

April 26, 2024

Kristin Beck
Washington State Department of Ecology
Toxics Cleanup Program
4601 North Monroe Street
Spokane, Washington 99205-1295

RE: PROPOSED COMPLIANCE GROUNDWATER MONITORING MODIFICATIONS AND

MICROSPARGE/SOIL VAPOR EXTRACTION SYSTEM 2024 OPTIMIZATION PLAN

CENEX HARVEST STATES COOPERATIVES SITE

300 DIVISION STREET EAST QUINCY, WASHINGTON FARALLON PN: 301-001

Dear Kristin Beck:

Farallon Consulting, L.L.C. (Farallon) has prepared this letter on behalf of CHS Inc. (CHS) (formerly Cenex Harvest States Cooperatives) to provide a revised compliance groundwater monitoring schedule and scope, and an optimization plan for the microsparge/soil vapor extraction system (MS/SVE) for 2024 for the Cenex Harvest States Cooperatives Site (herein referred to as the Site) (Figure 1). The Site consists of the property near 300 Division Street East in Quincy, Washington (herein referred to as the CHS Property) and adjacent and downgradient properties where hazardous substances released from the CHS Property have come to be located. Figure 2 presents a facility map of the CHS Property and Figures 3A and 3B present a map the CHS Property and Site monitoring well network.

BACKGROUND

Compliance groundwater monitoring has been conducted at the Site since 2001 on a quarterly basis at the monitoring wells specified in the approved Draft Remedial Action Work Plan (RAP),¹ in accordance with Consent Decree No. DE-00TCPER-1815 dated February 22, 2001 entered into by the Washington State Department of Ecology (Ecology) and Cenex Harvest States Cooperatives (Consent Decree).²

¹ Farallon. 2021. *Draft Remedial Action Work Plan, Cenex Harvest States Cooperatives Site, 300 Division Street, Quincy, Washington.* Prepared for Cenex Harvest States Cooperatives. July 2.

² Ecology. 2001. Final Consent Decree and Cleanup Action Plan, Cenex/Quincy Site, Quincy, WA. February 22.



The MS/SVE system has also been operating at the Site since 2001 to meet the requirements of the Consent Decree and has been operating under a modified configuration approved by Ecology³ to optimize recovery of volatile organic compound (VOC) vapors generated by sparging activities and from the unsaturated soil matrix. The continued optimization efforts to increase VOC mass removal at the CHS Property have not been fully evaluated due to equipment issues resulting in discontinuous operation during the planned operational time periods as noted in the Revised Annual Report 2023.⁴

The proposed modifications to the compliance groundwater monitoring schedule and scope along with an updated plan for operation/optimization of the MS/SVE system in 2024 are provided in the following sections.

COMPLIANCE GROUNDWATER MONITORING

Compliance groundwater monitoring under the Consent Decree has been conducted quarterly from December 2001 through December 2023 (22 years of quarterly data) in accordance with the Ecology-approved RAP. The quarterly monitoring included collection of groundwater samples for laboratory analysis of indicator hazardous substances (IHSs) at monitoring wells MW-1 through MW-3, MW-5 through MW-9, MW-11 through MW-13, MW-15 through MW-17, MW-20, MW-24 through MW-26, and MW-28 through MW-33 with monitoring wells MW-34 through MW-46 added as they were installed at the Site between 2007 and 2011 (Figure 3A and 3B).

The IHSs for groundwater were established as a subset of the constituents of concern for the Site and defined by Ecology in the Final Cleanup Action Plan,⁵ Exhibit B of the Consent Decree. The IHSs for groundwater for the Site are chloroform, 1,2-dibromoethane, 1,2-dichloropropane (1,2-DCP), 1,1,2-trichloroethane, 1,2,3-trichloropropane, and vinyl chloride.

Periodically, groundwater samples were also collected from Site monitoring wells not included in the quarterly compliance groundwater monitoring program and included

³ Ecology. 2021. Email Regarding Approval of the Cenex Quincy – Proposed Operational Modifications for the MS/SVE System. From Chuck Gruenenfelder. To Tracey Mulhern, Farallon Consulting, L.L.C. August 10.

⁴ Farallon. 2023. Revised Annual Report 2023, Remedial Action Performance and Groundwater Compliance Monitoring, Cenex Harvest States Cooperatives Site, 300 Division Street East, Quincy, Washington. December 14.

⁵ Ecology. 2001. Final Cleanup Action Plan, Cenex/Quincy Site, Quincy, WA. Exhibit B of the Final Consent Decree and Cleanup Action Plan, Cenex/Quincy Site, Quincy, WA dated February 22, 2001 issued by the Washington State Department of Ecology. February 22.



monitoring wells MW-10, MW-14, MW-18, MW-19, MW-21 through MW-23, and MW-27. These monitoring wells were not included in the quarterly compliance monitoring program because groundwater samples collected from the wells generally have not contained IHS concentrations exceeding the laboratory practical quantitation limit or Site cleanup levels. The periodic monitoring was conducted to confirm conditions at these locations have not changed.

The Second Periodic Review completed by Ecology⁶ included a recommendation to continue groundwater monitoring at an agreed upon frequency and sampling locations. CHS proposed changes to the compliance groundwater monitoring schedule and sampling locations in the Revised Annual Report 2023⁷ as the historical groundwater data has demonstrated that the groundwater plume at the Site is stable and concentrations of IHSs have generally been decreasing over the past 10 years. The proposed changes to the groundwater sampling schedule and well locations are provided in the following sections.

SCHEDULE AND SELECTED MONITORING WELLS

The proposed changes to the compliance groundwater sampling program for the Site consists of collecting groundwater samples semiannually for the next 5 years. This sampling frequency and scope would be subject to review at the conclusion of the 5-year monitoring and sampling period.

The semiannual compliance groundwater monitoring events would be collected during the first and third quarters of each calendar year, with the first semiannual compliance groundwater monitoring event conducted during the third quarter 2024. Compliance groundwater samples would not be collected during the second quarter of 2024. The compliance groundwater monitoring details are provided in Table 1 and on Figures 3A and 3B. Monitoring wells that will be sampled semiannually include locations where IHS concentrations have exceeded the laboratory PQL and/or Site cleanup levels. Monitoring wells that will be sampled every 18 months include locations where IHS concentrations have not exceeded the laboratory PQL and/or Site cleanup levels. The 18-month interval will allow for collection of groundwater samples from select Site monitoring wells during an alternating

⁶ Ecology. 2022. Second Periodic Review, CENEX Supply & Marketing Inc. Rinsate, 300 Division St. East, Quincy, Grant County, Facility Site ID No. 33599645, Cleanup Site ID No. 370. Toxics Cleanup Program, Eastern Region. December.

⁷ Farallon. 2023. Revised Annual Report 2023, Remedial Action Performance and Groundwater Compliance Monitoring, Cenex Harvest States Cooperatives Site, 300 Division Street East, Quincy, Washington. December 14.



semiannual event every other year. This frequency is sufficient to evaluate plume stability and continue to confirm that conditions remain protective of human health and the environment.

ANALYTICAL METHOD

Compliance groundwater samples will continue to be analyzed for IHSs by U.S. Environmental Protection Agency Method 8260D.

REPORTING

In lieu of quarterly reporting, semiannual reports will be prepared each year documenting the groundwater compliance monitoring events and MS/SVE system optimization results. Each report will be completed following receipt and validation of the laboratory analytical results for each semiannual groundwater sampling event. The reports will continue to be prepared and submitted in general accordance with the schedule in the Consent Decree.

MICROSPARGE/SOIL VAPOR EXTRACTION SYSTEM 2024 OPERATIONAL PLAN

The MS/SVE system has recovered approximately 0.295 pound of 1,2-DCP over the last 7.5 years of operation, and has recovered an estimated 0.087 pound of 1,2-DCP over the last 2 years of operation under the current pulsed operational scenario. The continued optimization efforts do not appear to have had a significant impact on increasing the 1,2-DCP recovered by the MS/SVE system or groundwater quality within the radius of influence of the system. However, due to equipment issues, the system has not operated continuously during the planned operational time periods.

The historical performance data has been reviewed and a modified optimization plan is being presented herein. The results will be used to evaluate whether the MS/SVE system operations at the former source area(s) should continue, or alternative technologies be considered to complete the cleanup action in a reasonable time frame. The Revised Annual Report 2023 should be referenced regarding details on historical MS/SVE operations.

MS/SVE SYSTEM PROPOSED EVALUATION AND OPERATION

To evaluate MS/SVE system operations and optimize VOC recovery, the following is recommended once repairs to the MS/SVE system compressor motor are completed, the compressor is reinstalled at the Site, and the system is restarted. The MS/SVE system



vacuum blower is currently on and operating VEW wells VEW-1 through VEW-9; and the VEW component of MSW wells MSW-5 through MSW-12.

- Collect air samples for analysis of 1,2-DCP from each individual SVE system VEW well (VEW-1 through VEW-9), as feasible, to identify areas with higher concentrations of 1,2-DCP. 1,2-DCP will be used as an indicator of VOC concentrations.⁸
- Focus the applied vacuum to SVE system VEW wells with higher concentrations of 1,2-DCP by turning off select wells, as feasible.
- Measure dissolved oxygen in monitoring wells MW-3, MW-5, and MW-16 with the air sparge system MSW wells both operating and turned off to evaluate the effects of air sparge system MSW well operation on dissolved oxygen concentrations in the treatment area. The dissolved oxygen measurements would be collected using a down-well dissolved oxygen meter after the MS system compressor motor repairs have been completed and the compressor is reinstalled at the Site.
- Measure vacuum at monitoring wells MW-3, MW-5, and MW-24 to evaluate radius of influence of the SVE system. These monitoring wells have well screens that are partially in the vadose zone and can therefore be used to evaluate the SVE system performance.

Modifications to the MS/SVE system operation will be made following the initial data gathering and evaluation event once the compressor is replaced and potentially adjusted following subsequent evaluation events for the optimization efforts. Bimonthly operations and maintenance events are proposed following replacement of the air compressor for the MS system, assuming the initial startup evaluation does not warrant more frequent adjustment/monitoring schedule to ensure continuous optimal performance of the MS/SVE system.

⁸ The ability to collect air samples from individual VEW wells is dependent upon the accessibility, condition, and functionality of the ball valves located adjacent to each wellhead.



Likely changes to system operation include but are not limited to:

- Ongoing focusing of the applied vacuum to SVE system VEW wells with higher concentrations of 1,2-DCP detected in the individual VEW well sampling;
- Pulsing operation of the air sparge MS wells to mitigate preferential air channeling and increase IHS mass removal; and
- Conducting supplemental SVE system VEW well air sampling following changes in air sparge MS well operation changes to evaluate whether IHS mass removal rates change.

The results of MS/SVE system optimization efforts will be reported under the quarterly progress reporting required under the Consent Decree for the second and fourth quarters, which will be completed via electronic mailing and semiannually for the first and third quarters along with the semiannual groundwater compliance monitoring.

SCHEDULE

Upon approval of the planned activities herein by Ecology, semiannual groundwater sampling will be initiated in the third quarter of 2024, likely in September 2024. Semiannual groundwater sampling events of the monitoring wells presented in Table 1 will continue through the next third periodic review period unless the data collected warrants changes to ensure the remedial action objectives are maintained in accordance with the requirements of the Consent Decree.

Air samples from individual SVE system VEW wells, and measurement of dissolved oxygen and vacuum at key monitoring wells to evaluate the MS system performance will be completed following startup activities of the MS system. The repairs on the air compressor are expected to be completed within the second quarter of 2024. The MS/SVE system optimization efforts will continue through 2024 and will be continuously evaluated as the data is available. The performance of the system will be summarized at the close of 2024 and presented to Ecology in a separate Technical Memorandum for review. The results of the optimization efforts will be used to evaluate further remedial action(s), if any are necessary to achieve the remedial action objectives, that would be implemented in 2025. The MS/SVE system will continue operation until the optimization results and recommendations for further action(s) are evaluated by Ecology.



Farallon appreciates the opportunity to provide environmental consulting services for this project. Please contact either of the undersigned at (425) 295-0800 if you have questions or need additional information.

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Sincerely,

Farallon Consulting, L.L.C.

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Attachments: Figure 1, Property Vicinity Map

Figure 2, CHS Property Plan

Figure 3A, Proposed Compliance Groundwater Monitoring Sampling Locations and Groundwater Analytical Results for 1,2-DCP in Shallow Monitoring Wells Figure 3B, Proposed Compliance Groundwater Monitoring Sampling Locations and Groundwater Analytical Results for 1,2-DCP in Deep Monitoring Wells

Table 1, Modified Compliance Groundwater Monitoring Schedule

cc: Allyson Bazan, Hillis Clark Martin & Peterson P.S.

Ann Van Dyke, Blakal Packing Cassie Roberts, Perkins Coie LLP

Jacob Blair, Hillis Clark Martin & Peterson P.S.

Lynn Grochala, Floyd|Snyder Mike Dunning, Perkins Coie LLP Nik Bergman, Quincy School District

Shawna Conroy, CHS Inc. Chris Guess, CHS Inc.

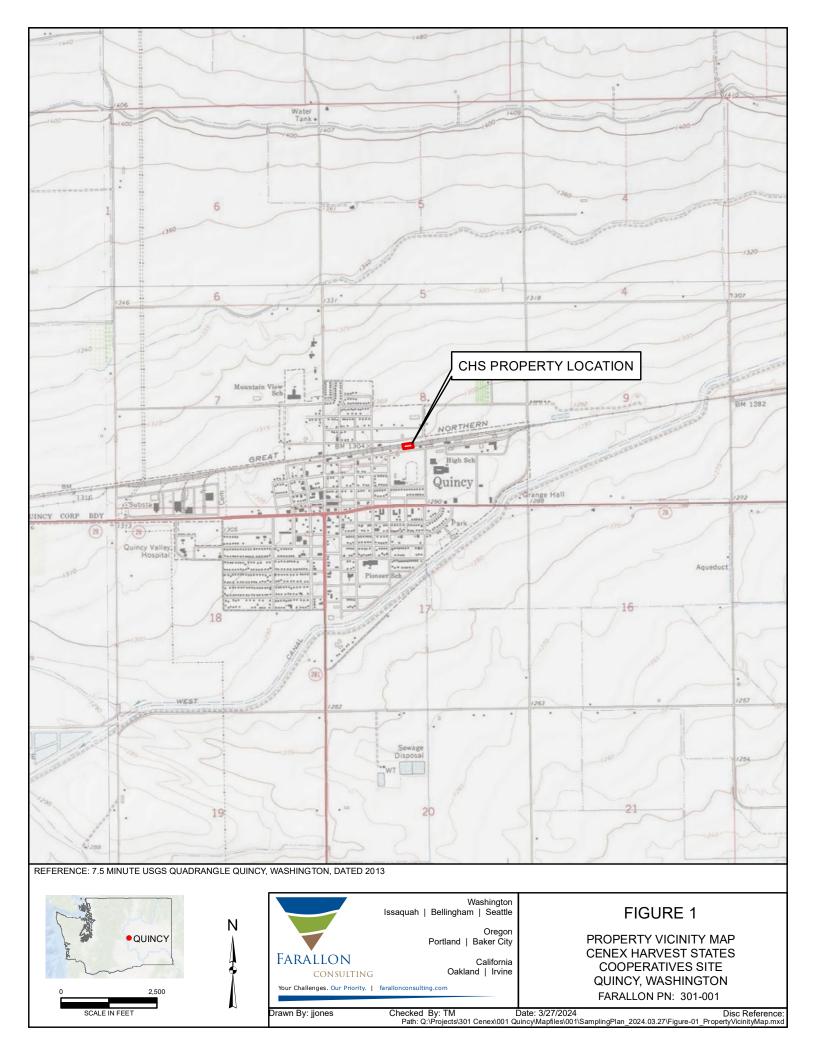
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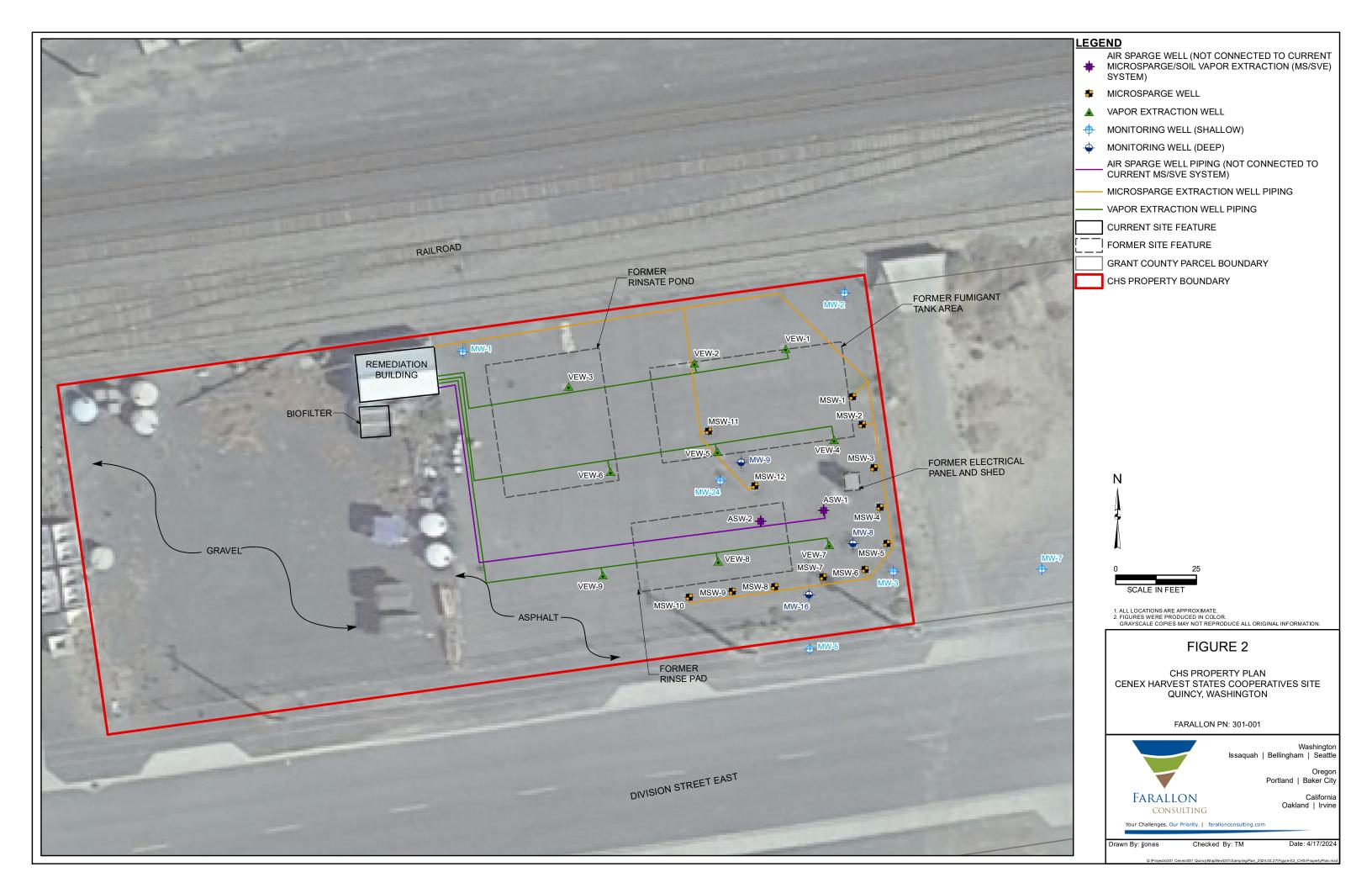
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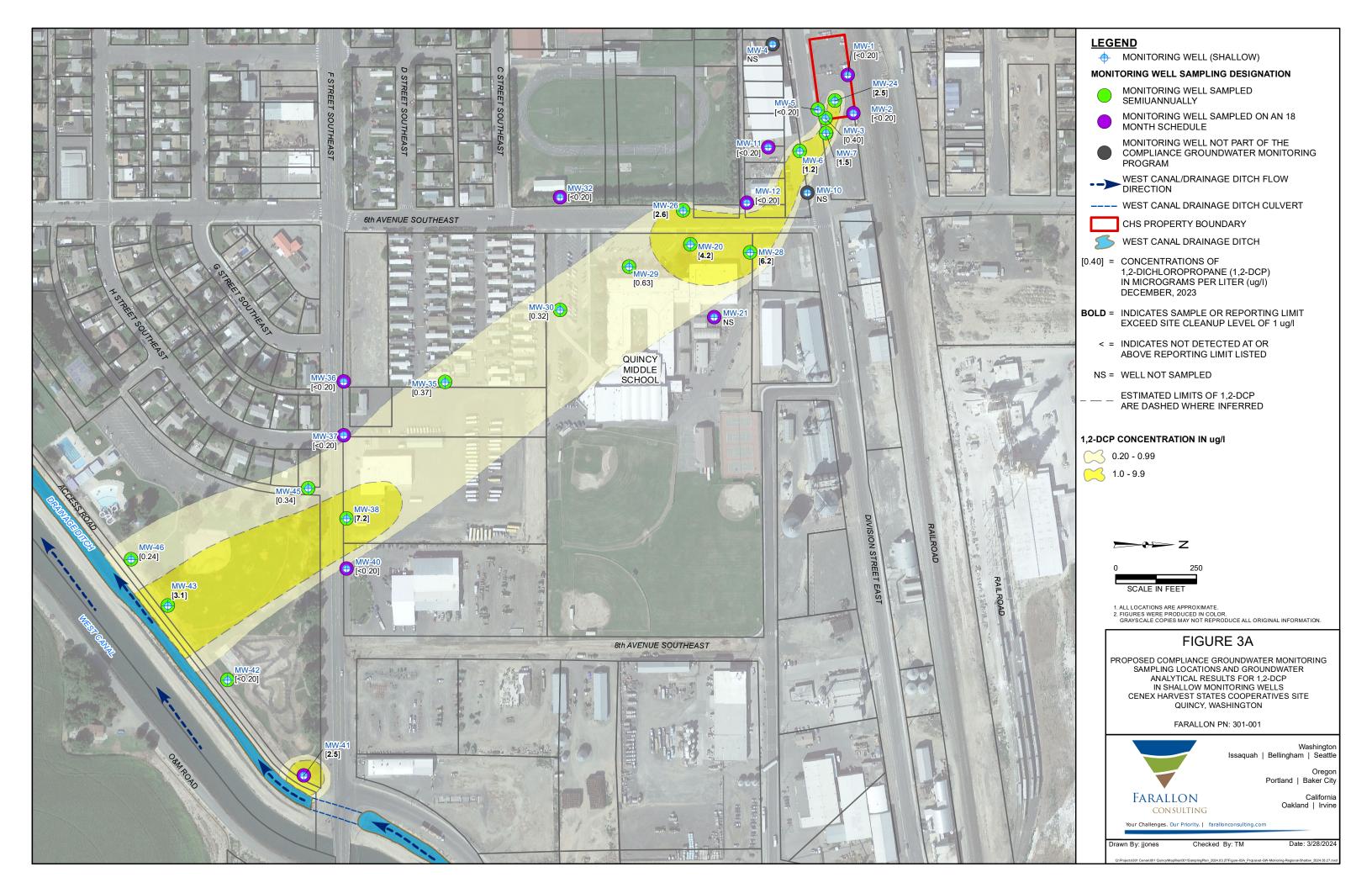
FIGURES

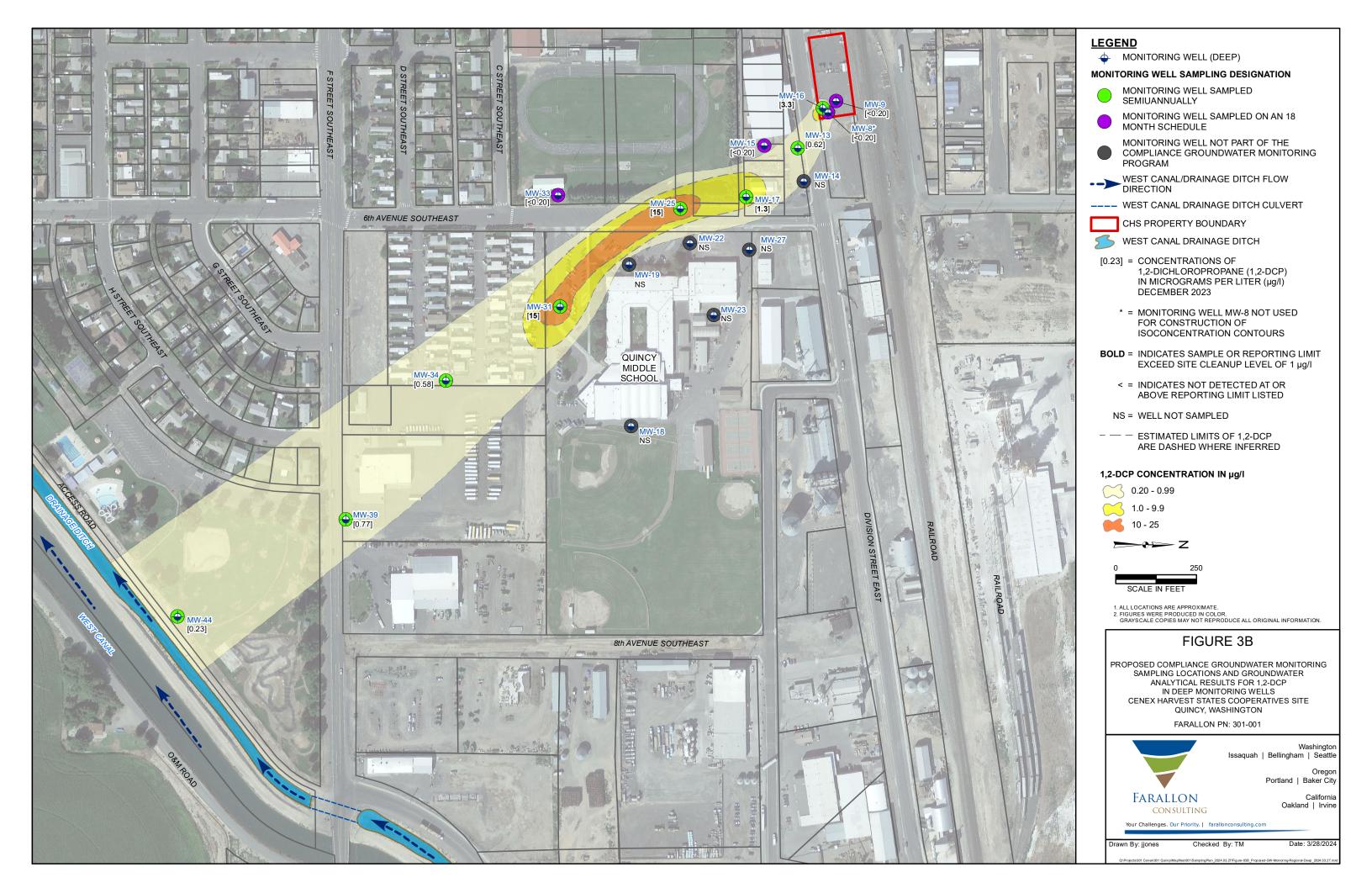
PROPOSED COMPLIANCE GROUNDWATER MONITORING MODIFICATIONS AND MICROSPARGE/SOIL VAPOR EXTRACTION SYSTEM 2024 OPTIMIZATION PLAN Cenex Harvest States Cooperatives Site 300 Division Street East Quincy, Washington

Farallon PN: 301-001









TABLE

PROPOSED COMPLIANCE GROUNDWATER MONITORING MODIFICATIONS AND MICROSPARGE/SOIL VAPOR EXTRACTION SYSTEM 2024 OPTIMIZATION PLAN Cenex Harvest States Cooperatives Site 300 Division Street East Quincy, Washington

Farallon PN: 301-001

Table 1 Modified Compliance Groundwater Monitoring Schedule Cenex Harvest States Cooperatives Site Quincy, Washington

Farallon PN: 301-001

		Monitoring Well		Monitoring Well Sampling Schedule											
				2024 2025		25	2026		2027		2028		20	29	
Monitoring Well Identification	Screened Interval (feet) ¹	Designation Deep or Shallow	Plume Location	Third Quarter	First Quarter	Third Quarter	First Quarter	Third Quarter	First Quarter	Third Quarter	First Quarter	Third Quarter	First Quarter (March/April	Third Quarter	
MW-1	20-25	Shallow	Upgradient	_	_	Х	_	_	Х	_	_	Х	_	_	
MW-2	20-25	Shallow	Upgradient	_	_	Х	_	_	Х	_	_	Х	_	-	
MW-3	20-25	Shallow	Source	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Χ	
MW-4	21-26	Shallow	Cross gradient	_	_	_	_	_	_	_	_	_	_	_	
MW-5	20-25	Shallow	Source	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	
MW-6	20-25	Shallow	Downgradient	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	
MW-7	20-25	Shallow	Downgradient	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	
MW-8	55-60	Deep	Source	_	_	Х	_	_	Х	_	_	Х	_	_	
MW-9	35-40	Deep	Source	_	_	Х	_	_	Х	_	_	Х	_	_	
MW-10	20-25	Shallow	Downgradient	_	_	_	_	_	_	_	_	_	_	_	
MW-11	20-25	Shallow	Downgradient	_	_	Х	_	_	Х	_	_	Х	_	_	
MW-12	20-25	Shallow	Downgradient	_	_	Х	_	_	Х	_	_	Х	_	_	
MW-13	40-45	Deep	Downgradient	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	
MW-14	35-45	Deep	Downgradient	_	_	_	_	_	_	_	_	_	_	_	
MW-15	35-45	Deep	Downgradient	_	_	Х	_	_	Х	_	_	Х	_	_	
MW-16	35-45	Deep	Source	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Χ	
MW-17	35-45	Deep	Downgradient	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Χ	
MW-18	40-45	Deep	Downgradient	_	_	_	_	_	_	_	_	_	_	_	
MW-19	41-46	Deep	Downgradient	_	_	_	_	_	_	_	_	_	_	_	
MW-20	17-27	Shallow	Downgradient	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	
MW-21	22-27	Shallow	Downgradient	_	_	Х	_	_	Х	_	_	Х	_	_	
MW-22	42-47	Deep	Downgradient	_	_	_	_	-	_	_	_	_	_	_	
MW-23	41.5-46.5	Deep	Downgradient	_	_	_	_	-	_	_	_	_	_	_	
MW-24	19-24 ²	Shallow	Source	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	
MW-25	43-48	Deep	Downgradient	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	
MW-26	23-28	Shallow	Downgradient	Х	Х	Х	X	Х	Х	Х	Х	X	Х	Χ	
MW-27	28-48	Shallow	Downgradient	_	-	_	_	_	_	_	-	_	_	ı	
MW-28	18-28	Shallow	Downgradient	Х	X	X	X	Х	X	Х	X	X	Х	Χ	
MW-29	23-28	Shallow	Downgradient	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Χ	
MW-30	18-28	Shallow	Downgradient	Χ	Х	Х	Х	Х	Х	Х	Х	Х	Χ	Χ	
MW-31	33-43	Deep	Downgradient	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	
MW-32	17-27	Shallow	Downgradient	_	-	Х	_	_	Х	_	-	Х	_	ı	
MW-33	32.5-42.5	Deep	Downgradient	_	_	Х	_	_	Χ	_	_	Х	_		
MW-34	34-44	Deep	Downgradient	Х	Χ	Х	Х	Х	Х	Х	Х	Х	Х	Χ	
MW-35	15-25	Shallow	Downgradient	Х	Χ	Х	Х	Х	Х	Х	Х	Х	Х	Χ	
MW-36	15-25	Shallow	Downgradient	_	-	Х	_	_	Х	_	-	Х	_	ı	
MW-37	15-25	Shallow	Downgradient	_	_	Х	_	_	Х	_	_	Х	_	-	
MW-38	15-25	Shallow	Downgradient	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Χ	
MW-39	37-47	Deep	Downgradient	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	

Table 1

Modified Compliance Groundwater Monitoring Schedule

Cenex Harvest States Cooperatives Site

Quincy, Washington Farallon PN: 301-001

				Monitoring Well Sampling Schedule										
		Monitoring Well		2024	2025		2026		2027		2028		2029	
Monitoring Well	Screened	Designation		Third	First	Third	First	Third	First	Third	First	Third	First	Third
Identification	Interval	Deep or		Quarter	Quarter	Quarter	Quarter	Quarter	Quarter	Quarter	Quarter	Quarter	Quarter	Quarter
	(feet) ¹	Shallow	Plume Location	(September)	(March/April	(September	(March/April	(September	(March/April	(September	(March/April	(September)	(March/April	(September
MW-40	15-25	Shallow	Downgradient	_	_	Х	_	_	Х	_		Х	_	_
MW-41	15-25	Shallow	Downgradient	_	_	Χ			Х	_		Х	_	_
MW-42	15-25	Shallow	Downgradient	X	Х	Χ	X	X	X	Х	X	Х	Х	X
MW-43	15-25	Shallow	Downgradient	Х	Х	Х	X	X	Х	Х	X	Х	Х	Х
MW-44	35-45	Deep	Downgradient	Х	Х	Х	X	X	Х	Х	X	Х	Х	Х
MW-45	15-25	Shallow	Downgradient	X	Х	Х	Χ	Χ	Х	Χ	Х	Х	Х	Χ
MW-46	15-25	Shallow	Downgradient	Х	Х	Х	Х	Х	Х	Х	X	Х	Х	Х

NOTES

-= not sampled

X = monitoring well sampled

- = green shading indicates monitoring wells sampled semiannually
- = purple shading indicates monitoring wells sampled on an 18 month schedule
- = gray shading indicates monitoring wells not part of the compliance groundwater monitoring program

¹In feet below ground surface according to boring logs for each monitoring well.

²Screened interval estimated based on total depth of well. Farallon has not located a well installation log for monitoring well MW-24. The water well report filed with the Washington State Department of Ecology by the driller in 1998 listed a screened interval of 23 to 28 feet below ground surface, which appears to be an error, based on the measured total depth.