, constructed using 2-inch Schedule 40 PVC blank casing with a 0.020-inch slotted PVC well screen. The screened interval will be from 50 to 60 feet bgs.

- Installation of 22 injection wells across the Source Area, Mid-Plume Area, and Downgradient Area with boreholes reamed using a track or truck mounted hollow steam auger technology with 10-inch outer-diameter augers, see Attachment 1 for locations.

  - Collect split-spoon samples at 5-foot intervals for field screening and soil logging purposes.

  - There are 12 injection wells in the A-Zone and A2-Zone, constructed using 4-inch Schedule 40 PVC blank casing with a 0.020-inch opening wire-wrap PVC well screen. The screened interval will be from 15 to 25 feet bgs, followed by a 5-foot break/transition seal and another screen interval from 30 to 40 feet bgs (two discrete screened intervals within single well construction)

  - There are 10 injection wells in the B-Zone, constructed using 4-inch Schedule 40 PVC blank casing with a 0.020-inch opening wire-wrap PVC well screen. The screened interval will be from 40 to 55 feet bgs.

    - The B-Zone wells may be installed up to a depth of 60 feet bgs; therefore, additional drilling equipment and supplies may be needed to modify well construction designs in the field.

- Well development of the new wells will occur by swabbing the well screens with a surge block, bailing out fines, and over-pumping with a submersible pump no sooner than 72 hours following well installation. A minimum of 10 well volumes will be purged during development. In the event that 10 casing volumes cannot be achieved due to slow recharge, the team will pump the wells until turbidity readings are less than 20 nephelometric turbidity units.

Wellhead and DPT Injection

Source Area Injection Locations

- A-Zone will have seven (7) direct-push points with a target treatment depth from 15 to 40 feet bgs and a total target reagent volume of 17,952 gallons. Each direct push point will receive 2,565 gallons of 1.3% weight per weight (w/w) reagent mix.

- A2-Zone will have wellhead injections using four (4) existing injection wells (INJ-1 through INJ-4) with screened intervals from 36 to 46 feet bgs and a total target reagent volume of 7,183 gallons. Each well will receive 1,795 gallons of 1.3% w/w reagent mix.

- B-Zone will have wellhead injections using five (5) existing injection wells (INJ-5 through INJ-9) with screened intervals from 49 to 56 feet bgs and a total target reagent volume of 42,423 gallons. Each well will receive 8,482 gallons of 1.3% w/w reagent mix.

- A-Zone DPT points and B-Zone Wells are located within an active auto maintenance facility. Access to these locations will be limited to allow the tenants to continue their operations during injection activities. Additional safety precautions will be taken to ensure the safety of the employees actively working in the shop facility.

Mid-Plume Treatment Area

- A-Zone and A2-Zones will have wellhead injections from six (6) newly installed injection wells with screened intervals from 15 to 25 feet bgs and 30 to 40 feet bgs, and a total target reagent volume of 34,791 gallons. Each well will receive 5,797 gallons of 1.3% w/w reagent mix (2,899 gallons to each screened interval).

- B-Zone will have wellhead injections from four (4) injection wells to be installed with screened intervals from 40 to 55 feet bgs and a total target reagent volume of 187,873 gallons. Each well will receive 46,956 gallons of 1.3% w/w reagent mix.

- Mid-Plume Treatment area is near a public bike and pedestrian path. During injection activities barricade's will be installed to divert bike and pedestrian traffic.

Down Gradient Alignment #1

#1 Methodology

- A-Zone and A2-Zones will have wellhead injections from six (6) newly installed injection wells with screened intervals from 15 to 25 feet bgs and 30 to 40 feet bgs, and a total target reagent volume of 34,791 gallons. Each well will receive 5,797 gallons of 1.3% w/w reagent mix (2,899 gallons to each screened interval).

- B-Zone will have well injections from six (6) injection wells with a screened interval from 40 to 55 feet bgs and a total target reagent volume of 393,927 gallons. Each well will receive 65,637 gallons of 1.3% w/w reagent mix – Inject ABC Ole into 12 wells.

- Down Gradient Alignment #1 is mainly within Len Hester Park. During drilling, development, and injection activities temporary fencing and barricades will be installed to delineate the work zone within the park and along Hampton Drive.

Down Gradient Alignment #2

#2 Methodology

- A-Zone and A2-Zones will have 13 direct-push injections with a total target treatment depth of 15 to 40 feet bgs, and a total target reagent volume of 44,892 gallons. Each direct-push point will receive 3,452 gallons of 1.3% w/w reagent mix.

- Down Gradient Alignment #2 injection points are within parking areas along Stimel Drive. Placement of equipment and tanks will be strategically placed to minimize disturbance to homeowners. Pedestrian traffic will be diverted with use barricades and signs. Every effort will be made to keep access to homeowners' driveway entrance. Hose ramps will used when water supply or injection line cross a driveway entrance.

Field implementation - Injection

During the injection event, Cascade will utilize personnel qualified and capable of meeting project schedule, following Cascade's Best Practices while meeting remediation goals. Cascade understands the importance of experienced injection operators and technicians on all in situ injection projects. To support the proposed remediation approach, Cascade will provide the following crew and equipment:

- Each Injection and Mixing Crew, 2-person
- Each Geoprobe 8040, for DPT locations
- Custom Built Injection Platform
    - Bulk Mixing
        - ABC Ole amendment will be transferred into frack tanks and mixed with water
        - Injection System will pull from mixed tanks and inject solution
            - Up to 10-point manifold system
        - Current pricing includes 2 bulk tanks for mixing
        - Forklift for amendment handling
    - Injection Pump(s)
    - High flow, high volume skid system with two centrifugal pumps, each with 100-gpm capacity.
    - A backup pump will be readily available at Cascade's Richmond, CA yard.
- Safety and spill systems including emergency shower & eye wash station, spill kit, wet/dry shop-vacs and secondary containment.

Delivery Approach Injection

Injection Wells: Cascade will use injection wells to deliver the amendments. We will use a multi-head delivery system to simultaneously inject into multiple wells. For wells with dual screens, low pressure packers will be set to isolate the injection screens. Each injection well will be retrofitted with a threaded coupler or internal packer to our wellheads that will include a pressure gauge, bleed valve, and injection hose. Once the target volume has been injected, Cascade will ensure the wellheads are relieved of downhole pressure before removal.

Example SS Injection Manifold

DPT Injections: Cascade will use 5 ft DPT Injection Screens to deliver the amendments. We will use a multi-head delivery system to simultaneously inject into multiple DPT points. Each injection point will include a pressure gauge, bleed valve, and injection hose. Once the target volume has been injected, Cascade will ensure the wellheads are relieved of downhole pressure before removal.

Amendment Handling: Cascade will provide a forklift to receive, stage and move the amendment on site as needed. It is anticipated that the amendment will be procured by the Client and will be delivered to the Cascade Richmond office prior for the start of the project. Amendments will be inventoried and staged inside a dedicated materials warehouse and brought to the site by Cascade as needed.

Amendment Mixing - Liquid Amendment Mixing:
Amendments will be mixed with dilution water to the design concentration. For this project, amendments will be transferred to tanks for mixing prior to injection. Dilution water will be pre-treated to create anoxic conditions and stored in tanks and amended with ABC Ole. These tanks are required to meet the overall injection performance outlined in our proposal. All tanks will be within secondary containment.

Example Bulk Mixing Tankage

Reporting

Cascade will provide in an Excel format, a daily summary of injection volumes per interval, measured pressures and flows at each of the injection locations. At the completion of the project, the field logs and relevant field notes will be reviewed and evaluated for quality and accuracy prior to the submittal of a final injection report, which will include:

- Location of each borehole
- Volume and depth interval of the solutions applied to each injection location
- Collected data for injection flow, gallons per minute, pressure, and volume

- Digital Output Pressure Vs Flow Graphs from the Pathfinder Injection System

Proposal Assumptions and Clarifications

1. This quotation is firm for 180 days for labor and equipment.
2. Due to the volatile nature of material costs and supply chain issues, the costs for subcontractors, materials, amendments, and rentals are valid for 180 days from proposal date. Although not anticipated based on the timeline proposed in the RFP, if at time of mobilization, the cost of subcontractors, materials and/or rentals has increased significantly, Client will be notified, and a change request may be submitted to capture the change in costs.
3. Work performed Non-Union, Non-Prevailing Wage unless otherwise noted.
4. Work hours assumed 10 hours per day on-site; no holidays or work hour restrictions. 5/2 shifts. Detailed hours of operation are designated in the RFP Response to Questions.
5. Level D PPE is included and supplemental PPE for injections and amendment handling, include face shield. If higher level PPE is required, additional costs will be quoted.
6. Estimated costs include, where applicable, mobilization/demobilization, rentals, drums, HASP/SDS/Reporting. These costs do not include, where applicable, traffic control, utility locates and brush clearing, or any unique logistical considerations not identified in this proposal. Unit cost for private unarmed security has been provide, if needed.
7. Pricing presented in this proposal is based on dosing and design requested by Client. Should dosing or design change, or design assumptions are not able to be met, Cascade reserves the right to adjust costs.
8. Client will procure the proposed amendments, arrange shipping and coordination of deliveries to the Cascade's Richmond, CA facility. Cascade will deliver, unload, store and handle amendments during field implementation. Client is responsible for any surplus reagent disposal or restocking. Cascade will manage recycling of reagent containers.
9. Project will be overseen by a Cascade project manager who will assist with pre-project planning, monitoring daily performance, reporting, and addressing project concerns. Injection data will be available to the Client site representative at all times. Compiled field data from the injection event will be submitted to the Client in electronic format upon completion.
10. Client will provide access to an onsite mixing and staging areas as noted in the RFP. Cascade will supply water via groundwater extraction pumps and have available a City of Concord fire hydrant use permit with hydrant meter, conveyance lines and pluming.
11. The Client will obtain all necessary regulatory approvals and permits (UIC, City encroachment, parking, etc.) related to the work and make all necessary notifications.
12. Cascade will supply temporary security fencing to enclose work area and laydown area as needed up to 1000 ft per area.
13. It is assumed that the work area will be free of surface obstructions allowing easy access to our drill rigs, injection system, conveyance hoses, and crews so as not to cause any production/schedule delays. It is assumed that Cascade can store equipment onsite overnight.
14. It is assumed that the access road to the site is 10 feet wide and clear to a minimum height of 13 ft to allow delivery access for frack tanks.
15. Portable sanitary facilities will be provided by Cascade.
16. Cascade has supplied costs for site restorations. These costs cover leveling or filling ruts, seeding new grass, and removal or any vegetation cut for access. No Hot Patch or Sidewalk replacement is included.

17. Circumstances encountered during the performance of these services could warrant additional time or expense (e.g., difficult drilling conditions, lower injection rates and/or higher injection pressures, reagent surfacing, regulatory delays, adverse weather, muddy conditions, accumulation of rainwater, lightning, and client-imposed injection restrictions or downtime including Client-directed work stoppages). We will notify Client site representative immediately of any such circumstances that could affect the completion time or costs of the engagement. The Client acknowledges that although this proposal may contain remediation options, CRS bears no responsibility for remediation results or impact to existing conditions. The Client indemnifies, holds harmless and shall defend CRS and affiliates against claims or actions, including third party claims or actions, arising from any remediation design, results, or impact to existing conditions. A thorough investigation should be performed by the Client to collect comprehensive data for the proper design of any remedial solution. In addition, treatability tests should be performed to confirm the quantity and concentrations of reagents injected to treat contaminants of concern, as well as identify any adverse reactions that might impact existing site conditions.
18. Standby rate may be charged during shutdowns, additional site setup, or daylighting due to others. This pertains to well injections that are on a per each rate.

We appreciate the opportunity to provide you with our estimate and proposal. If you need any additional information, please contact Chris Tatum at 510-772-0841.

Cascade Remediation Services, LLC

By		By	
Name	Chris Tatum	Name	
Title	BU Manager	Title	
Date	7-23-2024	Date	

Please sign below to acknowledge acceptance of this estimate and proposal and authorize Cascade to begin with final contract and work authorization.

ERM

_____

Authorized Signature Date

_____

Name (Print) P.O. or Project #.

Signature above confirms signee has reviewed the cost estimate and proposal and agrees with remediation approach, assumptions, and budgetary costs. The next steps toward project implementation:

1. Sign Cost Estimate and Proposal.
2. Cascade to finalize cost estimate based on any data gaps filled by Optimization steps, and any unique site logistics identified during a site walk.
3. Finalize Contract Documents incorporating this proposal.

4. Cascade to schedule project after all local and regulatory permits, access agreements, any pre-payments for chemistries have been completed.
5. Client and Cascade participate in pre-mobilization project call finalizing all project requirements, equipment to be utilized and contingencies,
6. Cascade implements remediation.
7. If required, Cascade and Client can work collaboratively in evaluating post remediation groundwater and soil data until remediation goals have been met.

ATTACHMENTS

Attachment 1: Completed Bid Form and RFP Response to Questions

Attachment 2: Key Bidder and Sub Employee Quals and Exp

Attachment 3: H&S Safety Program

Attachment 4: Work Hours

Attachment 5: Work Days

Attachment 6: Temp Facilities and Site Access Layout

Attachment 7: Redline-Strikeout comments on ERM SWA

Attachment 8: ERM Bid Submittal Checklist

Attachment #1 - Bid Form

Cascade is providing bids for well installation and injection services. Cascade is open to contracting each scope independently or together however contracting both to Cascade would benefit the project.

Cascade has provided Injection Service Rates. Cascade has all provided TWO well installation rate sheets. The first sheet will be in effect if both drilling and injection are awarded to Cascade. The 2nd drilling rate sheet would be in affect if the injection services are not awarded to Cascade.

ATTACHMENT 3-2
Bid Form
Request for Proposal
Well and Direct Push Injection Activities - Alternative Scope
Hookston Station
Pleasant Hill, California
Cascade Remediation Services - ChrisTatum

Item No.	Item Description	Estimated Quantity	Estimated Units	Item Unit Price Bid	Item Extended Price Bid
Source Area Work					
1	Mobilization	1	LS	$ 3,350.00	$ 3,350.00
2	Reagent Receipt, Storage and Project Site Delivery	1	LS	$ 450.00	$ 450.00
3	Implementing health and safety	1	LS	$ 500.00	$ 500.00
4	Onsite water extraction and handling for reagent mixing (pumps, generator, hoses etc.), for the duration of injection	1	LS	$ 4,400.00	$ 4,400.00
5	Obtain hydrant meter and pay for water use	1	LS	$ 450.00	$ 450.00
6	Hydrant meter water charge		GAL	$ 0.02	$ -
7	Frac tank for anoxic water storage (including Newman Zone or equal) for the duration of injection	1	MN	$ 5,900.00	$ 5,900.00
8	Direct Push Points Injections (see section 3.2 for specifics)	5	DY	$ 6,150.00	$ 30,750.00
9	Additional direct push injections due to surfacing challenges		DY	$ 6,150.00	$ -
10	Well Injections (see section 3.2 for specifics)	9	EA	$ 4,950.00	$ 44,550.00
11	Injection Point Abandonment	280	FT	$ 2.00	$ 560.00
12	Site Restoration to match existing surface	7	EA	$ 100.00	$ 700.00
13	Drums		EA	$ 95.00	$ -
14	Site cleanup and waste staging (designated area)	1	LS	$ 2,395.00	$ 2,395.00
15	Demobilization	1	LS	$ 2,935.00	$ 2,935.00
Mid-Plume Area Work					
1	Mobilization	1	LS	$ 3,500.00	$ 3,500.00
2	Reagent Receipt, Storage and Transport	1	LS	$ 450.00	$ 450.00
3	Implementing health and safety	1	LS	$ 500.00	$ 500.00
4	Onsite water extraction and handling for reagent mixing (pumps, generator, hoses etc.), for the duration of injection	1	LS	$ 4,400.00	$ 4,400.00
5	Obtain hydrant meter and pay for water use	1	LS	$ 450.00	$ 450.00
6	Hydrant meter water charge		GAL	$ 0.02	$ -
5	Frac tank for anoxic water storage (including Newman Zone or equal) for the duration of injection	2	MN	$ 5,900.00	$ 11,800.00
6	Well Injections (see section 3.2 for specifics)	10	EA	$ 17,250.00	$ 172,500.00
7	Drums		EA	$ 95.00	$ -
8	Site cleanup and waste staging (designated area)	1	LS	$ 2,395.00	$ 2,395.00
9	Demobilization	1	LS	$ 2,935.00	$ 2,935.00
Downgradient Area Work					
1	Mobilization	1	LS	$ 3,500.00	$ 3,500.00
2	Reagent Receipt, Storage and Transport	1	LS	$ 450.00	$ 450.00
3	Implementing health and safety	1	LS	$ 500.00	$ 500.00

4	Onsite water extraction, handling for reagent mixing (pumps, generator, hoses etc.), for the duration of injection	1	LS	$ 4,400.00	$ 4,400.00
5	Obtain hydrant meter and pay for water use	1	LS	$ 450.00	$ 450.00
6	Hydrant meter water charge		GAL	$ 0.02	$ -
7	Frac tank for anoxic water storage (including Newman Zone or equal) for the duration of injection	2	MN	$ 5,900.00	$ 11,800.00
8	Direct Push Points for Downgradient Alignment #1 (see section 3.2 for specifics)	9	DY	$ 6,500.00	$ 58,500.00
9	Additional direct push injections due to surfacing challenges		DY	$ 6,500.00	$ -
10	Well Injections for Downgradient Alignment #1 and #2 (see section 3.2 for specifics)	18	EA	$ 9,000.00	$ 162,000.00
11	Injection Point Abandonment	520	FT	$ 1.50	$ 780.00
12	Drums		EA	$ 95.00	$ -
13	Site cleanup and waste staging (designated area)	1	LS	$ 2,500.00	$ 2,500.00
14	Demobilization	1	LS	$ 2,935.00	$ 2,935.00
				Grand Total	$ 543,685.00

A	Site Security Guard		HR	$ 35.00	$ -
B	Standby		HR	$ 850.00	$ -

NOTES

Generated waste (soil, water, surfaced reagent) will need to be properly handled transported and stored at a designated waste area onsite.

Changes made to the bid form in response to bidder questions are indicated in red.

ACRONYMS

LS = lump sum
EA = each
MN = month
DY = day
GAL = gallons

ATTACHMENT 3-1
Bid Form
Request for Proposal
Performance Monitoring and Injection Well Installation and Development Work - Alternative Scope
Hookston Station
Pleasant Hill, California

BID SHEET	RATES IF INJECTION SCOPE IS ALSO AWARDED				
Item No.	**Item Description (see Notes for more details)**	**Estimated Quantity**	**Estimated Units**	**Item Unit Price Bid**	**Item Extended Price Bid**
Source Area Work					
1	Mobilization/Demobilization for Well Installation	1	LS	$ 1,800.00	$ 1,800.00
2	Temporary Fuel Surcharge For Air Vac and Well Installation	1	LS	$ 500.00	$ 500.00
3	Health and Safety for the Work	1	LS	$ 1,500.00	$ 1,500.00
4	Mobilization/Demobilization Air Vac for the Work	1	LS	$ 1,200.00	$ 1,200.00
5	Asphalt/Concrete Coring	2	EA	$ 100.00	$ 200.00
6	Air Vac Onsite	1	DY	$ 2,250.00	$ 2,250.00
7	Drill Rig Use	2	DY	$ 3,200.00	$ 6,400.00
8	Support Truck Onsite during the Air Vac and Well Installation	3	DY	$ 150.00	$ 450.00
9	Monitoring Well Materials for 2" well, Sch. 40 PVC, with 0.020" slotted screens (see 3.2 for specifics)	130	FT	$ 25.00	$ 3,250.00
10	Well Boxes	3	EA	$ 200.00	$ 600.00
11	Forklift (if necessary)		MN	$ 3,500.00	$ -
12	Drums for soil from well installation activities	16	EA	$ 95.00	$ 1,520.00
13	Mobilization/Demobilization for Well Development	1	LS	$ 1,800.00	$ 1,800.00
14	Redevelop Existing Injections Wells (8)	4	DY	$ 2,150.00	$ 8,600.00
14	Develop New Performance Wells (2)	1	DY	$ 2,150.00	$ 2,150.00
15	Drums for purged well development water	10	EA	$ 95.00	$ 950.00
16	Site cleanup and waste staging (designated area)	1	LS	$ 500.00	$ 500.00
Mid-Plume Area Work					
1	Mobilization/Demobilization for Well Installation	1	LS	$ 5,000.00	$ 5,000.00
2	Temporary Fuel Surcharge For Air Vac and Well Installation	1	LS	$ 3,500.00	$ 3,500.00
3	Health and Safety for the Work	1	LS	$ 1,500.00	$ 1,500.00
4	Mobilization/Demobilization Air Vac for the Work	1	LS	$ 5,000.00	$ 5,000.00
5	Air Vac Onsite	5	DY	$ 2,250.00	$ 11,250.00
6	Asphalt/Concrete Coring	10	EA	$ 100.00	$ 1,000.00
7	Drill Rig Use	18	DY	$ 3,200.00	$ 57,600.00
8	Support Truck Onsite during the Air Vac and Well Installation	15	DY	$ 150.00	$ 2,250.00
9	Well Materials for 2" well, Sch. 40 PVC, with 0.020" slotted screens (see 3.2 for specifics)	130	FT	$ 25.00	$ 3,250.00
10	Well Materials for 4" well, Sch. 40 PVC, with 0.020" wire wrap screens (see 3.2 for specifics)	550	FT	$ 45.00	$ 24,750.00
11	Well Boxes	13	EA	$ 200.00	$ 2,600.00
12	Forklift (if necessary)		MN	$ 3,500.00	$ -
12	Drums for soil from well installation activities	48	EA	$ 95.00	$ 4,560.00
13	Mobilization/Demobilization for Well Development	1	LS	$ 5,000.00	$ 5,000.00
14	Development Activites	12	DY	$ 2,150.00	$ 25,800.00
15	Drums for purged well development water	30	EA	$ 95.00	$ 2,850.00
16	Site cleanup and waste staging (designated area)	1	LS	$ 3,000.00	$ 3,000.00
Downgradient Area Work					
1	Mobilization/Demobilization for Well Installation	1	LS	$ 5,000.00	$ 5,000.00

2	Temporary Fuel Surcharge For Air Vac and Well Installation	1	LS	$ 3,500.00	$ 3,500.00
3	Health and Safety for the Work	1	LS	$ 1,500.00	$ 1,500.00
4	Mobilization/Demobilization Air Vac for the Work	1	LS	$ 5,000.00	$ 5,000.00
5	Air Vac Onsite	5	DY	$ 2,250.00	$ 11,250.00
6	Asphalt/Concrete Coring	12	EA	$ 100.00	$ 1,200.00
7	Drill Rig Use	15	DY	$ 3,200.00	$ 48,000.00
8	Support Truck Onsite during the Air Vac and Well Installation	17	DY	$ 150.00	$ 2,550.00
9	Well Materials for 2" well, Sch. 40 PVC, with 0.020" slotted screens (see 3.2 for specifics)	60	FT	$ 25.00	$ 1,500.00
10	Well Materials for 4" well, Sch. 40 PVC, with 0.020" wire wrap screens (see 3.2 for specifics)	480	FT	$ 45.00	$ 21,600.00
11	Well Boxes	13	EA	$ 200.00	$ 2,600.00
12	Forklift (if necessary)		MN	$ 3,500.00	$ -
13	Drums for soil from well installation activities	39	EA	$ 95.00	$ 3,705.00
14	Mobilization/Demobilization for Well Development	1	LS	$ 5,000.00	$ 5,000.00
15	Development Activites	10	DY	$ 2,150.00	$ 21,500.00
16	Drums for purged well development water	30	EA	$ 95.00	$ 2,850.00
17	Site Security		HR	$ 40.00	
18	Site cleanup and waste staging (designated area)	1	LS	$ 3,000.00	$ 3,000.00
				Grand Total	**$ 332,335.00**

NOTES

Changes made to the bid form in response to bidder questions are indicated in red.

ACRONYMS

LS = lump sum

EA = each

MN = month

DY = day

ATTACHMENT 3-1
Bid Form
Request for Proposal
Performance Monitoring and Injection Well Installation and Development Work - Alternative Scope
Hookston Station
Pleasant Hill, California

Item No.	Item Description (see Notes for more details)	Estimated Quantity	Estimated Units	Item Unit Price Bid	Item Extended Price Bid
Source Area Work					
1	Mobilization/Demobilization for Well Installation	1	LS	$ 1,800.00	$ 1,800.00
2	Temporary Fuel Surcharge For Air Vac and Well Installation	1	LS	$ 500.00	$ 500.00
3	Health and Safety for the Work	1	LS	$ 1,500.00	$ 1,500.00
4	Mobilization/Demobilization Air Vac for the Work	1	LS	$ 1,200.00	$ 1,200.00
5	Asphalt/Concrete Coring	2	EA	$ 100.00	$ 200.00
6	Air Vac Onsite	1	DY	$ 2,250.00	$ 2,250.00
7	Drill Rig Use	2	DY	$ 3,700.00	$ 7,400.00
8	Support Truck Onsite during the Air Vac and Well Installation	3	DY	$ 200.00	$ 600.00
9	Monitoring Well Materials for 2" well, Sch. 40 PVC, with 0.020" slotted screens (see 3.2 for specifics)	130	FT	$ 27.00	$ 3,510.00
10	Well Boxes	3	EA	$ 200.00	$ 600.00
11	Forklift (if necessary)		MN	$ 3,500.00	$ -
12	Drums for soil from well installation activities	16	EA	$ 105.00	$ 1,680.00
13	Mobilization/Demobilization for Well Development	1	LS	$ 1,800.00	$ 1,800.00
14	Redevelop Existing Injections Wells (8)	4	DY	$ 2,150.00	$ 8,600.00
14	Develop New Performance Wells (2)	1	DY	$ 2,150.00	$ 2,150.00
15	Drums for purged well development water	10	EA	$ 95.00	$ 950.00
16	Site cleanup and waste staging (designated area)	1	LS	$ 500.00	$ 500.00
Mid-Plume Area Work					
1	Mobilization/Demobilization for Well Installation	1	LS	$ 5,000.00	$ 5,000.00
2	Temporary Fuel Surcharge For Air Vac and Well Installation	1	LS	$ 3,500.00	$ 3,500.00
3	Health and Safety for the Work	1	LS	$ 1,500.00	$ 1,500.00
4	Mobilization/Demobilization Air Vac for the Work	1	LS	$ 5,000.00	$ 5,000.00
5	Air Vac Onsite	5	DY	$ 2,250.00	$ 11,250.00
6	Asphalt/Concrete Coring	10	EA	$ 125.00	$ 1,250.00
7	Drill Rig Use	18	DY	$ 3,700.00	$ 66,600.00
8	Support Truck Onsite during the Air Vac and Well Installation	15	DY	$ 200.00	$ 3,000.00
9	Well Materials for 2" well, Sch. 40 PVC, with 0.020" slotted screens (see 3.2 for specifics)	130	FT	$ 27.00	$ 3,510.00
10	Well Materials for 4" well, Sch. 40 PVC, with 0.020" wire wrap screens (see 3.2 for specifics)	550	FT	$ 50.00	$ 27,500.00
11	Well Boxes	13	EA	$ 200.00	$ 2,600.00
12	Forklift (if necessary)		MN	$ 3,500.00	$ -
12	Drums for soil from well installation activities	48	EA	$ 95.00	$ 4,560.00
13	Mobilization/Demobilization for Well Development	1	LS	$ 5,000.00	$ 5,000.00
14	Development Activites	12	DY	$ 2,150.00	$ 25,800.00
15	Drums for purged well development water	30	EA	$ 95.00	$ 2,850.00
16	Site cleanup and waste staging (designated area)	1	LS	$ 3,000.00	$ 3,000.00
Downgradient Area Work					
1	Mobilization/Demobilization for Well Installation	1	LS	$ 5,000.00	$ 5,000.00

2	Temporary Fuel Surcharge For Air Vac and Well Installation	1	LS	$ 3,500.00	$ 3,500.00
3	Health and Safety for the Work	1	LS	$ 1,500.00	$ 1,500.00
4	Mobilization/Demobilization Air Vac for the Work	1	LS	$ 5,000.00	$ 5,000.00
5	Air Vac Onsite	5	DY	$ 2,250.00	$ 11,250.00
6	Asphalt/Concrete Coring	12	EA	$ 125.00	$ 1,500.00
7	Drill Rig Use	15	DY	$ 3,700.00	$ 55,500.00
8	Support Truck Onsite during the Air Vac and Well Installation	17	DY	$ 200.00	$ 3,400.00
9	Well Materials for 2" well, Sch. 40 PVC, with 0.020" slotted screens (see 3.2 for specifics)	60	FT	$ 27.00	$ 1,620.00
10	Well Materials for 4" well, Sch. 40 PVC, with 0.020" wire wrap screens (see 3.2 for specifics)	480	FT	$ 50.00	$ 24,000.00
11	Well Boxes	13	EA	$ 200.00	$ 2,600.00
12	Forklift (if necessary)		MN	$ 3,500.00	$ -
13	Drums for soil from well installation activities	39	EA	$ 95.00	$ 3,705.00
14	Mobilization/Demobilization for Well Development	1	LS	$ 5,000.00	$ 5,000.00
15	Development Activites	10	DY	$ 2,150.00	$ 21,500.00
16	Drums for purged well development water	30	EA	$ 105.00	$ 3,150.00
17	Site Security		HR	$ 40.00	
18	Site cleanup and waste staging (designated area)	1	LS	$ 3,000.00	$ 3,000.00
				Grand Total	**$ 358,385.00**

NOTES

Changes made to the bid form in response to bidder questions are indicated in red.

ACRONYMS

LS = lump sum

EA = each

MN = month

DY = day

Attachment #2 Key Bidder and SUB SOQ

- C-57, A, HAZ - # 1069034
- Key Personell (Resumes Available Upon request)
  Cascade and ERM have an outstanding track record of completing technically challenging projects together. Cascade offers our dedicated team to this project.
  - BU Manager – Chris Tatum
  - Technical Expert – John McAssey
  - Project Manager – Jared Plank
  - Construction Supervisor – Felix Jimenez
  - H&S Regional Manager – Rocky Tooyak
  - H&S Director – Brooke King
  - Shop Manager / Field Support – Doug Palacios
  - Field Support – Sergio Navarro
  - Field Leads and Field Crews and Field Safety Officer– Expert Crews requested and favourited by ERM for similar projects.
  - Administrative Support – Shelley Ambriz
- Potential Subcontractors
  - Private Security
    - Property Security Services, Inc.

Attachment #3 H&S

Safety Program

In keeping with Cascade's core commitment of delivering safety, quality and value to our clients, our CORE™ behavior-based safety program creates a self-sustaining safety culture in which participation and success are measured at every level. Training is the foundation of the CORE™ program and is structured to develop skills, accentuate strengths, support client performance and drive toward a zero-incident goal. The design and application of communication programs such as health and safety plans (HASP), job safety analyses (JSA) and hazard communication in the form of safety data sheets are aimed to strengthen education, ensure global understanding and expedite information.

Seven Elements of Cascade's Core™ Safety Program

- Inspections and Audits
- Compliance and Risk Management
- Recognition and Accountability
- Training
- Communications
- Management Involvement
- Incident Investigation and Case Management

Cascade will prepare a site-specific HASP to address worker and public safety. Cascade's HASP supplements Cascade's Injury and Illness prevention program and Client's site-specific HASP. Cascade's HASP includes applicable JSAs and safety data sheets (SDS), describes the work to be performed by Cascade and addresses health and safety concerns with respect to proposed field activities, such as personal protection requirements and safe working practices, monitoring and site control procedures, and contingency plans for emergency situations. The CORE program includes seven facets, consistent with guidance for effective safety programs.

Site Safety Plan Summary

Cascade is a leader in safety with one of the most comprehensive safety programs in the industry. Our training, near miss, and lessons learned programs are engrained into each employee's daily life. Once a project is awarded to Cascade, a site-specific Health and Safety plan (HASP) will be created. This plan will detail numerous aspects of the hazards associated with the site, tasks involved, and chemicals being used, but in general, the HASP will contain the following:

- Site map with exact location, entrance and exit points and best possible muster points depending on conditions.
- List of personnel and contact information for employees onsite and supporting the project.
- Route to the nearest hospital or medical facility along with contact information.
- COVID-19 specific prevention measures to ensure worker safety.
- Job Safety Analysis (JSA) detailing each job task onsite with its potential hazards and best practices to avoid those hazards.
- Description and hazards of the contaminates of concern (COC) with appropriate Personal Protection Equipment (PPE) requirements.

- List and description of all chemicals onsite including a Safety Data Sheet (SDS) for each chemical.
- Checklist of site safety equipment including fire extinguishers, safety shower, eyewash station, first aid kit, spill prevention kit and any site-specific equipment needed.
- Daily Tailgate safety meeting sheet with identified hazards and risks associated with the site and job tasks for that day, along with shared learning observations from the previous day.
- Cascade uses Work Care for any non-emergency incidents onsite. All employees are directed to call Work Care to report any incident that may occur while on duty.
- Should any incident occur while onsite including injury, property damage or spill, the incident will be documented and reported using a Notice of Incident (NOI). Once the NOI has been submitted an investigation will occur to determine the root cause of the incident and administer the appropriate corrective/disciplinary actions.

Attachment #4 Work Hours

Cascade has the ability to provide multiple work schedules and crews. For least impact to the nearby homes and public spaces, Cascade proposes a 10 hrs shift as noted times in the RFP Response to Questions. Times can be adjusted on an as needed bases to meet the schedule. Work includes no planned night work.

Attachment #5 Work Days

To least impact nearby homes and public spaces, Cascade proposes a M-F schedule with weekends off. Cascade has the ability to work weekends or other alternate schedules. Cascade can also work multiple areas at one time to shorten overall project duration. No work will be completed on Holidays.

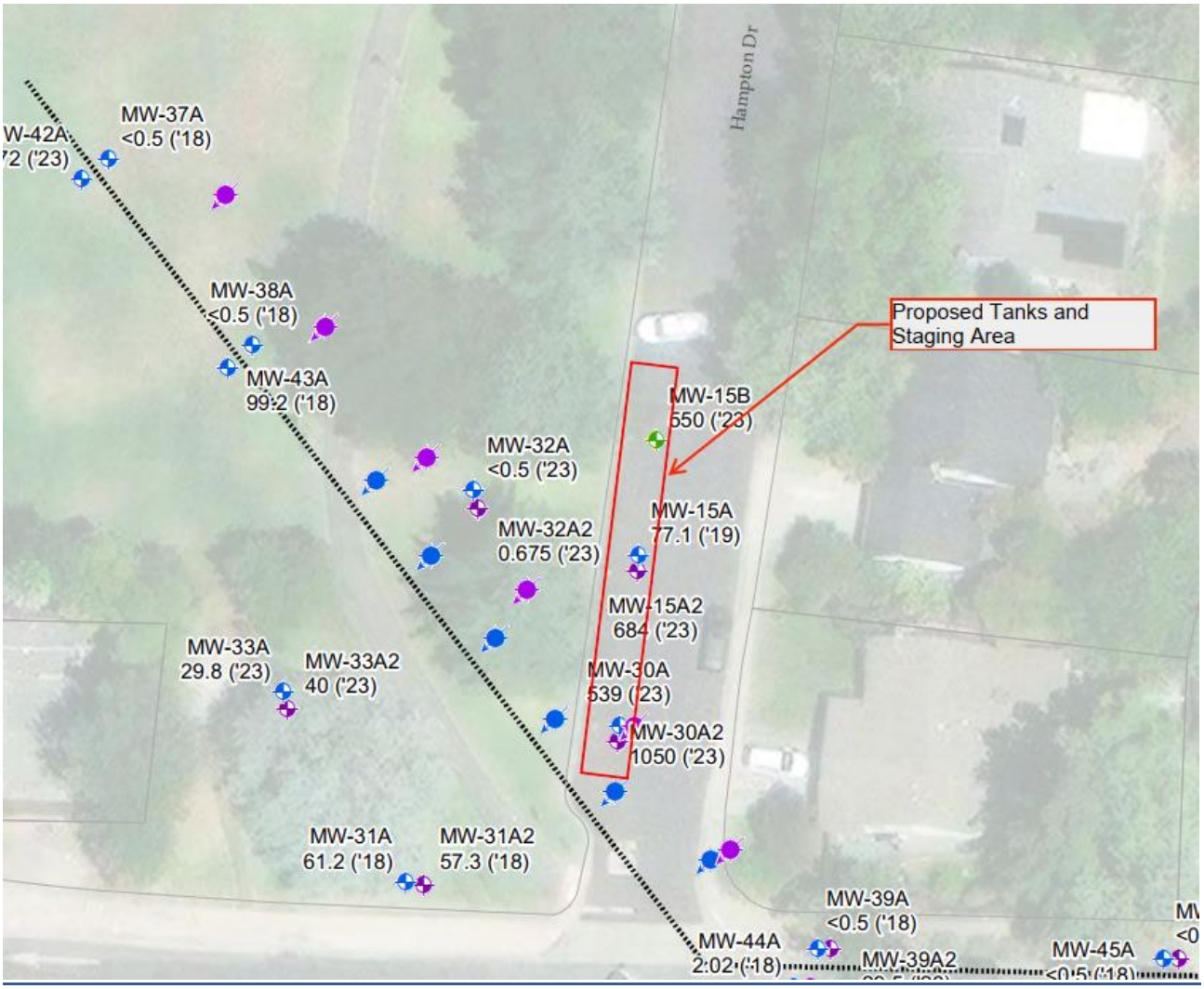
Attachment #6 Proposed Temporary Facilities and Site Layout

Cascade has included a contained mixing area that will include all mix tanks, pumps, and hoses to complete the work. This equipment will be enclosed inside temporary fencing. Portable toilet and wash station will be staged at each location. Areas can be adjusted to meet needs of all parties and reduce impact to any homes or public spaces.

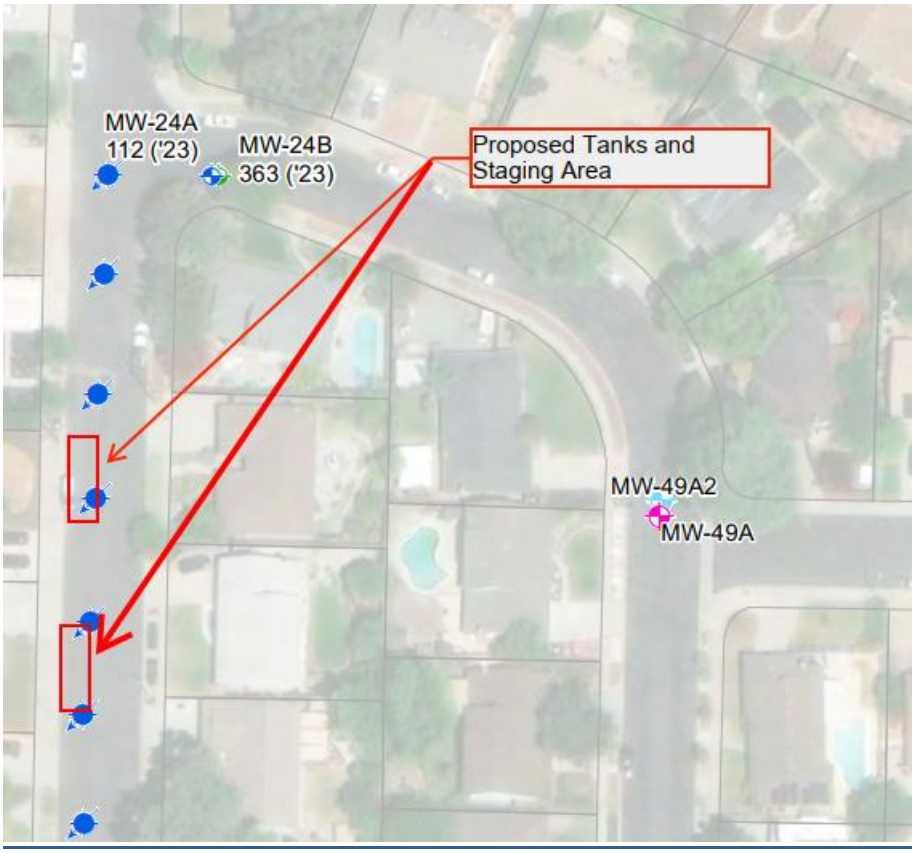
Source Area Injections

Mid-Plume Treatment Area

Down Gradient Alignment #1



Down Gradient Alignment #2



Attachment #7 Redline-Strikeouts

- All terms per current MSA with Cascade and ERM

Attachment #8 Bid Checklist

ATTACHMENT 3-3
Bid Submittal Checklist
Request for Proposal
Hookston Station
Pleasanton, California

Add Y/N confirmation that each of the required information/document listed below is included with the Proposal

Item No.	Description	Included? (Yes/No)
1	Completed Bid Form - Attachment 3-1 (including review of the "Notes")	X
2	Key Bidder and Subcontractor Employee Qualifications and Experience (see 4.2.1)	x
3	Health and Safety Program (see 4.2.2)	x
4	Work Hours (see 4.2.3)	x
5	Work Days (see 4.2.4)	x
6	Temporary Facilities and Site Access Layout (see 4.2.5)	x
7	Redline-strikeout comments on the ERM SWA General T&Cs (see 4.4 and 4.5)	x

Monday, July 22, 2024

ERM
1340 Treat Blvd
Walnut Creek, CA 94597

SUBJECT: ABC-Ole INJECTION SERVICES
ESTIMATE NO: LR2407-0326

We are pleased to offer this In-Situ Remediation Cost Estimate for ABC-Ole Injection at the Hookston Station property located at in Pleasant Hill, CA.

We appreciate the opportunity to bid on this work, and we look forward to working with you. Should you have any questions or regarding this cost estimate or our injection approach, please don't hesitate to contact me at (714) 494-6609.

Sincerely,

Jake Wilson
Legacy Remediation, Inc.
jwilson@legacyremediation.com

Todd Hanna
Legacy Remediation, Inc.
thanna@legacyremediation.com

IN-SITU REMEDIATION SCOPE OF WORK:

Source Area:

- A-Zone Direct Push Injection: 17,952 gallons of 1.3% ABC-Ole reagent mix injected across 7 DPT points at depths of 15 to 40 ft bgs. Target flow rate of 2-5 gpm, and target pressure below 50 psi, not to exceed 150 psi.
- A2-Zone Well Injection: 7,183 gallons of 1.3% ABC-Ole reagent mix injected across 4 wells screened from 36 to 46 ft bgs. Target flow rate of 2-5 gpm, and target pressure below 10 psi, not to exceed 30 psi.
- B-Zone Well Injection: 42,423 gallons of 1.3% ABC-Ole reagent mix injected across 5 wells screened from 49 to 56 ft bgs. Target flow rate of 10 gpm, and target pressure below 10 psi, not to exceed 44 psi.

Mid-Plume Area:

- A/A2-Zone Well Injection: 34,791 gallons of 1.3% ABC-Ole reagent mix injected across 6 wells screened from 15 to 25 and 30 to 40 ft bgs. Target flow rate of 2-5 gpm, and target pressure not to exceed 10 psi.
- B-Zone Well Injection: 187,873 gallons of 1.3% ABC-Ole reagent mix injected across 4 wells screened from 40 to 55 ft bgs. Target flow rate of 10 gpm, and target pressure below 10 psi, not to exceed 35 psi.

Downgradient Area:

- A/A2-Zone Well Injection: 34,791 gallons of 1.3% ABC-Ole reagent mix injected across 6 wells screened from 15 to 25 and 30 to 40 ft bgs. Target flow rate of 2-5 gpm, and target pressure not to exceed 10 psi.
- B-Zone Well Injection: 393,927 gallons of 1.3% ABC-Ole reagent mix injected across 6 wells screened from 40 to 55 ft bgs. Target flow rate of 10 gpm, and target pressure below 10 psi, not to exceed 35 psi.
- A/A2-Zone Direct Push Injection: 44,892 gallons of 1.3% ABC-Ole reagent mix injected across 13 DPT points at depths of 15 to 40 ft bgs. Target flow rate of 2-5 gpm, and target pressure below 50 psi, not to exceed 150 psi.

		WEEK							
	Days	1	2	3	4	5	6	7	8
Downgradient - A/A2-Zone & B-Zone Well Injections	20								
Downgradient - A/A2-Zone DPT Injections	14								
Mid-Plume - A/A2-Zone & B-Zone Well Injections	20								
Source Area - A-Zone DPT/ B-Zone Well Injections	10								
Source Area - A2-Zone Well Injections	2								
TOTAL RIG DAYS	66								
Rig 1 Days	40								
Rig 2 Days	26								
DPT Injection Days	21								
Well Injection Days	45								

Work Hours: Work hours will be 9 hours onsite between 7am-5pm

Work Days: Work days will be Monday - Friday except for holidays that may fall during the work schedule

IN-SITU REMEDIATION SCOPE OF WORK AND APPROACH:

As shown on the schedule above, Legacy proposes running two injection rigs for the first 6 weeks and a single injection rig for the remaining 2 weeks in order to complete the project in a total of 8 weeks. Below is an overall logistics summary as well as a breakdown of the tasks by rig.

Legacy will set up two 21,000-gallon frac tanks in the western parking lane of Hampton Drive approximately 50-100 feet north of the injection wells located on Hampton Drive. Legacy will plumb both tanks to the nearby hydrant located on the north side of Hookston Road and set up a mixing station to allow anoxic water to be made and for carbon substrate to be mixed in once the water is considered anaerobic. Mixed solution will be drawn directly from the frac tanks for the downgradient A/A2-Zone and B-Zone well injections and will be transported by 2,000-gallon water truck for the other areas.

Other equipment anticipated to be used include:
stakebed truck for transportation of neat carbon substrate from Legacy's yard to the jobsite daily. Unused substrate will be brought back for secure storage and empty containers will be brought back for disposal;
forklift as needed for setup/takedown when moving between areas;
and portable toilets at each work area.

Rig 1 will begin with downgradient wells and will plumb directly into the frac tanks minimizing logistical hurdles. It is anticipated that it will take 24 days to complete this zone averaging 9 injection points and 45 gpm. Once the downgradient wells are completed, this rig will move to the mid-plume wells. A holding tank or tanks will be used to allow injections to run uninterrupted while a water truck transports solution from the frac tanks to the mid-plume area. It is anticipated that it will take 16 days to complete this zone averaging 8 injection points and 38 gpm.

Rig 2 will begin with downgradient DPT points and will use a holding tank to hold mixed solution transported by a water truck from the frac tanks. It is anticipated that it will take 14 days to complete this zone averaging 4 injection points and 12 gpm. Given the linear nature of this zone, the injection rig will have to move frequently to allow it to reach DPT points as it moved down the street. Legacy anticipates this setup being fully mobile and easily moveable. Once the downgradient DPT points are completed, this rig will move to the source area and simultaneously inject on the A-zone wells and DPT points. It is anticipated that it will take 7 days to complete the DPT portion of this zone averaging 3-4 injection points and 10.5 gpm and 3 days to complete the well portion of this zone averaging 4 injection points and 12 gpm. Finally, this rig will move to the source area B-Zone wells and complete injections in 3 days averaging 5 injection points and 50 gpm.

ATTACHMENT 3-2
Bid Form
Request for Proposal
Well and Direct Push Injection Activities - Alternative Scope
Hookston Station
Pleasant Hill, California

Item No.	Item Description	Estimated Quantity	Estimated Units	Item Unit Price Bid	Item Extended Price Bid
Source Area Work					
1	Mobilization	1	LS	$ 1,250.00	$ 1,250.00
2	Reagent Receipt, Storage and Project Site Delivery	1	LS	$ 1,500.00	$ 1,500.00
3	Implementing health and safety	1	LS	included	$ -
4	Onsite water extraction and handling for reagent mixing (pumps, generator, hoses etc.), for the duration of injection	1	LS	$ 3,000.00	$ 3,000.00
5	Obtain hydrant meter and pay for water use	1	LS	$ 500.00	$ 500.00
6	Hydrant meter water charge	67558	GAL	$ 0.01	$ 675.58
7a	Frac tank for anoxic water storage (including Newman Zone or equal) for the duration of injection, Delivery	1	LS	$ 2,000.00	$ 2,000.00
7b	Frac tank for anoxic water storage (including Newman Zone or equal) for the duration of injection, Rental	3	WK	$ 900.00	$ 2,700.00
8	Direct Push Points Injections (see section 3.2 for specifics)	7	DY	$ 6,700.00	$ 46,900.00
9	Additional direct push injections due to surfacing challenges	0	DY	$ 6,700.00	$ -
10	Well Injections (see section 3.2 for specifics)	9	EA	$ 2,600.00	$ 23,400.00
11	Injection Point Abandonment	7	EA	$ 50.00	$ 350.00
12	Site Restoration to match existing surface	7	EA	$ 25.00	$ 175.00
13	Drums	1	EA	$ 95.00	$ 95.00
14	Site cleanup and waste staging (designated area)	1	LS	included	$ -
15	Demobilization	1	LS	$ 1,250.00	$ 1,250.00
Mid-Plume Area Work					
1	Mobilization	1	LS	$ 1,250.00	$ 1,250.00
2	Reagent Receipt, Storage and Transport	1	LS	$ 1,500.00	$ 1,500.00
3	Implementing health and safety	1	LS	included	$ -
4	Onsite water extraction and handling for reagent mixing (pumps, generator, hoses etc.), for the duration of injection	1	LS	$ 4,000.00	$ 4,000.00
5	Obtain hydrant meter and pay for water use	1	LS	$ 500.00	$ 500.00
6	Hydrant meter water charge	222664	GAL	$ 0.01	$ 2,226.64
7a	Frac tank for anoxic water storage (including Newman Zone or equal) for the duration of injection, Delivery	1	LS	$ 2,000.00	$ 2,000.00
7b	Frac tank for anoxic water storage (including Newman Zone or equal) for the duration of injection, Rental	4	WK	$ 900.00	$ 3,600.00
6	Well Injections (see section 3.2 for specifics)	10	EA	$ 8,900.00	$ 89,000.00
7	Drums	0	EA	$ 95.00	$ -
8	Site cleanup and waste staging (designated area)	1	LS	included	$ -
9	Demobilization	1	LS	$ 1,250.00	$ 1,250.00

Downgradient Area Work					
1	Mobilization	1	LS	$ 1,250.00	$ 1,250.00
2	Reagent Receipt, Storage and Transport	1	LS	$ 1,500.00	$ 1,500.00
3	Implementing health and safety	1	LS	included	$ -
4	Onsite water extraction, handling for reagent mixing (pumps, generator, hoses etc.), for the duration of injection	1	LS	$ 9,500.00	$ 9,500.00
5	Obtain hydrant meter and pay for water use	1	LS	$ 500.00	$ 500.00
6	Hydrant meter water charge	473610	GAL	$ 0.01	$ 4,736.10
7a	Frac tank for anoxic water storage (including Newman Zone or equal) for the duration of injection, Delivery	1	LS	$ 2,000.00	$ 2,000.00
7b	Frac tank for anoxic water storage (including Newman Zone or equal) for the duration of injection, Rental	4	WK	$ 900.00	$ 3,600.00
8	Direct Push Points for Downgradient Alignment #1 (see section 3.2 for specifics)	14	DY	$ 6,700.00	$ 93,800.00
9	Additional direct push injections due to surfacing challenges	0	DY	$ 6,700.00	$ -
10	Well Injections for Downgradient Alignment #1 and #2 (see section 3.2 for specifics)	12	EA	$ 7,600.00	$ 91,200.00
11	Injection Point Abandonment	13	EA	$ 75.00	$ 975.00
12	Drums	2	EA	$ 95.00	$ 190.00
13	Site cleanup and waste staging (designated area)	1	LS	included	$ -
14	Demobilization	1	LS	$ 1,250.00	$ 1,250.00
				Grand Total	$ 399,623.32

NOTES

Generated waste (soil, water, surfaced reagent) will need to be properly handled transported and stored at a designated waste area onsite.

Changes made to the bid form in response to bidder questions are indicated in red.

ACRONYMS

LS = lump sum

EA = each

MN = month

DY = day

GAL = gallons