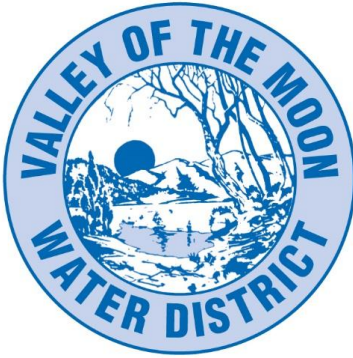




VALLEY OF THE MOON WATER DISTRICT

A Public Agency Established in 1962
19039 Bay Street · P.O. Box 280
El Verano, CA 95433-0280
Phone: (707) 996-1037
Fax: (707) 996-7615

RE: Request for Proposals - PFAS Treatment System Design at Four Well Sites

Dear Consultant:

Valley of the Moon Water District (District) invites proposals from qualified engineering firms through this request for proposals (RFP) to validate, permit, and prepare construction-ready designs for per- and polyfluoroalkyl substances (PFAS) wellhead treatment at the Agua Caliente, Craig, Pedroncelli, and Larbre well sites in Sonoma Valley, California.

The District is pursuing State Water Resources Control Board Emerging Contaminants funding for construction. The District presently expects to fund design with local funds and intends to complete the design phase during fiscal year 2026-27 so that one or more construction projects may be positioned for grant funding during fiscal year 2027-28. The District may authorize, defer, modify, or discontinue work at an individual site based on testing, well condition, site control, permitting, funding requirements, and lifecycle economics.

This RFP describes the project, scope of services, consultant-selection process, schedule, and minimum proposal content. Failure to provide requested information may be cause for disqualification. The District may waive minor deviations, reject any or all proposals, modify the scope, forgo interviews, or select the firm determined to be in the District's best interest. The District will hold an optional pre-proposal meeting and site tour on October 29, 2026, 11:00 a.m., beginning at the District office located at 19039 Bay Street in Sonoma.

Proposals must be received electronically as one searchable PDF file, no later than 4:30 p.m. Pacific Time on November 23, 2026, 4:30 p.m. Submit to:

Matt Fullner, General Manager

mfullner@vomwd.org

Subject: PFAS Treatment System Design Proposal

Please Cc:

Amanda Hudson (Administration Manager) &

Clayton Church (Water System Manager)

ahudson@vomwd.org; cchurch@vomwd.org

Questions must be submitted by email to Matt Fullner by the deadline shown below. Responses that materially affect the RFP will be distributed by addendum.

Sincerely,

A handwritten signature in blue ink, appearing to read "Matt Fullner", followed by a horizontal line.

Matt Fullner – General Manager

REQUEST FOR PROPOSALS

PFAS Treatment System Design

Agua Caliente, Craig, Pedroncelli, and Larbre Wells

1. Project Overview

The District serves approximately 23,000 residents through approximately 7,000 service connections in the Sonoma Valley. The District relies primarily on imported water from Sonoma Water and operates local groundwater wells for supplemental, peak, emergency, and resiliency supply.

PFAS have been detected at the District-owned Agua Caliente Well and at three privately owned wells operated under agreements with the District: Craig, Pedroncelli, and Larbre. Craig, Pedroncelli, and Larbre are presently isolated from the drinking water system due to PFAS. Agua Caliente remains online currently, as its detected PFAS concentrations have not exceeded applicable State or Federal MCLs, Notification or Response levels.

The District's July 6, 2026, PFAS Evaluation - Agua Caliente Well, prepared by EKI Environment & Water, Inc. (EKI Memorandum), evaluated granular activated carbon (GAC), PFAS-selective ion exchange (IX), and DEXSORB cyclodextrin adsorbent. The memorandum ranked DEXSORB highest for further evaluation at Agua Caliente because of its smaller footprint, lower planning-level capital cost, and potential effectiveness for both long- and short-chain PFAS. EKI nevertheless recommended bench- or pilot-scale validation before final design. The selected consultant shall use the EKI Memorandum as planning information, independently validate its assumptions, and make site-specific recommendations.

2. Project Objectives

- Develop a coordinated four-site PFAS treatment program that allows common equipment, controls, monitoring, specifications, and operational practices where practical while preserving site-specific solutions.
- Validate treatment performance, media life, breakthrough criteria, pretreatment requirements, residuals handling, and lifecycle cost using representative site water.
- Prepare bid-ready, permit-ready plans, specifications, and estimates that allow the District to construct sites separately, together, or as additive alternatives depending on funding and priorities.
- Support State Water Resources Control Board, Division of Drinking Water (DDW) permitting; California Environmental Quality Act (CEQA) compliance; and State funding requirements, including site control and project-readiness documentation.
- Complete design during fiscal year 2026-27, with final bid documents targeted by June 18, 2027.

- Avoid premature investment at the Larbre Well by evaluating structural condition and remaining useful life before advancing full design.

3. Existing Information and Site Considerations

Well	Ownership	Preliminary Flow	Key Considerations
Agua Caliente	District-owned	120 gallons per minute (gpm); 80-112 pounds per square inch (psi)	Existing well house, chlorination, and booster station. EKI recommends DEXSORB pilot/validation; constrained site.
Craig	Privately owned / District-operated	80 to 110 gpm; 58 to 65 psi	Higher and broader PFAS detections; variable historic production. Preserve operational flexibility and leased-site constraints.
Pedroncelli	Privately owned / District-operated	100 to 130 gpm; 58 to 65 psi	Broader PFAS speciation; existing air-separation equipment and unique cascading-water/air-entrainment conditions.
Larbre	Privately owned / District-operated	90 to 120 gpm; 58 to 65 psi	Older well with mild-steel/torch-cut casing. Structural condition and remaining useful life are a required decision gate before full design.

The District will provide available analytical results, operating data, well records, record drawings, agreements and access information, and the EKI Memorandum. The selected consultant remains responsible for identifying data gaps and verifying the design basis.

4. Scope of Services

Task 1 - Project Management, Kickoff, and Data Review

- Conduct a kickoff meeting; confirm goals, decision points, communication protocols, quality-control procedures, and detailed schedule.
- Review the EKI Memorandum, water-quality data, operating records, existing permits, well records, property documents, prior improvements, and available drawings.
- Maintain three concise, current project-control records: (1) a decision log identifying the issue, alternatives considered, decision, date, responsible decision-maker, rationale, and resulting

design or schedule impacts; (2) an action-item log identifying each action, responsible party, due date, and status; and (3) a risk register identifying each material risk, likelihood, consequence, mitigation measure, responsible party, and status. Include these records with a monthly progress report summarizing work completed, schedule and budget status, decisions needed from the District, upcoming work, and emerging issues. Monthly invoices shall identify labor and expenses by contract task and well site, separately identify shared program costs and the basis used to allocate them, and show the authorized budget, prior billings, current billing, and remaining budget.

- Coordinate with District staff, property owners as directed by the District, DDW, the funding agency, vendors, laboratories, and other stakeholders. The District will lead owner communications unless otherwise authorized.

Task 2 - Site Investigation and Basis-of-Design Data

- Visit all four sites and document existing civil, hydraulic, mechanical, structural, electrical, instrumentation, security, access, drainage, and operational conditions.
- Perform topographic and utility surveys sufficient for final design; identify property, easement, setback, and construction-access constraints. Coordinate subsurface utility investigation where warranted.
- Confirm well flow, pressure, pumping schedule, pump condition, available head, system hydraulics, electrical service, standby power needs, communications, supervisory control and data acquisition (SCADA) interfaces, and chlorination configuration.
- Prepare and implement a data-gap sampling plan addressing PFAS speciation and concentrations, total organic carbon (TOC), total suspended solids (TSS), pH, alkalinity, sulfate, nitrate, hardness, iron, manganese, and other parameters affecting treatment selection and media life.
- For Larbre, complete a focused condition and remaining-life assessment, including review of construction and maintenance records and if appropriate, video, structural, mechanical, and corrosion evaluation. Submit a go/no-go memorandum and obtain District authorization before advancing Larbre beyond the agreed design milestone.

Task 3 - Bench/Pilot Testing and Technology Validation

- Use the EKI Memorandum as the completed planning-level alternatives screening for Agua Caliente. Do not repeat a broad desktop comparison of DEXSORB, PFAS-selective ion exchange (IX), and granular activated carbon (GAC). Instead, confirm the EKI assumptions that materially affect design and determine whether its findings are transferable to Craig, Pedroncelli, and Larbre based on site-specific water quality, flow, operating conditions, footprint, regulatory acceptance, and lifecycle considerations.

- Develop a targeted, cost-effective bench- and/or pilot-testing program that closes the remaining design data gaps. DEXSORB shall be treated as the preferred baseline for Agua Caliente unless the consultant identifies a material technical, regulatory, availability, or lifecycle concern. Testing of IX, GAC, or another credible drinking-water technology should be proposed only as a control, contingency, or site-specific alternative where technically justified.
- Proposers may group wells or use representative testing where technically defensible. Explain how differences in PFAS mixtures, background water quality, flow, and operating conditions will be addressed, and identify the minimum testing necessary at each site before final design.
- Use the targeted testing and available vendor data to confirm applicable PFAS removal, lead-lag operation, empty-bed contact time (EBCT), hydraulic loss, pretreatment needs, oxidant tolerance, backwash requirements, media service life, breakthrough criteria, changeout frequency, residual handling, regeneration or destruction pathway, vendor guarantees, and Certificate-of-Destruction documentation, as applicable.
- Establish conservative influent design concentrations (i.e. two, three or more times the current concentration detections) and finished-water performance targets that provide an appropriate compliance margin under current and reasonably foreseeable regulations. Prepare a concise testing and validation report documenting results, quality-assurance review, recommended technology by site, scale-up criteria, updated lifecycle costs, and remaining uncertainties.

Task 4 - Basis of Design and 30 Percent Design

- Prepare a coordinated Basis of Design Report (BODR) covering all four sites and a distinct design chapter for each well.
- Recommend a treatment train for each site and document design flow, pressure, vessel configuration, EBCT, redundancy, pretreatment, disinfection location, monitoring points, breakthrough criteria, waste management, controls, alarms, and operating strategy.
- Prepare 30 percent plans, site layouts, process flow diagrams, hydraulic profiles, preliminary electrical design, control narratives, equipment lists, and preliminary specifications.
- Identify opportunities and limitations for common treatment equipment, vendor platforms, media procurement, spare parts, controls, sampling, and operator training.
- Provide site-specific lifecycle costs, design-stage-appropriate opinions of probable construction cost, annual operations and maintenance (O&M) costs, media replacement assumptions, and implementation schedules.
- Conduct a District workshop to confirm technology selection and authorization to proceed at each site.

Task 5 - Environmental, Regulatory, and Funding Support

- Coordinate or meet with the assigned DDW District Engineer and prepare the engineering report and supporting materials required for domestic water supply permit amendments.
- Develop monitoring, compliance sampling, operations and maintenance, media handling, residual disposal, startup, and performance-validation plans required by DDW.
- Evaluate CEQA applicability and prepare technical support for the appropriate exemption or environmental document, as authorized by the District.
- Identify County, utility, building, grading, electrical, fire, encroachment, and other approvals that may be applicable to each site and support required applications.
- Provide technical exhibits, cost estimates, schedules, alternatives analysis, project-readiness information, and responses reasonably needed for the District's Emerging Contaminants funding application and grant coordination.

Task 6 - 60 Percent, 90 Percent, and Final Plans, Specifications, and Estimates (PS&E)

- Prepare coordinated and site-specific civil, process mechanical, structural, architectural, electrical, instrumentation, security, drainage, grading, paving, fencing, and landscape-restoration designs. For controls, provide process and instrumentation diagrams, an input/output list, control narrative, alarm and setpoint schedule, instrument data, wiring and loop diagrams, and coordination details sufficient for District staff to complete SCADA integration.
- Clearly incorporate the SCADA division of responsibility into the plans and specifications. District staff will purchase and install programmable logic controller (PLC) modules if needed, land field conductors within existing PLC panels, and perform PLC, human-machine interface, and SCADA programming and system integration. The construction contractor will furnish and install project-specific instruments and inputs, including transducers, meters, analyzers, switches, and associated equipment, and will furnish and install conduit and wiring from those devices to District-designated termination points. The contractor shall calibrate and functionally test the instruments and wiring in coordination with District staff. The consultant shall coordinate interface requirements and support commissioning but shall not include District programming or panel work in the contractor's scope.
- Address well-pump modifications, pressure losses, bypasses, isolation, sample points, pretreatment, chlorination relocation, freeze/weather protection, access for media changeout, chemical compatibility, secondary containment where needed, and safe operator access.
- Prepare technical specifications, front-end technical requirements, equipment schedules, commissioning requirements, performance-testing criteria, and operator-training requirements.

- Prepare separate bid schedules and cost estimates for each well, plus a combined procurement approach and additive/deductive alternates so the District may award sites individually or together.
- Conduct District reviews at 60 and 90 percent, respond to consolidated comments, perform interdisciplinary quality control, and deliver final bid documents in PDF format.
- Prepare an updated implementation schedule and final opinion of probable construction cost at each design milestone.

Task 7 - Bid-Phase Services

- Attend a pre-bid meeting/site walk; respond to bidder questions; prepare addenda; and assist with bid evaluation and recommendation of award.

Task 8 - Construction and Startup Services

- Provide submittal and request for information (RFI) review, design clarifications, site observations, change-order support, startup and performance-test oversight, record drawings, O&M manual review and operator training.
- Compile the final DDW permit to operate application and provide submission and closeout support.

5. Required Deliverables

Deliverable	Target/Due Date	Minimum Content
Project work plan	Within 10 business days of contract execution	Schedule, data request, decision points, communication strategy
Site/data-gap memorandum	January, 2027	Existing conditions, surveys, sampling plan, data gaps, early permitting issues
Larbre go/no-go memorandum	February, 2027	Condition, remaining useful life, treatment-investment recommendation
Pilot/bench testing report	March, 2027	Results, media life, technology recommendation, scale-up criteria
BODR and 30% design	April, 2027	Four-site program and site-specific design packages

Deliverable	Target/Due Date	Minimum Content
60% PS&E	Early May, 2027	Plans, specifications, estimates, permit/funding materials
90% PS&E	Late May, 2027	Near-final bid documents and resolved review comments
Final PS&E	Early June, 2027	Signed/sealed bid-ready documents; PDF files; final estimates and schedule, ready for bid advertisement and award by the Board at the July or August 2027 Board meeting. Anticipate beginning construction early fiscal year 2027-2028.

The proposer shall identify any schedule adjustment needed to produce defensible pilot results and complete high-quality design. The District prefers final design by Spring, 2027 to allow for bidding and final award by the Board of Directors in Summer 2027, and will consider an alternate schedule only when clearly justified.

6. District-Furnished Information and Services

- EKI PFAS Evaluation - Agua Caliente Well, dated July 6, 2026, including attachments and vendor information available to the District.
- Available PFAS and general water-quality analytical data, well operating records, SCADA trends, permits, well records, record drawings, and prior reports.
- District staff will lead SCADA integration, including procurement and installation of PLC modules if needed, termination of field wiring within existing PLC panels, and programming of PLCs, human-machine interfaces, and the SCADA system. District staff will coordinate this work with the consultant and construction contractor.
- District staff support for site access, operational testing, sampling coordination, utility knowledge, and review of deliverables.
- Coordination with private well owners and access under the District's agreements. Consultant personnel shall comply with site rules and minimize interference with private property.
- Timely consolidated review comments and District decisions at established milestones.

7. Anticipated Procurement Schedule

Milestone	Anticipated Date
RFP issued	Mid-October, 2026
Optional pre-proposal meeting and site tour	October 29, 2026, 11:00 a.m.
Deadline for questions	November 12, 2026, 4:30 p.m.
Final addendum, if required	November 17, 2026
Proposals due	November 23, 2026, 4:30 p.m. Pacific Time
Shortlist notification, if required	Early December, 2026
Interviews, if required	December, 2026
Scope and fee negotiation	December, 2026
Anticipated contract award	Late December/Early January, 2026/7

Dates are subject to change at the District's discretion. The District may select a consultant solely from written proposals and may forgo interviews.

8. Proposal Preparation and Format

Submit a concise, searchable PDF organized in the order below. The technical proposal should not exceed 30 single-sided pages, excluding covers, dividers, resumes, required forms, and appendices. Use no smaller than 10-point type.

Section 1 - Executive Summary

Identify the legal firm name, office responsible for the work, primary contact, email, phone number, and person authorized to negotiate and execute an agreement.

Section 2 - Project Understanding and Approach

Describe understanding of the four-site program, critical risks, proposed task approach, pilot/bench strategy, technology-selection method, Larbre decision gate, DDW/funding coordination, quality control, and proposed innovations or scope refinements.

Section 3 - Project Schedule and Capacity

Provide a detailed schedule showing major activities, reviews, decision points, critical path, staff loading, and ability to complete final design during fiscal year 2026-27.

Section 4 - Project Team

Identify the project manager, discipline leads, key staff, subconsultants, California professional registrations, office locations, responsibilities, availability, and percentage commitment. The proposed project manager may not be replaced without District approval. Identify any proposed subconsultants that are certified Disadvantaged Business Enterprises (DBEs) and the applicable certification.

Section 5 - Relevant Experience and References

Provide up to five comparable projects emphasizing PFAS drinking-water treatment, pilot testing, DDW permitting, wellhead design, constrained sites, grant-funded projects, and multi-site delivery. Include client, contact information, completion date, role, construction cost, technology, and outcome.

Section 6 - Deliverables, Assumptions, and Exceptions

Confirm each requested deliverable; identify data needs, assumptions, exclusions, proposed optional services, conflicts of interest, pending claims, and requested exceptions to the RFP or anticipated agreement.

Appendix A - Fee Proposal

Provide a detailed fee by task, well site, labor classification, hours, subconsultant, expense, and any optional services identified by the consultant.

Appendix B - Resumes and Subconsultant Qualifications

Limit resumes to two pages per key individual.

9. Consultant Selection and Evaluation

Proposals will be ranked based on the following scoring matrix:

Scoring Category		Possible Score
Expertise and qualifications of firm/project manager		15
Relevant PFAS treatment, pilot testing, wellhead design, and DDW experience		10
Response to RFP scope of work		25
Schedule, capacity, quality-control approach, and ability to meet fiscal year 2026-27 objectives		25
Comparable-project performance and client references		15
Cost		10
Total Possible		100

Note: The District reserves the right to conduct interviews and/or request presentations from top-ranked firms.

10. General Conditions

1. Proposal costs. All costs of preparing, submitting, interviewing, and negotiating a proposal are the proposer's responsibility.
2. Public records. Proposals become District records and may be subject to disclosure under the California Public Records Act. Clearly identify material claimed to be confidential; the District does not guarantee confidentiality.
3. No obligation. Issuance of this RFP does not obligate the District to award a contract, authorize every task or site, reimburse costs, or proceed with construction.
4. Scope flexibility. The District may negotiate, add, delete, defer, or separately authorize tasks and well sites. In particular, advancement of Larbre beyond the condition assessment is subject to written District authorization.
5. Ownership. Final work products prepared and paid for under the agreement will become District property, subject to customary professional-use limitations and consultant retention of underlying instruments and methods.
6. Insurance and licensing. The selected firm and subconsultants shall maintain required California licenses and District-required insurance, including professional liability, general liability, automobile liability, and workers' compensation.
7. Grant and DBE requirements. The District anticipates pursuing federal funding through the Drinking Water State Revolving Fund (DWSRF) Emerging Contaminants program for construction of the project and may seek reimbursement of eligible planning and design costs. Disadvantaged Business Enterprise (DBE) requirements, including the Six Good Faith Efforts, apply to this procurement. The selected consultant shall comply with applicable DBE requirements when procuring subconsultant or subcontractor services and shall flow applicable DBE requirements down to its subconsultants and subcontractors. DBE participation is encouraged; however, selection of a DBE firm is not required. The selected consultant shall also cooperate with other applicable State and federal funding requirements. Conflict of interest. Disclose actual or potential conflicts, including relationships with treatment vendors, media suppliers, well owners, contractors, or parties that could impair independent recommendations.
8. Independent recommendation. Vendor information in the EKI Memorandum is planning-level information. The consultant shall independently evaluate technology and shall disclose vendor compensation, teaming, exclusivity, or other relationships.
9. Contract. Award is subject to successful negotiation, District legal review, Board authorization as applicable, and execution of the District's professional services agreement.

11. RFP Attachments

Attachment	Description
Attachment A	Location and basic site information of the four wells.
Attachment B	PFAS Evaluation - Agua Caliente Well, EKI Environment & Water, Inc., July 6, 2026
Attachment C	Example District professional services agreement and insurance requirements

12. Reservation of Rights

The District reserves the right to reject any or all proposals; waive informalities; request clarification or additional information; modify the scope or schedule; negotiate with one or more firms as permitted; verify qualifications and references; cancel or reissue the RFP; and award no contract. The District's determination regarding responsiveness, qualifications, ranking, and best interest is final to the extent permitted by law.

Attachment A:

Pedroncelli Well: 18775 Arnold Drive, Sonoma, CA 95476, which is identified as Assessor's Parcel Number (APN) 052-251-035:



Larbre Well: 18701 Arnold Drive, Sonoma, CA 95476, which is identified as Assessor's Parcel Number (APN) 052-521-037:



Larbre Well: 18715 Arnold Drive Sonoma, CA 95476, which is identified as Assessor's Parcel Number (APN) 052-251-036:



Agua Caliente Well: No Address, Kearney Avenue Sonoma CA 95476, which is identified as Assessor's Parcel Number (APN) 056-172-010:



Attachment B

TECHNICAL MEMORANDUM

To: Matthew Fullner
Valley of the Moon Water District

From: Tyler Colyer, PE
Nicolas Dilliot, PE
EKI Environment & Water, Inc.

Subject: PFAS Evaluation Agua Caliente Well
(EKI C60073.00)

EKI Environment & Water, Inc. (EKI) is pleased to present to Valley of the Moon Water District (District) this technical memorandum that evaluates alternatives for wellhead treatment of per- and polyfluoroalkyl substances (PFAS) at the District's Agua Caliente (AC) Well.

The scope of this evaluation includes:

- A review of the current PFAS drinking water regulations;
- An assessment of detections of PFAS at the AC and Pedroncelli well;
- Development of preliminary design criteria for treatment;
- Development of alternatives that will allow the District to use the AC well in compliance with existing drinking water regulations;
- Development of conceptual-level costs and benefits associated with each alternative; and
- A summary of recommendations.

BACKGROUND

The Agua Caliente (AC) Well is a District-owned groundwater supply well located in the eastern portion of the District's service area in Sonoma County, California. The existing AC Well site includes the well, a well house, a chlorination system, and a booster pump station capable of delivering water to the Chestnut Tank. The AC Well operates at a design production rate of 120 gallons per minute (gpm) at a discharge pressure range of 80 to 112 pounds per square inch (psi). The AC Well is one of several supply sources serving the District, alongside the District's other wells and imported supply from Sonoma Water.

The AC Well has historically provided reliable supply to the eastern portion of the District's distribution system. No treatment beyond chlorination is currently required at the AC Well site. The existing booster pump station provides the hydraulic capacity to transfer water from the well or the distribution system to the Chestnut Tank, providing operational flexibility for blending or storage management. Water quality data for the AC Well indicate low TDS (160–190 mg/L), low sulfate (2.2–3.3 mg/L), low nitrate (0.2–0.49 mg/L), low chloride (5.2–7.3 mg/L), and a near-neutral pH (6.9–7.2). Iron and manganese have been non-detect since 2023 and 2014, respectively.

In February 2026, the District collected and analyzed groundwater samples for PFAS from the AC Well and from other wells in the District, including the Pedroncelli and Craig wells, located southwest of the AC Well, which both exhibited further short-chain PFAS speciation and generally higher concentrations of PFAS. Prior to February 2026, PFAS was not detected in the AC Well during annual samplings event in 2024 and 2025. PFAS presence in these wells has been rising between 2024-2026, indicating the PFAS concentrations are migrating and increasing in the basin, and that future detections at the AC Well could increase in speciation and in concentration as has occurred in both the Pedroncelli and Craig Wells. The source of PFAS has not been determined. Analytical results from February 2026 are summarized in Table 1.

Table 1. PFAS Concentrations at Agua Caliente, Pedroncelli, and Craig Well

Constituent	Agua Caliente Well Concentration (ng/L) ¹	Pedroncelli Well Concentration (ng/L) ¹	Craig Well Concentration (ng/L) ¹
PFBS	ND	4.3	4.4
PFHxA	ND	2.6	5.6
PFHxS	ND	2.1	2.9
PFOA	2.2	4.3	8.7
PFOS	3.1	3.2	4.4
PFPeA	ND	2.4	4.8
Notes: 1. Wells were sampled on 10 February 2026. 2. ND = Non-detect			

The District has requested that EKI assess options for PFAS wellhead treatment at the AC Well for initial planning purposes and to inform potential future treatment at other District wells. This evaluation is therefore conducted on a conservative, planning-level basis to ensure the District is prepared to maintain the AC Well in service if PFAS concentrations increase above applicable regulatory thresholds.

PFAS Drinking Water Regulatory Setting

On April 10, 2024, USEPA finalized the National Primary Drinking Water Regulation (NPDWR) for six PFAS in drinking water: PFOA, PFOS, Perfluorohexane sulfonic acid (PFHxS), Perfluorononanoic acid (PFNA), and Hexafluoropropylene Oxide Dimer acid (HFPO-DA) as contaminants with individual MCLs. A Hazard Index MCL was established for mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS to account for the combined and co-occurring levels of these PFAS in drinking water. EPA also finalized health-based, non-enforceable Maximum Contaminant Level Goals (MCLGs) for these PFAS, summarized in Table 2, below.

Table 2. Final MCLG and MCL Levels for PFAS

Constituent	Final MCLG (ng/L)	Final MCL (enforceable levels) (ng/L)
PFOA	0	4.0
PFOS	0	4.0
PFHxS	10	10
PFNA	10	10
HFPO-DA	10	10
Mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS	1 (unitless) Hazard Index	1 (unitless) Hazard Index

As of the date of this memorandum, the April 2024 NPDWR remains in effect. However, on May 18, 2026, USEPA published two proposed rules that would:

- Retain the PFOA and PFOS MCLs at 4.0 ng/L while extending the compliance deadline from 2029 to 2031; and
- Rescind the MCLs for PFHxS, PFNA, HFPO-DA, and the Hazard Index mixture of these three PFAS plus PFBS.

These proposed rules are not yet final.

In July 2019, the Governor signed California Assembly Bill 756 (AB 756), which expands the California State Water Resources Control Board (SWRCB) Division of Drinking Water's (DDW) authority to order water systems to monitor for PFAS and expands notification requirements for agencies with detections of PFAS. In particular, AB 756 requires the following reporting:

- Public water systems need to report any confirmed detections in its annual consumer confidence report (CCR).
- When PFOA or PFOS detections exceed the Notification Levels (NLs), agencies need to notify their governing bodies within 30 days of receiving results (unchanged from Health and Safety Code Section 116400 requirements). NLs remain advisory and not enforceable standards.
- When Quarterly Running Annual Average (QRAA) detections exceed the RLs, agencies are required to either:
 - 1.1 Take the source out of service immediately;
 - 1.2 Utilize treatment or blending to reduce concentrations below the RL; or
 - 1.3 Provide public notification of the response level exceedance within 30 days.

AB 756 took effect on 1 January 2020 and was codified as Health and Safety Code section 116378. Only monitoring required by an order issued under the authority of section 116378 must comply with the AB 756 reporting requirements. On October 29, 2025, DDW issued new and revised notification and response levels for PFOA, PFOS, Perfluorobutane Sulfonic acid (PFBS), PFHxS, and Perfluorohexanoic acid (PFHxA), summarized in Table 3, below.

Table 3. DDW Notification and Response Levels for PFAS

Constituent	Notification Level (ng/L)	Response Level (ng/L)
PFOA	4.0	10
PFOS	4.0	40
PFBS	500	5000
PFHxS	3.0	10
PFHxA	1,000	10,000

The California Environmental Protection Agency's Office of Environmental Health Hazard Assessment (OEHHA) finalized Public Health Goals (PHGs) for PFOA and PFOS on April 5, 2024, setting the PHG for PFOA at 0.007 ng/L and for PFOS at 1 ng/L. These PHGs form the basis for California's ongoing MCL development. On December 12, 2025, DDW issued PFAS General Order DW-2025-0002-DDW, requiring community and nontransient-noncommunity water systems to conduct initial PFAS monitoring under AB 756.

Preliminary Design Criteria

The preliminary design criteria for the Agua Caliente Well treatment evaluation were established using a design flow rate of 120 gpm and a discharge pressure range of 80 to 112 psi. Baseline influent PFAS concentrations were derived from the reported well data of 2.2 ng/L for PFOA and 3.1 ng/L for PFOS, with target effluent concentrations of non-detect or below applicable regulatory/action levels. To support conservative planning, influent concentrations are evaluated at approximately 3 to 5 times baseline values, including planning-level concentrations of 11 ng/L for PFOA and 15.5 ng/L for PFOS. Other District wells, including Pedroncelli well, have detected a broader PFAS speciation profile, including PFBS, PFHxA, PFHxS, PFOA, PFOS, and PFPeA, highlighting significant District-wide variability in both PFAS compound mixture and concentration. The rest of the parameters were taken from water quality data taken at the AC well from 1990 to 2026.

Table 4. Preliminary Design Criteria

Parameter	Design Value	Target Value
Design Flow Rate	120 gpm	120 gpm
Discharge Pressure	80-112 psi	80-112 psi
PFOA	11 ng/L (5x detected concentration)	Non-Detect
PFOS	15.5 ng/L (5x detected concentration)	Non-Detect
PFBS, PFHxA, PFHxS, PFPeA	Present	Non-Detect
TOC	Unknown	
TSS	Unknown	
TDS	160-190 mg/L	
VOC	ND	
Sulfate	2.2 - 3.3 mg/L	
Nitrate	0.2 – 0.49 mg/L	

Parameter	Design Value	Target Value
Alkalinity (bicarbonate)	72-96 mg/L	
Chloride	5.2 – 7.3 mg/L	
Perchlorate	ND	
Hexavalent Chromium	0.57 µg/L	
Arsenic	3.1 – 4 µg/L	
Iron	ND since 2023 (max reading 0.58 mg/L in 2014)	
Manganese	ND since 2014 (max reading of 289 µg/L in 2014)	
Hardness	41 – 44 mg/L	
pH	6.9 – 7.2 (max reading of 7.8 in 2014)	

ALTERNATIVES EVALUATION

EKI evaluated three active wellhead treatment technologies for PFAS removal at the AC Well: Granular Activated Carbon (GAC), PFAS-Selective Ion Exchange (IX), and DEXSORB cyclodextrin adsorbent (PFAS specific adsorbent). The three active treatment alternatives are summarized across key engineering, operational, and cost criteria in Attachment A. Each alternative was evaluated, subjectively scored, and ranked based on various criteria, including vendor-quoted vessel sizing, Empty Bed Contact Time (EBCT), site constraints, spent media handling, planning-level capital costs, and recurring media changeout costs, in Attachment B. The criteria draw from vendor proposals received from Newterra Corp. (GAC), Cyclopure (DEXSORB), and verbal sizing and cost from Newterra Corp. as of April 2026 (IX). The higher an alternative scored, the more appropriate it may be considered for adoption. The DEXSORB treatment alternative scored highest, with the IX scoring second, and GAC scoring third. Alternative results should be validated with a pilot study to confirm efficacy of the treatment technology. Conceptual level¹ cost estimates and conceptual site plans were developed for each alternative and included in Attachment C, and Attachment D.

These three technologies were selected because they represent typical PFAS treatment at drinking water supply wells, span a range of capital cost, operational complexity, and residuals management approaches, and are each capable of achieving compliance with the applicable federal MCLs and California DDW response levels under the AC Well's design conditions. All three technologies operate in a packed-bed pressure vessel configuration compatible with the AC Well's design flow rate of 120 gpm and discharge pressure range of 80 to 112 psi, and all three can be installed at the existing AC Well site upstream of the existing chlorination system. The AC Well's favorable water quality: low TDS (160–190 mg/L), low sulfate (2.2–3.3 mg/L), low nitrate (0.2–0.49 mg/L), non-detect iron and manganese, and non-detect VOCs, reduces pretreatment requirements and co-contaminant interference for all three technologies, making each technically feasible at this site.

¹ Conceptual level cost estimates are consistent with AACE Class 5 classification

Granular activated carbon (GAC) is the most widely deployed and longest-proven of the three technologies, removing PFAS by physical adsorption with strong performance on long-chain compounds (PFOA, PFOS, PFHxS, PFNA) but has reduced affinity for shorter-chain PFAS, and it produces spent media that must be managed offsite by thermal reactivation, landfill, or incineration. PFAS-selective ion exchange (IX) removes both long- and short-chain PFAS through a combined electrostatic and hydrophobic mechanism at a substantially shorter contact time and smaller footprint than GAC, but may require more stringent pretreatment and offsite incineration of single-use resin. DEXSORB is a β -cyclodextrin adsorbent operated in a packed-bed configuration similar to GAC. It captures both long- and short-chain PFAS by physically trapping them within ring-shaped molecular cavities (inclusion complexation), making it less sensitive to competition from natural organic matter, sulfate, and nitrate. Spent media is regenerated offsite and recovered PFAS destroyed under a Certificate of Destruction, though California field experience remains limited.

Although each of the three technologies evaluated is capable of achieving compliance with applicable PFAS drinking water standards, the performance of adsorptive and ion exchange media is highly sensitive to site-specific water quality conditions, particularly influent PFAS speciation and concentration, total organic carbon, and competing ion loading, which cannot be fully characterized from the available data. Accordingly, EKI recommends that the District conduct bench-scale or pilot-scale testing using AC Well groundwater prior to final design of the preferred alternative to confirm media performance, establish media service life and changeout frequency, and validate the planning-level cost estimates presented in this memorandum.

The selected treatment train may require relocation of the disinfection injection point. Granular activated carbon adsorbs free chlorine, so for a GAC alternative, chlorination must be applied downstream of the contactors; for PFAS-selective ion exchange and DEXSORB, the need to relocate the injection point depends on the media's oxidant tolerance and process configuration and should be confirmed per media.

PERMITTING CONSIDERATIONS

Installation of wellhead PFAS treatment at the AC Well, regardless of which technology is selected, will require the District to obtain an amendment to its existing domestic water supply permit issued by DDW. The amendment process requires submittal of an engineering report to the DDW District Engineer assigned to the District's service area. The engineering report must describe the proposed treatment process in sufficient detail to allow DDW to evaluate its adequacy for protecting public health, and must include, at minimum: a description of the treatment technology and its PFAS removal mechanism; preliminary design criteria (design flow, EBCT, and influent and target effluent concentrations); a monitoring plan specifying parameters, frequency, and compliance sampling points (entry point to the distribution system); an operations and maintenance (O&M) plan; and a description of media handling and disposal.

The project is anticipated to qualify for a California Environmental Quality Act (CEQA) categorical exemption under 14 CCR §15303 (new construction or conversion of small structures), with §15301 (existing facilities) available as an alternative basis, given that the proposed treatment system would be installed within or immediately adjacent to the existing AC Well site footprint.

CONCLUSIONS AND RECOMMENDATIONS

Based on the evaluation of three wellhead treatment technologies: Granular Activated Carbon (GAC), PFAS-Selective Ion Exchange (IX), and DEXSORB cyclodextrin adsorbent, EKI recommends that the District advance DEXSORB as the preferred alternative for further evaluation and pilot testing at the AC Well. DEXSORB ranked highest across the evaluation criteria, offering effective removal of both long- and short-chain PFAS, the lowest cost, and the smallest physical footprint of the three alternatives which is a meaningful advantage given the constrained conditions of the existing AC Well site. DEXSORB carries a capital cost that is approximately half of either GAC or IX, which are similarly priced to one another; this cost differential is further amplified when site civil costs are considered, as GAC's larger vessel configuration necessitates a more substantial retaining wall, adding construction cost and complexity beyond the treatment equipment itself. Notwithstanding DEXSORB's favorable ranking, EKI recommends that the District conduct bench- or pilot-scale testing using AC Well groundwater prior to final design to confirm media performance under site-specific water quality conditions particularly with respect to TOC loading and short-chain PFAS removal and to validate the planning-level cost estimates presented herein.

Attachments

- A - Summary of Alternatives
- B - Alternatives Evaluation
- C - Planning Level Cost Estimates for Alternatives
- D – Conceptual Site Plans for Alternatives
- E - Newterra GAC Proposal and Supporting Information
- F - Cyclopure Proposal and Supporting Information

References

AACE International. *Cost Estimate Classification System — As Applied in Engineering, Procurement, and Construction for the Process Industries*. Recommended Practice No. 18R-97. Morgantown, WV: AACE International.

California Code of Regulations, Title 14, §15301. *CEQA Categorical Exemption: Existing Facilities*.

California Code of Regulations, Title 14, §15303. *CEQA Categorical Exemption: New Construction or Conversion of Small Structures*.

California Code of Regulations, Title 22, §64556. *California Waterworks Standards — Engineering Report Requirements for Treatment Changes*.

California Health and Safety Code §116378. *PFAS Monitoring and Reporting Requirements (AB 756)*. Effective January 1, 2020.

California Health and Safety Code §116455. *Notification Requirements for Detections Above Notification Levels*.

California Health and Safety Code §116550. *Requirement for Amended Domestic Water Supply Permit Prior to Change in Treatment Method*.

California Office of Environmental Health Hazard Assessment (OEHHA). 2024. *Public Health Goals for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonic Acid (PFOS) in Drinking Water*. April 5, 2024. Available at: <https://oehha.ca.gov/water/public-health-goal-report/perfluorooctanoic-acid-pfoa-and-perfluorooctane-sulfonic-acid-pfos-drinking-water>

Caltest Analytical Laboratory. 2025. *PFAS Analysis Report — Valley of the Moon Water District, UCMR5 Sampling Event*. Lab Order No. A040423. Project ID: PFAS 2026 Q1 / 4910013. April 8, 2025. Subcontracted to Weck Laboratory; EPA Methods 533 and 537.1.

Caltest Analytical Laboratory. 2026. *PFAS Analysis Report — Valley of the Moon Water District, Q1 2026 Sampling Event*. Lab Order No. B020488. Project ID: PFAS 2026 Q1 / 4910013. February 10, 2026. Subcontracted to Weck Laboratory; EPA Methods 533 and 537.1.

- Cyclopure, Inc. 2026. *Vendor Proposal — DEXSORB Cyclodextrin Adsorbent Wellhead Treatment System, Agua Caliente Well, Valley of the Moon Water District*. Received by EKI, April 2026. On file as Attachment F.
- Newterra Corp. 2026. *Vendor Proposal — Granular Activated Carbon (GAC) Wellhead Treatment System*. Received by EKI, April 2026. On file as Attachment E.
- Newterra Corp. 2026. *Ion Exchange (IX) System Sizing and Pricing*. Verbal communication to EKI, June 2026.
- NSF International / American National Standards Institute (ANSI). *NSF/ANSI Standard 61: Drinking Water System Components — Health Effects*. Current edition. Ann Arbor, MI: NSF International.
- State Water Resources Control Board, Division of Drinking Water (DDW). 2018. *Notification Levels and Response Levels for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS)*. July 2018. Available at: https://waterboards.ca.gov/drinking_water/certlic/drinkingwater/NotificationLevels.html
- State Water Resources Control Board, Division of Drinking Water (DDW). 2021. *Notification Level and Response Level for Perfluorobutane Sulfonic Acid (PFBS)*. March 5, 2021. Available at: https://www.waterboards.ca.gov/drinking_water/programs/documents/pfbs_nl_issuance_03052021_final_signed.pdf
- State Water Resources Control Board, Division of Drinking Water (DDW). 2025. *Revised Notification and Response Levels for PFOA, PFOS, PFBS, PFHxS, and PFHxA*. October 29, 2025. Available at: https://waterboards.ca.gov/drinking_water/certlic/drinkingwater/NotificationLevels.html
- State Water Resources Control Board, Division of Drinking Water (DDW). 2025. *General Order DW-2025-0002-DDW: Initial Monitoring for Per- and Polyfluoroalkyl Substances Under AB 756*. December 12, 2025. Available at: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/pfas_ddw_general_order/
- U.S. Environmental Protection Agency (USEPA). 2009. *Provisional Health Advisories for Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS)*. Office of Water. EPA 822-R-09-008. January 8, 2009.
- U.S. Environmental Protection Agency (USEPA). 2016. *Drinking Water Health Advisories for PFOA and PFOS*. Office of Water. EPA 800-F-16-003. May 2016.
- U.S. Environmental Protection Agency (USEPA). 2022. *Interim Updated PFAS Health Advisories: PFOA and PFOS*. EPA 822-F-22-002. June 2022. Available at: <https://www.epa.gov/system/files/documents/2022-06/technical-factsheet-four-PFAS.pdf>
- U.S. Environmental Protection Agency (USEPA). 2024. *PFAS National Primary Drinking Water Regulation*. 89 Fed. Reg. 32532. April 10, 2024. Available at: <https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas>

U.S. Environmental Protection Agency (USEPA). 2025. *Announcement of Intent to Retain PFOA and PFOS MCLs and Extend Compliance Deadline; Proposed Rescission of MCLs for PFHxS, PFNA, HFPO-DA, and Hazard Index*. May 14, 2025.

U.S. Environmental Protection Agency (USEPA). 2026. *Proposed Rules to Implement Revisions to the PFAS National Primary Drinking Water Regulation*. May 18, 2026.

ATTACHMENTS

ATTACHMENT A

Summary of Alternatives

FINAL, last updated on: July 6, 2026

PFAS Treatment Technology Summary

Alternative			Sizing & Hydraulics				Operations				Schedule
	Vendor	Configuration	Design flow rate	Vessel size	Media loading	EBCT	Backwash	Pre-treatment	Media life	Spent-media handling	Lead time
Granular Activated Carbon (GAC)	Newterra Corp. QU-2610506.R0	2 vessels, lead-lag / series	120 gpm	6 ft dia. 250 ft³ vol.	10,000 lbs total (5,000 lbs/vessel)	Not stated in proposal	Capable—piping included	5-µm filter upstream	Not stated in proposal	Onsite fill by Newterra; regen. not addressed	Submittals 2–4 wks; ready to ship 24–30 wks
Ion Exchange (IX)	Newterra Corp.	2 vessels, lead-lag / series	120 gpm	4.67 ft (56 in) dia. 5 ft tall	Not specified	3.4 min/vessel	Not specified	5-µm filter upstream	Not stated in verbal communication	Onsite fill by Newterra; regen. not addressed	Not stated in verbal communication
DEXSORB (Cyclodextrin PBF)	Cyclopure Sonoma Co. DWTP (Apr 2026)	2 vessels, lead-lag	120 gpm	4 ft (48 in) dia. 8.9 ft tall	3,000 lbs total (1,500 lbs/vessel)	6.0 min total (3.0 min/vessel)	Capable (~20 gpm/vessel); not expected in normal ops	5-µm filter upstream; pre-chlorination	18–24 months (lead vessel)	Regenerable; PFAS destroyed; Cert. of Destruction incl. in media cost	Media in stock; vessels ~16 wks

Abbreviations:

DAP = Delivered at Place (Incoterms 2020)

EBCT = Empty Bed Contact Time

GAC = Granular Activated Carbon

gpm = gallons per minute

IX = Ion Exchange

MAWP = Max. Allowable Working Pressure

O&M = Operations & Maintenance

PBF = Packed Bed Filtration

PFAS = Per- & Polyfluoroalkyl Substances

Sources:

1. Newterra QU-2610506.R0 (2026-04-23).

2. DEXSORB — Cyclopure, Sonoma Co. DWTP (Apr 2026).

3. Ion Exchange Vessel size, EBCT, and Total cost verbally confirmed by Newterra June 2026.

ATTACHMENT B

Alternatives Evaluation

PFAS Treatment Technology Alternatives Evaluation

Alt. No.	Alternative	Cost	Technical Feasibility	Treatment Effectiveness	Operational Complexity & Residuals	Siting / Footprint	Score
1	GAC Treatment						11
		Highest cost of all treatment alternatives	Proven technology	Effective removal of PFOS, PFOA, and long-chain PFAS via GAC adsorption. May not be effective on shorter-chain PFAS if regulated in the future.	Backwash piping included if required; Newterra lifecycle services and digital monitoring available.	Largest footprint requirement	
2	IX Treatment						12
		Second highest cost of all treatment alternatives	Proven technology	Effective removal of PFOS, PFOA, and long-chain PFAS via GAC adsorption. May not be effective on shorter-chain PFAS if regulated in the future.	Minimal O&M expected; backwash not expected in normal operation	Second largest space requirements	
3	Adsorbent Treatment						14
		Lowest cost of all treatment alternatives	Newer technology vs. GAC/IX; less long-term track record at scale.	Effective PFAS removal; 6.0 min EBCT; designed for PFOA up to 11 ng/L, PFOS up to 15.5 ng/L.	Minimal O&M; backwash not expected in normal operation; free monthly PFAS analysis by Cyclopure.	Smallest footprint required	

Abbreviations:

EBCT = Empty Bed Contact Time
GAC = Granular Activated Carbon
gpm = gallons per minute
IX = Ion Exchange
O&M = Operations & Maintenance

PBF = Packed Bed Filtration
PFAS = Per- & Polyfluoroalkyl Substances
PFOA = Perfluorooctanoic Acid
PFOS = Perfluorooctanesulfonic acid

Sources:

- 1. Newterra QU-2610506.R0 (2026-04-23).
- 2. DEXSORB — Cyclopure, Sonoma Co. DWTP (Apr 2026).
- 3. Ion Exchange Vessel size, EBCT, and Total cost verbally confirmed by Newterra June 2026.

ATTACHMENT C

Planning Level Cost Estimates for Alternatives

GAC Alternative
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION - COST SUMMARY
Valley of the Moon Water District

Project: PFAS Agua Caliente Well
Prepared By: EKI Environment & Water Inc.
Date Prepared: 6-Jul-26
Proj. No.: C60073.00
Level of Design: Planning

ITEM NO.	ITEM DESCRIPTION	TOTAL	% OF TOTAL
Direct Costs			
<i>PFAS Treatment</i>			
1	Vessels, Media, and Installation	\$218,115	40%
2	5-micron Filter	\$7,000	1%
3	Vessel pad	\$13,200	2%
4	Piping and Mechanical Work	\$20,000	4%
5	Well Pump and Discharge Pipe	\$30,000	5%
<i>Site Work</i>			
5	Site Wall	\$30,000	5%
6	Site Work and Grading	\$8,250	1%
	Direct Costs	\$326,600	59%
	30% Contingency	\$97,980	18%
	Total Direct Costs	\$424,580	77%
Indirect Costs			
7	Design and Permitting	\$127,374	23%
	Total Indirect Costs	\$127,374	23%
Project Capital Cost			
	Project Capital Cost Subtotal	\$552,000	100.0%
	Project Cost Uncertainty Range		
	-30%	\$386,400	
	+50%	\$828,000	
Annual Operation and Maintenance Costs			
8	Media Replacement	\$10,000	50.0%
9	Operating and Overhead Costs	\$10,000	50.0%
	Total Annual Operating and Overhead Costs	\$20,000	100.0%
Notes: (a) Total item costs may not sum exactly due to rounding. (b) Costs can vary significantly due to bidding conditions. (c) Media replacement cost assumes highest expected replacement frequency for planning purposes. (d) No booster pump is assumed to be required. (e) Costs are order of magnitude consistent with AACE Class 5.			

References:

1. Newterra Corporation, 2026a. Liquid Phase Pressure Vessels, Budgetary Proposal QU-2610506.R0, prepared for EKI Environment & Water, submitted 23 April 2026.

Ion Exchange Alternative
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION - COST SUMMARY
Valley of the Moon Water District

Project: PFAS Agua Caliente Well
Prepared By: EKI Environment & Water Inc.
Date Prepared: 6-Jul-26
Proj. No.: C60073.00
Level of Design: Planning

ITEM NO.	ITEM DESCRIPTION	TOTAL	% OF TOTAL
Direct Costs			
<i>PFAS Treatment</i>			
1	Vessels, Media, and Installation	\$218,115	41%
2	5-micron Filter	\$7,000	1%
3	Vessel pad	\$13,200	2%
4	Piping and Mechanical Work	\$20,000	4%
5	Well Pump and Discharge Pipe	\$30,000	6%
<i>Site Work</i>			
5	Site Wall	\$20,000	4%
6	Site Work and Grading	\$8,250	2%
	Direct Costs	\$316,600	59%
	30% Contingency	\$94,980	18%
	Total Direct Costs	\$411,580	77%
Indirect Costs			
7	Design and Permitting	\$123,474	23%
	Total Indirect Costs	\$123,474	23%
Project Capital Cost			
	Project Capital Cost Subtotal	\$535,100	100.0%
	Project Cost Uncertainty Range		
	-30%	\$374,570	
	+50%	\$802,650	
Annual Operation and Maintenance Costs			
8	Media Replacement	\$10,000	50.0%
9	Operating and Overhead Costs	\$10,000	50.0%
	Total Annual Operating and Overhead Costs	\$20,000	100.0%
Notes: (a) Total item costs may not sum exactly due to rounding. (b) Costs can vary significantly due to bidding conditions. (c) Media replacement cost assumes highest expected replacement frequency for planning purposes. (d) No booster pump is assumed to be required. (e) Costs are order of magnitude consistent with AACE Class 5.			

References:

1. Newterra Corporation, June 2026. Verbal communication.

DEXSORB Alternative
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION - COST SUMMARY
Valley of the Moon Water District

Project: PFAS Agua Caliente Well
Prepared By: EKI Environment & Water Inc.
Date Prepared: 6-Jul-26
Proj. No.: C60073.00
Level of Design: Planning

ITEM NO.	ITEM DESCRIPTION	TOTAL	% OF TOTAL
Direct Costs			
<i>PFAS Treatment</i>			
1	Vessels, Media, and Installation	\$85,000	28%
2	5-micron Filter	\$7,000	2%
3	Vessel pad	\$12,000	4%
4	Piping and Mechanical Work	\$20,000	7%
5	Well Pump and Discharge Pipe	\$30,000	10%
<i>Site Work</i>			
5	Site Wall	\$20,000	7%
6	Site Work and Grading	\$7,500	2%
	Direct Costs	\$181,500	59%
	30% Contingency	\$54,450	18%
	Total Direct Costs	\$235,950	77%
Indirect Costs			
7	Design and Permitting	\$70,785	23%
	Total Indirect Costs	\$70,785	23%
Project Capital Cost			
	Project Capital Cost Subtotal	\$306,700	100.0%
	Project Cost Uncertainty Range		
	-30%	\$214,690	
	+50%	\$460,050	
Annual Operation and Maintenance Costs			
8	Media Replacement	\$10,000	50.0%
9	Operating and Overhead Costs	\$10,000	50.0%
	Total Annual Operating and Overhead Costs	\$20,000	100.0%
Notes: (a) Total item costs may not sum exactly due to rounding. (b) Costs can vary significantly due to bidding conditions. (c) Media replacement cost assumes highest expected replacement frequency for planning purposes. (d) No booster pump is assumed to be required. (e) Costs are order of magnitude consistent with AACE Class 5.			

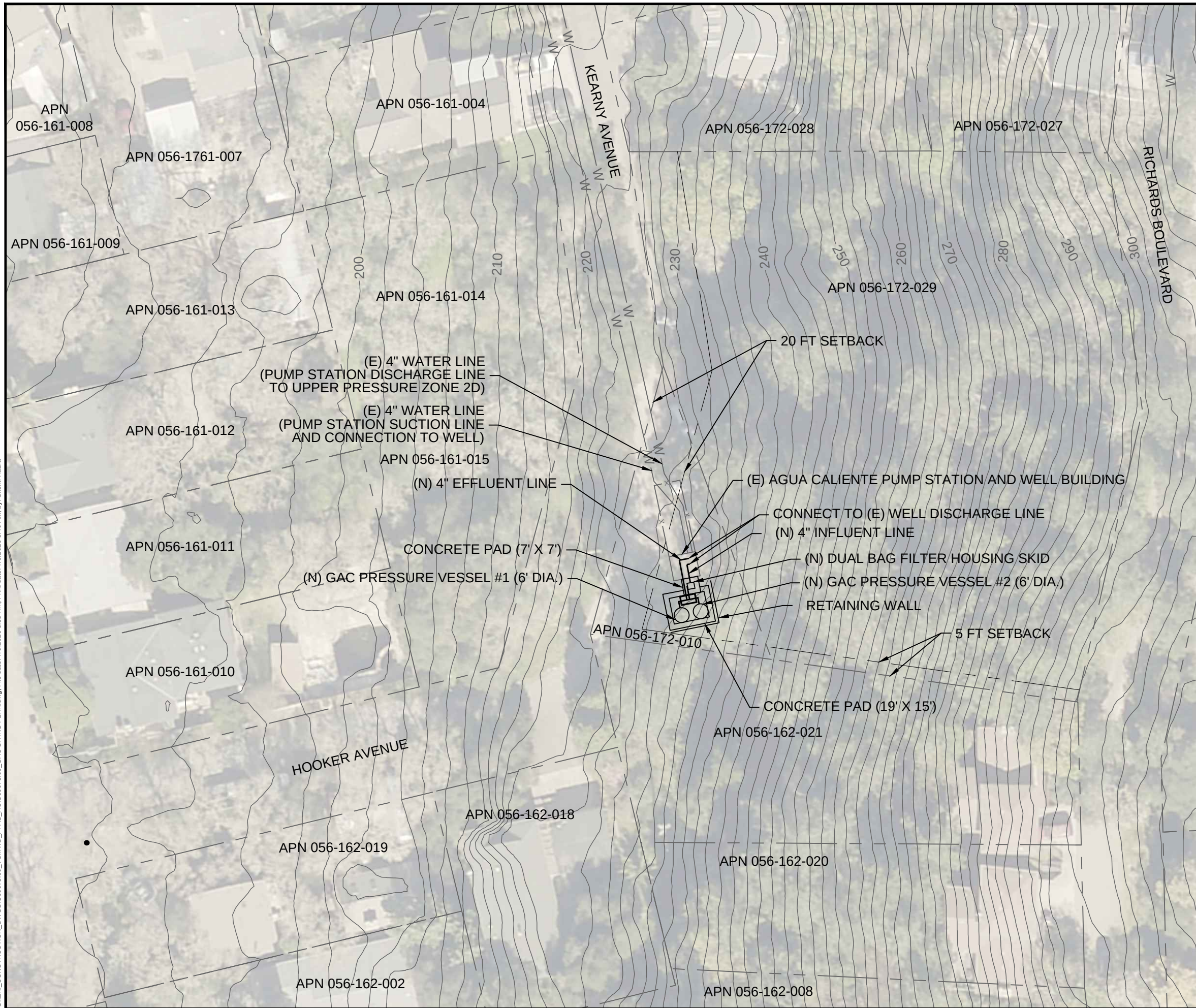
References:

1. Cyclopure, 2026a. DEXSORB® System for PFAS Treatment, Sonoma County, California, prepared and provided by Cyclopure, received 27 April 2026.

ATTACHMENT D

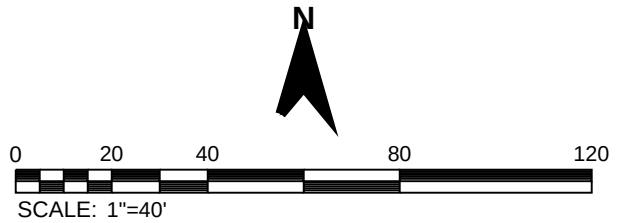
Conceptual Site Plans for Alternatives

G:\EKL CONSTRUCTION\DWG\SC60073.00_VOMWD_PFAS_ACC60073.00_GAC SITTING PLAN.dwg, File date: 7/6/2026 8:40 AM, Print date: 7/6/2026 8:38 AM, Print date: 7/6/2026 8:40 AM, by: Sisihi Hazra



Notes:

1. Per Sonoma County Zoning and Land Use Map, the APN 056-172-010 is zoned as R1 B6 1 (Residential), UR (Urban and Built-Up Land), obtained May 22, 2026.



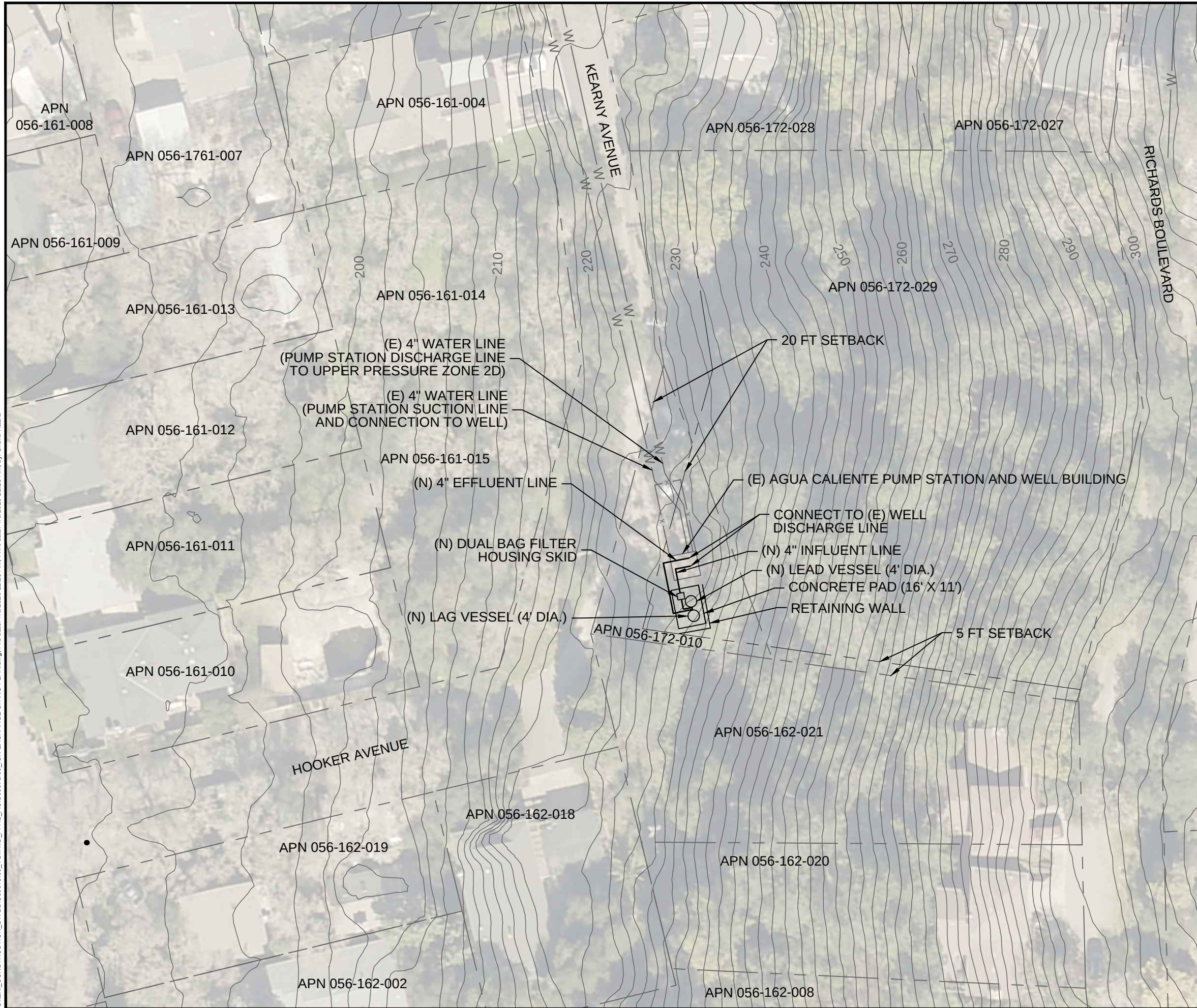
**GAC Alternative
Proof of Concept Schematic**

eki environment
& water

PFAS Evaluation Agua Caliente Well
Sonoma, CA
July 2026
EKI C60073.00

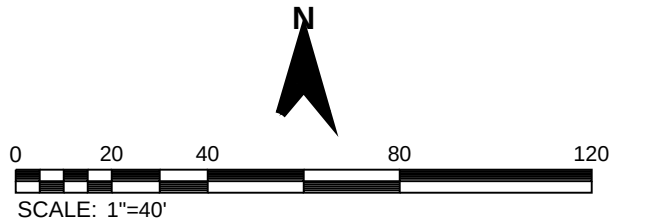
Figure 1

G:\EKL CONSTRUCTION_DWG\SC60073.00_VOMWD_PFAS_ACC60073.00_ION EXCHANGE SITING PLAN.dwg, File date: 7/6/2026 11:25 AM, Print date: 7/6/2026 11:25 AM, by: Sishili Hazra



Notes:

1. Per Sonoma County Zoning and Land Use Map, the APN 056-172-010 is zoned as R1 B6 1 (Residential), UR (Urban and Built-Up Land), obtained May 22, 2026.



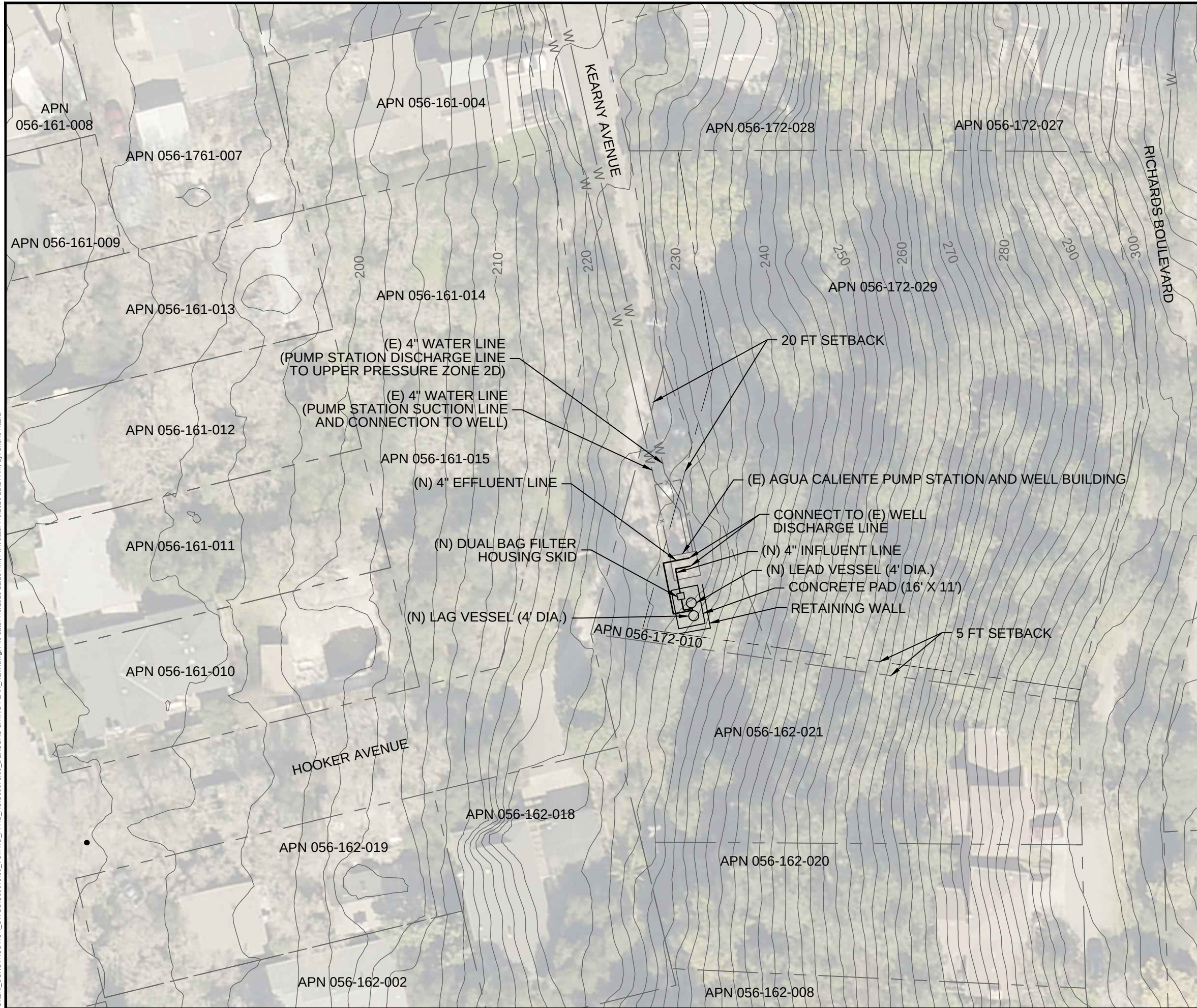
**Ion Exchange Alternative
Proof of Concept Schematic**

eki environment
& water

PFAS Evaluation Agua Caliente Well
Sonoma, CA
July 2026
EKI C60073.00

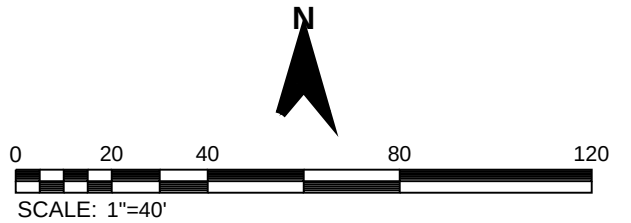
Figure 2

G:\EKL CONSTRUCTION\DWGSC60073.00_VOMWD_PFAS_ACC60073.00_DEXSORB SITING PLAN_NEW.dwg, File date: 7/6/2026 11:23 AM, Print date: 7/6/2026 11:24 AM, by: Sishili Hara



Notes:

1. Per Sonoma County Zoning and Land Use Map, the APN 056-172-010 is zoned as R1 B6 1 (Residential), UR (Urban and Built-Up Land), obtained May 22, 2026.



**DEXSORB Alternative
Proof of Concept Schematic**



PFAS Evaluation Agua Caliente Well
Sonoma, CA
July 2026
EKI C60073.00

Figure 3

ATTACHMENT E

Newterra GAC Proposal and Supporting Information



EKI Environment & Water PFAS Treatment

Liquid Phase Pressure Vessels

Budgetary Proposal QU-2610506.R0

Submitted To: EKI Environment and Water

Attention To: Nicolas Dillliott, ndillliott@ekiconsult.com

Submitted By: Newterra Corporation, Inc.
1555 Coraopolis Heights Rd. Suite 4100
Coraopolis, PA 15108

Presented By: Sean Fields, , sfields@newterra.com



Submitted 2026-04-23

Contents

1	Introduction & Overview	3
	About Newterra	3
	Locations	4
2	Commercial Section	5
	Pricing.....	5
	Commercial Notes	5
	Schedule	6
3	Technical Section	7
	Scope of Supply	7
4	Statement of Qualifications	8
	Newterra's Pressure Vessel	8
	Reference List.....	9
5	Newterra Lifecycle Solutions.....	13
6	Appendices	14
	Preliminary Layout/General Arrangement Drawing(s).....	15
	ASME Certification	16

1 Introduction & Overview

About Newterra

Newterra's approach is simple: we are a single point contractor combining process design, engineering, fabrication, and long-term life cycle support services to all our customers. We are a leading provider of modular, prefabricated water treatment technologies with a core focus of treating water for three primary purposes:

-  **To drink**
-  **To safely return to the environment or be reused**
-  **For industries to use to produce goods and services**

Operating as Newterra since 1992, and headquartered in Coraopolis, PA, USA, Newterra is an industry leader in modular treatment solutions. Servicing a variety of customers in diverse end-markets including municipalities, land developers, military, commercial & institutional and a variety of light and heavy industries. Providing treatment solutions from 100 gallons per day up to several million gallons per day is within our wheelhouse and driven by the type of treatment solution targeted. Our cross functional team brings outstanding expertise in engineering, treatment applications, manufacturing, and service, leveraging a broad portfolio of technologies. We have dependable (largely modular) designs for ease of installation and operation. We employ a flexible business model to address your needs from capital equipment to rental units (water as a service) and full lifecycle support. Newterra provides real solutions to the world's most demanding industrial end-users, including Mining, Oil & Gas and food and beverage, as well as potable and wastewater solutions for Private and Commercial Developments, and Municipalities.

With over 200+ employees worldwide, delivering 100's of systems annually Newterra is more than just an equipment and solutions provider. Newterra forms a long-term partnership with all our customers, providing long-term Life Cycle support and site services. We understand operating a water or wastewater treatment system can be challenging. Oftentimes, the purchaser of the system, and even the operator of the system, cannot maintain the same level of expertise as the original system designer. Newterra is dedicated to the ongoing success of all its clients, and so we offer our engineering and technical capabilities as an ongoing service.

What differentiates Newterra from our competition is:

- 1) Client Relationships – Our fundamental belief is that knowing our clients and understanding their needs, desires and challenges is the only way to foster and maintain long-lasting relationships where both parties reap the benefits.
- 2) Flexibility – Newterra understands that not all clients or projects are the same and therefore offer the ability to design the level of systems that is appropriate for your specific project needs.
- 3) Stature – Newterra is a right sized company to provide a hands-on approach to every project. One of Newterra's greatest strengths is the ability to make decisions quickly and effectively. Our clients appreciate the speed of service and our level of attentiveness, especially in moments of crisis or emergency.
- 4) Streamlined In-House Services and Capabilities – Being an integrated mid-sized equipment and service provider allows Newterra the flexibility to offer a full spectrum of in-house capabilities to best serve and create value for our clients.

Locations

Newterra is headquartered in Coraopolis, PA, with engineering, fabrication, and field service offices strategically located throughout North America to better service our growing client base.



Newterra Corporate Headquarters
1555 Coraopolis Heights Rd. Suite 4100
Coraopolis, PA 15108
USA



Systems Manufacturing
1291 California Ave.
Brockville, ON K6V 5Y6
Canada



Pressure Vessel Manufacturing
250 Bolton Sullivan Dr.
Heber Springs, AR 72543
USA



Surface Aerators & Mixer Manufacturing
1215 Chaska Creek Blvd., Suite 400
Chaska, MN 55318
USA



Systems Manufacturing
1220 Kendall Road
San Luis Obispo, CA 93401
USA

2 Commercial Section

Pricing

Item	Price
Budgetary Equipment Purchase Price	\$ 218,115
Estimated Equipment Freight to Site <ul style="list-style-type: none"> Equipment will be shipped DAP Sonoma, CA (Incoterms 2020) 	Included
Onsite Startup	Included
Sales Tax on Equipment	Not Included
Total System Price	\$ 218,115

Commercial Notes

- All prices are quoted in US Dollars (USD).
- Pricing is valid for 30 days.
- Unless otherwise specified, any sales or value added taxes are not included.
- Freight costs are based on current fuel pricing and is subject to change due to recent pricing volatility.
- This proposal supersedes all previous proposals and correspondence.
- The pricing provided is contingent upon acceptance of Newterra's payment milestones, Terms & Conditions outlined in this proposal and may be adjusted if other payment terms or T&C's are applied at time of order.
- Unless specified within this proposal, the equipment delivery date, start date, and date of commencement of operations are to be negotiated.
- This proposal and the rates provided herein are subject to Newterra compliance check and financial due diligence by Newterra.
- Newterra's pricing is based on reasonable market variability in our supply chain. In the event of extreme volatility, defined as an increase of greater than 10% of the Producer Price Index (PPI) in value from the month of the proposal date to the month of submission of engineering documentation for approval, Newterra reserves the right to adjust the project price. PPI is obtained from the US Bureau of Labor Statistics: PPI for final demand, 12-month percent change, not seasonally adjusted.
- This proposal has been prepared with considerations for globally sourcing materials and independent of provisions specific to BABA.

Schedule

The information provided below is a projected estimate only and should not be assumed to represent a binding schedule.

- Submittal of drawings¹ for approval: Estimated to be 2 to 4 weeks² after Order Acceptance³
- Customer review and approval of drawings: In a timely fashion, not longer than 2 weeks
- Notice of readiness to ship: Estimated to be 24 to 30 weeks^{2,4} after Receipt of Submittal Approval

Notes:

- 1) Newterra will provide one set of drawings in pdf format to included P&ID (if applicable) and general arrangement drawings.
- 2) At time of order, Newterra will confirm a submittal of drawings' date based on verified shop loading and material lead times
- 3) Order acceptance will occur once all required fully executed order documents have been received (signed purchase order, mutually agreed upon terms and conditions) and acknowledged in writing by Newterra.
- 4) Readiness to ship date will be contingent on payment milestones being met (payment received and confirmed by Newterra in writing). Delays on any payments will postpone the ship date.

3 Technical Section

Scope of Supply

Newterra Corporation Inc. will be providing one (1) CP5K-6 system of GAC pressure vessels with GAC media and initial fill by Newterra. This proposal has been prepared with considerations for globally sourcing materials and independent of provisions specific to BABA.

- Each system contains two (2) 6' diameter vessels and 4" unlined carbon steel interconnecting piping (see included general assembly)
- Each system contains twelve (12) Bray series 30 wafer style butterfly valves
 - BFVs with manual hand lever operation
- Each vessel is ASME code rated for 125 PSI
- Each vessel is capable of holding 5,000 lbs of GAC (10,000 lbs/system)
 - The system will be supplied with 10,000 lbs of carbon.
- Media will be filled onsite by a Newterra representative.
- Each vessel will be supplied with vessel access
 - Each vessel will be provided with one (1) 14"x18" elliptical manway located on the top head.
 - Each vessel will be provided with one (1) 20" manway located on the side shell.
- Each vessel will have the following internal liner:
 - Plasite 4110
- Each vessel will have the following external paint:
 - Hydroplate 1086 and Carbothane 134HG
- Each vessel will be supplied with pressure relief:
 - One (1) rupture disk for pressure relief
- Each vessel will be provided with stainless steel internals:
 - Inlet distributor: 2 upturned 304 stainless steel nozzles with area greater than influent piping
 - Underdrain: 304 Stainless steel header with 1-1/2" diameter wedge wire laterals. The laterals are constructed of 316 stainless steel .060" triangular wire with an opening of .008".

Items Not Included:

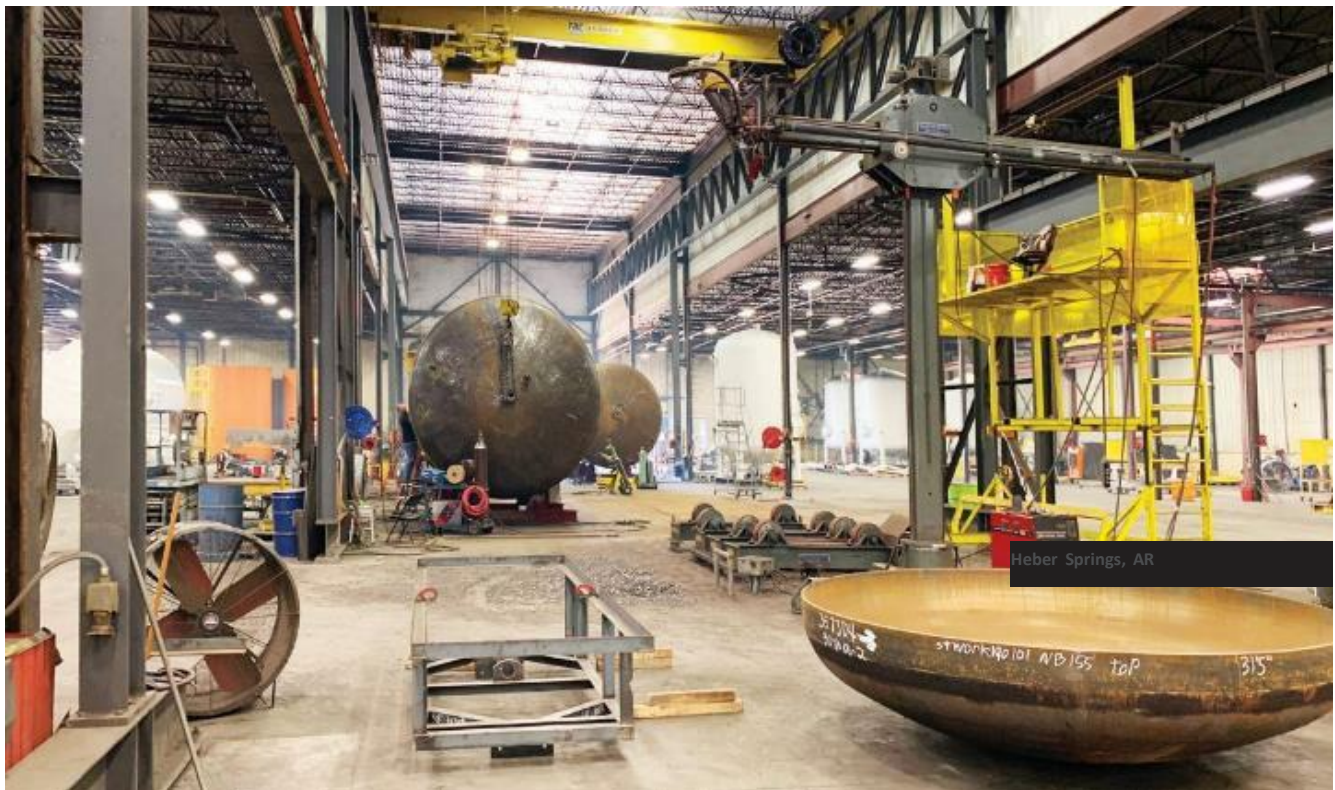
- Site Preparation, foundation design and foundation installation
- Receipt, off-loading of equipment
- Installation of adsorption system equipment
- Any hydrostatic testing of installed equipment
- System connection to existing equipment
- System disinfection prior to initial media fill
- Utilities for GAC fills
- Operation of system during carbon fills/operation
- Mechanical startup of system
- Anchor Bolts and embedment depths
- Piping to and from GAC system

4 Statement of Qualifications

Newterra's Pressure Vessel

Newterra has been engineering and designing standard and custom pressure vessels specifically designed to be used as activated carbon adsorbers and activated carbon filters for over 40 years. Our 155,000-sq. ft. ASME code, NSF certified fabrication facility in Arkansas allows us to manufacture, line, paint, and assemble our systems in-house. The combination of engineering design, project management, and manufacturing assures our clients that they will get a well-engineered, quality system with a proven design delivered when promised.

Newterra is qualified and has the capability to build systems which are compliant with your water treatment requirements.



Reference List

			
<p>Project: City of Fountain GAC Systems Owner: City of Fountain Location: Fountain, CO Contact: Ron Woolsey, 719.322.2071 Date: March 2017 Flow: 500 GPM/system Mode: (2) Two-vessel GAC system, series Size: 10' diameter, 80,000 lbs. Treating: PFC's</p>	<p>Project: Martinsburg, WV GAC System Owner: City of Martinsburg Location: Martinsburg, WV Contact: Mark Baldwin, 304.264.2131 Date: April 2017 Flow: 1,000 GPM/system Mode: (2) Two-vessel GAC system, series Size: 12' diameter, 320,000 lbs. Treating: PFC's</p>		
<p>Project: Piqua, OH GAC Vessels Owner: City of Piqua Location: Piqua, OH (Miami County) Contact: Greg Kemper, 567.356.9378 Date: August 2016 Flow: 1,260 GPM Mode: (4) Four GAC vessels, parallel Size: 14' diameter, 240,000 lbs. Treating: Contaminated water</p>	<p>Project: City of West Monroe GAC System Owner: City of West Monroe Location: West Monroe, LA (Ouachita County) Contact: Robbie George (S. E. Huey), 318.325.1791 Date: January 2015 Flow: 2,000 GPM Mode: (4) Four-vessel GAC system, lead/lag and parallel Size: 10' diameter, 80,000 lbs. Treating: Color</p>		
<p>Project: Issaquah, WA GAC Vessels Owner: City of Issaquah Public Works Location: Issaquah, WA (King County) Contact: Bret Heath, 425.837.3475 Date: June 2016 Flow: 250 GPM Mode: (1) Two-vessel GAC system, series Size: 10' diameter, 40,000 lbs. Treating: PFC's</p>	<p>Project: Barnstable Public Works Water Supply Owner: Town of Barnstable Water District Location: Hyannis, MA (Barnstable County) Contact: Hans Keijser, 508.788.9617x3502 Date: June 2016 Flow: 500 GPM Mode: (2) Two-vessel GAC system, series Size: 10' diameter x 2 with pipe rack, 40,000 lbs. Treating: PFC's</p>		
<p>Project: Swanton WTP Improvements Owner: Village of Swanton Water Department Location: Swanton, OH (Lucas County) Contact: Bill Villalta (Poggemeyer), 419.352.7537 Date: April 2015 Flow: 1,000 GPM; 1,400 GPM parallel Mode: (2) Two-vessel GAC system, lead/lag and parallel Size: 12' diameter, 40,000 lbs. Treating: VOC's</p>	<p>Project: Warminster, PA GAC Vessels Owner: Warminster Municipal Authority Location: Warminster, PA Contact: Joe Nolan (CKS Engineers), 215.340.0600 Date: June 2016 Flow: 185 GPM Mode: (2) Two-vessel GAC system, series Size: 7' diameter SS x 2, with pipe rack, 12,700 lbs. Treating: PFC's</p>		

			
<p>Project: Water Treatment Plant Improvements (Phase III) Owner: Blancester Waterworks Location: Blancester, OH (Warren County) Contact: Dick Schlemmer (CDM Smith), 513.583.9800 Date: February 2015 Flow: 700 GPM Mode: (2) Two-vessel GAC system, lead/lag and parallel Size: 10' diameter x 2, 40,000 lbs. Treating: VOCs (Trichloroethylene)</p>	<p>Project: Town of Hammonton Well 1 Owner: Town of Hammonton Location: Hammonton, NJ (Atlantic County) Contact: Joseph Pantalone (ARH Engineering), 609.531.0482 Date: December 2012 Flow: 750 GPM Mode: (2) Two-vessel GAC system, lead/lag Size: 10' diameter x 2, 40,000 lbs. Treating: Ethylene Dibromide, T&O</p>		
<p>Project: RWD Plant 1 GAC Owner: Roslyn Water District Location: Roslyn, NY (Nassau County) Contact: Rich Passariello (Roslyn Water District), 567516.621.7770 Date: June 2014 Flow: 1,100 GPM Mode: (2) Two-vessel GAC systems, parallel Size: 10' diameter cone bottom x 2, 40,000 lbs. Treating: TCE, PCE, DCE, MTBE</p>	<p>Project: Multimedia Filters Owner: Bogue Lusa Water District Location: Angie, LA (Washington County) Contact: Neil Case (Greenbriar Digging Services), 601.833.0975 Date: March 2012 Flow: 300 GPM Mode: (2) Two-vessel MMF system, parallel Size: 8' diameter x 2 Treating: Iron and Manganese</p>		
<p>Project: Wellhead Treatment at Plant 5 Owner: Locust Valley Water District Location: Locust Valley, NY (Nassau County) Contact: Charles Savenetti (Locust Valley Water District), 516.671.1783 Date: June 2014 Flow: 1,400 GPM Mode: (2) Two-vessel GAC system, parallel Size: 12' diameter cone bottom x 2, 40,000 lbs. Treating: TCE, PCE, DCE</p>	<p>Project: New York American Water Owner: New York American Water Location: Levittown, NY (Nassau County) Contact: Stephen Matney (AGVIQ), 757.213.8583 Date: February 2014 Flow: 2,000 GPM Mode: Three (3) Two-vessel GAC system, parallel Size: 10' diameter x 6, 120,000 lbs. Treating: TCE</p>		
<p>Project: GAC Potable Water Filters Owner: City of Fairfield Location: Fairfield, IL (Wayne County) Contact: Matt Heuerman (Curry Construction), 217.254.3014 Date: January 2014 Flow: 750 GPM Mode: (2) Two-vessel GAC system, lead/lag Size: 10' diameter x 2 with pipe rack, 40,000 lbs. Treating: Organics</p>	<p>Project: San Antonio Water System Owner: City of San Antonio, TX Location: San Antonio, TX (Bexar County) Contact: Linda Bevis (San Antonio Water System), 210.233.3100 Date: August 2013 Flow: 5 MGD Mode: Three (3) Two-vessel GAC system, parallel Size: 10' diameter x 6, 12,700 lbs. Treating: TOC, THM</p>		
<p>Project: Rain CII WTF Upgrade Owner: Rain CII Location: Moundsville, WV (Marshall County) Contact: Dave VanCamp (Rain CII), 304.843.0235 Date: October 2012 Flow: 200 GPM Mode: (3) Three-vessel GAC system, series Size: 8' diameter x 3, 22,500 lbs. Treating: PAHs</p>	<p>Project: Naval Weapons Plant Owner: Department of the Navy Location: Bethpage, NY (Nassau County) Contact: Stavros Patselas (Tetra Tech), 215.702.4099 Date: December 2008 Flow: 1,400 GPM Mode: (3) Three-vessel GAC system, parallel Size: 8' diameter x 3 Treating: Chlorinated Hydrocarbons</p>		

	
<p>Project: Rain CII WTF Upgrade Owner: Rain CII Location: Moundsville, WV (Marshall County) Contact: Dave VanCamp (Rain CII), 304.843.0235 Date: October 2012 Flow: 200 GPM Mode: (3) Three-vessel GAC system, series Size: 8' diameter x 3, 22,500 lbs. Treating: PAHs</p>	<p>Project: Naval Weapons Plant Owner: Department of the Navy Location: Bethpage, NY (Nassau County) Contact: Stavros Patselas (Tetra Tech), 215.702.4099 Date: December 2008 Flow: 1,400 GPM Mode: (3) Three-vessel GAC system, parallel Size: 8' diameter x 3 Treating: Chlorinated Hydrocarbons</p>
<p>Project: Horizontal Media Filters Owner: Township of Ocean Location: Township of Ocean, NJ (Monmouth County) Contact: Wayne McVicar (Remington, Vernick & Veta), 732.286.9220x1606 Date: January 2011 Flow: 600 GPM Mode: Single-vessel MMF systems Size: 10' diameter horizontal Treating: Iron and Manganese</p>	<p>Project: Wyckoff GTP Owner: USACE Location: Bainbridge Island, WA (Kitsap County) Contact: Dan Bock (Holmes Construction), 360.698.1977 Date: April 2008 Flow: 90 GPM Mode: Five-vessel GAC system, series Size: 8' diameter x 5 Treating: PCBs & PAH</p>
<p>Project: Multimedia Filters Owner: Chatham Water District Location: Chatham, LA (Chatham County) Contact: Donald Sanders (San Tech Inc.), 318.255.3200 Date: May 2010 Flow: 1 MGD Mode: (3) Three-vessel MMF system, parallel Size: 10' diameter x 3 Treating: Color</p>	<p>Project: Multimedia Filters Owner: City of West Monroe Location: West Monroe, LA (Ouachita County) Contact: Clyde Kapp (Ford, Bacon, and Davis), 318.398.1051 Date: November 2009 Flow: 2 MGD Mode: (5) Five-vessel MMF, parallel Size: 10' diameter x 5 Treating: Color</p>
<p>Project: Water Filtration at Industrial Park Owner: Sussex County, DE Location: Georgetown, DE (Sussex County) Contact: Ron Pryor (Shurline), 302.653.4310x14 Date: June 2009 Flow: 376 GPM Mode: (2) Two-vessel GAC system, lead/lag Size: 8' diameter x 2 Treating: Organics</p>	<p>Project: Tetra Tech Fox River Owner: EPA Location: Fox River, WI (Kenosha County) Contact: Joe Francis (Tetra Tech), 803.646.0160 Date: March 2009 Flow: 450 GPM Mode: Twenty four-vessel GAC system Size: 8' diameter x 24 Treating: PCBs</p>
<p>Project: Laurel Springs, NJ Owner: American Water Location: Laurel Springs, NJ (Camden County) Contact: Kevin Roberson (American Water), 856.309.4754 Date: September 2008 Flow: 300 GPM Mode: (2) Two-vessel GAC system, series Size: 8' diameter x 2 Treating: VOCs</p>	<p>Project: Pekin, IL Owner: American Water Location: Pekin, IL (Tazewell County) Contact: Peter Keenan (American Water), 856.727.6112 Date: July 2001 Flow: 1,500 GPM Mode: (3) Three-vessel GAC system, parallel Size: 10' diameter x 3 Treating: PCE</p>
<p>Project: Horizontal Media Filters Owner: Township of Ocean Location: Township of Ocean, NJ (Monmouth County) Contact: Wayne McVicar (Remington, Vernick & Veta), 732.286.9220x1606 Date: January 2011 Flow: 600 GPM Mode: Single-vessel MMF systems Size: 10' diameter horizontal Treating: Iron and Manganese</p>	<p>Project: Wyckoff GTP Owner: USACE Location: Bainbridge Island, WA (Kitsap County) Contact: Dan Bock (Holmes Construction), 360.698.1977 Date: April 2008 Flow: 90 GPM Mode: Five-vessel GAC system, series Size: 8' diameter x 5 Treating: PCBs & PAH</p>
<p>Project: Multimedia Filters Owner: Chatham Water District Location: Chatham, LA (Chatham County)</p>	<p>Project: Multimedia Filters Owner: City of West Monroe Location: West Monroe, LA (Ouachita County)</p>

Contact: Donald Sanders (San Tech Inc.), 318.255.3200 Date: May 2010 Flow: 1 MGD Mode: (3) Three-vessel MMF system, parallel Size: 10' diameter x 3 Treating: Color	Contact: Clyde Kapp (Ford, Bacon, and Davis), 318.398.1051 Date: November 2009 Flow: 2 MGD Mode: (5) Five-vessel MMF, parallel Size: 10' diameter x 5 Treating: Color
Project: Water Filtration at Industrial Park Owner: Sussex County, DE Location: Georgetown, DE (Sussex County) Contact: Ron Pryor (Shurline), 302.653.4310x14 Date: June 2009 Flow: 376 GPM Mode: (2) Two-vessel GAC system, lead/lag Size: 8' diameter x 2 Treating: Organics	Project: Tetra Tech Fox River Owner: EPA Location: Fox River, WI (Kenosha County) Contact: Joe Francis (Tetra Tech), 803.646.0160 Date: March 2009 Flow: 450 GPM Mode: Twenty four-vessel GAC system Size: 8' diameter x 24 Treating: PCBs
Project: Laurel Springs, NJ Owner: American Water Location: Laurel Springs, NJ (Camden County) Contact: Kevin Roberson (American Water), 856.309.4754 Date: September 2008 Flow: 300 GPM Mode: (2) Two-vessel GAC system, series Size: 8' diameter x 2 Treating: VOCs	Project: Pekin, IL Owner: American Water Location: Pekin, IL (Tazewell County) Contact: Peter Keenan (American Water), 856.727.6112 Date: July 2001 Flow: 1,500 GPM Mode: (3) Three-vessel GAC system, parallel Size: 10' diameter x 3 Treating: PCE
Project: Hannibal WTP GAC Facility Owner: City of Hannibal Location: Hannibal, MO Contact: Robert Stevenson, 573.221.8050 Date: February 2019 Flow: 750 GPM Mode: (8) Eight-vessel GAC system, parallel Size: 12' diameter x 8, 40,000lbs each Treating: TOC	Project: Plainview Plant 1 Owner: Plainview Water District Location: Plainview, NY Contact: Stephen Moriarty, 516.931.6469 Date: August 2019 Flow: 1,000 GPM Mode: Two (2) Two-vessel GAC system, series Size: 12' diameter x 8, 20,000lbs each Treating: 1-4 dioxane and PFAS
Project: Nassau Station 44 Owner: Water Authority of Western Nassau County Location: New Hyde Park, NY Contact: Joseph Corbisiero, 516.327.4100 Date: August 2019 Flow: 2,000 GPM Mode: Two (2) Two-vessel GAC system, series Size: 12' diameter, 40,000 lbs. each Treating: 1-4 dioxane and PFAS	Project: Nassau Station 28 Owner: Water Authority of Western Nassau County Location: New Hyde Park, NY Contact: Joseph Corbisiero, 516.327.4100 Date: August 2019 Flow: 1,000 GPM Mode: Two-vessel GAC system, series Size: 12' diameter, 40,000lbs each Treating: 1-4 dioxane and PFAS
Project: Maher Filtration Plant Owner: Town of Barnstable Location: Hyannis, MA Contact: Mike Girard, 603.235.2785 Date: September 2019 Flow: 1,500 GPM Mode: Three GAC system, series Size: 10' diameter x 3 Treating: PFAS	Project: Ft Leavenworth PFAS Removal Owner: American Water Location: Fort Leavenworth, KS Contact: Luke Messer, 816.741.4600 Date: January 2020 Flow: 1,000 GPM Mode: (2) Two-vessel GAC system, series Size: 12' diameter, 40,000 lgs. each Treating: PFAS

5 Newterra Lifecycle Solutions

Robust Support and Complete Lifecycle Solutions: Call us at 1-800-420-4056

Newterra Lifecycle offerings are here to assist with maintaining your water treatment equipment every step of the way by offering OEM Spare Parts & Consumables customized to suit your needs, alongside a team of support staff dedicated to providing top level services for the life of your system. Not Just Technologies. Lifecycle Solutions.



NEWTERRA PARTS AND CONSUMABLES SUPPORT

Our Newterra Parts Team ensures seamless replacement and maintenance parts support, with a detailed list of OEM critical spares, maintenance, and consumable parts provided in your Operations & Maintenance Manual. We're dedicated to meeting your parts requirements to ensure long-lasting equipment solutions. Whether your system needs regular maintenance or requires consumable parts for optimal performance, we have you covered. Our Customer Experience Team is here to assist you in identifying the right components based on your specific challenges. Let us connect you with one of our specialists to find the perfect solution tailored to your needs.



TECHNICAL SERVICE SUPPORT

Our dedicated OEM Trained Service Team is here to help support you and your equipment needs. We offer a range of water treatment services including: 1) Operations Consultations, 2) Equipment Audits, 3) On-site Training, 4) 24/7 Digital Monitoring Services, 5) Equipment Maintenance/Repair, 6) Real-time Technical Support and 7) System Upgrades. Our Technical Services Teams are here to ensure your water treatment equipment is operating optimally, maximum uptime is achieved, and costly repairs are avoided. Reach out for expert guidance and a customized solution to your specific technical service needs today.



NEWTERRA DIGITAL SERVICE

Newterra Digital Services offers the integration of 24/7 web-based remote monitoring to help you increase system runtime and track performance. It provides real-time data and notifications to you and our technical support team on how your system is running or if there are any issues. The technology also provides the ability to quickly analyze the root cause and assist in determining a proper solution. Newterra Digital Services web-based remote monitoring can consist of two levels of access; read-only and system control. With control, you can have the ability to restart components from remote locations saving you time and money. The advanced digital services support will help you get the most out of your water treatment equipment and stay ahead of potential problems.



MEDIA & MEDIA SERVICES

Proper media selection is crucial for efficiency, sustainability, and cost-effectiveness. Newterra leads this sector, providing a range of media solutions from bulk supplies to specialized drums, including Granular Activated Carbon (GAC) and Resin media. When your media has lost its ability to reduce contaminants, our trained professionals, backed by Newterra's experience in the design and implementation of liquid and vapor phase treatment systems, provide complete on-site services. Our trained technicians will arrive on-site and safely clean and remove vapor phase and liquid phase media or even the vessels themselves. We embrace the entire lifecycle of your system.



RENTALS SOLUTIONS

For just about any water problem, Newterra has you covered. If you're looking for medium or short-term water or wastewater treatment solutions, Newterra has a large, in-stock inventory of solutions that are available to rent. From supplemental aeration to remediation systems, pressure vessels, and complete wastewater treatment systems, our temporary ownership and rental solutions can save precious capital while solving a critical need. Newterra offers flexible terms and conditions to suit any customer.

6 Appendices



Preliminary Layout/General Arrangement Drawing(s)

4

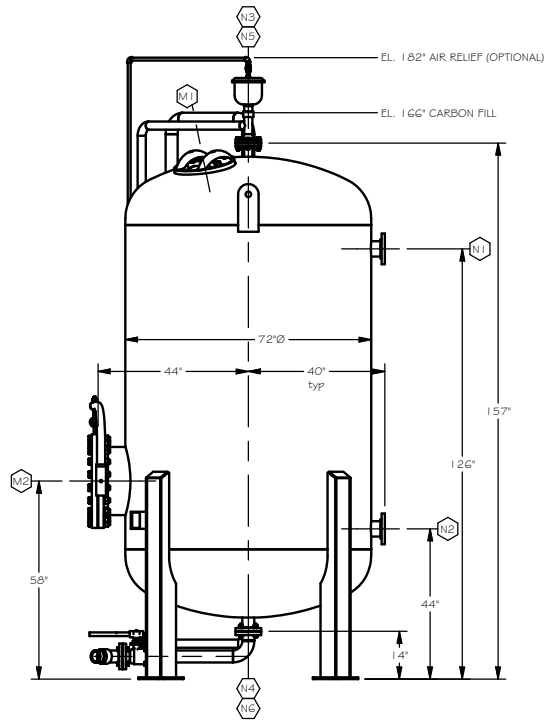
3

2

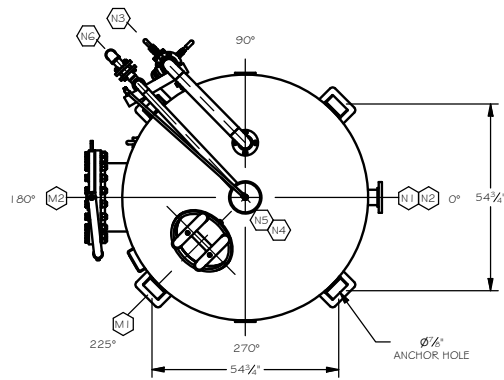
1

B

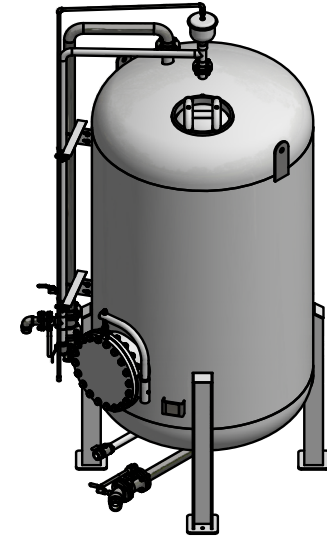
B



ELEVATION



PLAN



NO.	DESCRIPTION	SIZE	LOCATION
N6	DRAIN	2" 150# FLANGE	BOTTOM HEAD
N5	VENT	2" 150# FLANGE	TOP HEAD
N4	CARBON OUT	3" 150# FLANGE	BOTTOM HEAD
N3	CARBON IN	3" 150# FLANGE	TOP HEAD
N2	OUTLET	4" 150# FLANGE	SIDE SHELL
N1	INLET	4" 150# FLANGE	SIDE SHELL
M2	MANWAY	20" 150# FLANGE W/ BLIND	SIDE SHELL
M1	MANWAY	14"x18" ELL. MANWAY	TOP HEAD
MARK	SERVICE	DESCRIPTION	LOCATION

NOZZLE SCHEDULE

REV	DESCRIPTION	BY	DATE

VESSEL STANDARDS:VESSEL MATERIAL: **SA-516-70**

- HEAD THICKNESS: **3/8"** HEAD TYPE: **2:1 ELLIPTICAL**
- SHELL THICKNESS: **3/8"**

COATINGS:

- INTERIOR LINING: **INTERLINE 850 – DFT 4-6 MILS**
- EXTERIOR COAT: **EPOXY BASE W/ URETHANE TOP**

INTERNALS:

- **304 STAINLESS STEEL**

VESSEL PROPERTIES:

- MAWP: **125 PSIG / -15 PSIG AT 150 f**
- EMPTY SHIP WEIGHT: **5,000 LBS**
- TOTAL VESSEL VOLUME: **250 FT³**
- MAXIMUM MEDIA FILL: **N/A FT³**

PROJECT		CP-5K-6		 1555 Coraopolis Heights Road, Suite 4100 Coraopolis, PA, USA 15108 (724-703-3020) www.newterra.com
PROJ. NO.		STANDARD		
PO. NO.				
<p>THIS DRAWING AND DESIGN ARE THE PROPERTY OF TIGG LLC. AND SHALL NOT BE REPRODUCED IN WHOLE OR IN PART. NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY TIGG LLC. THIS DRAWING LOANED SUBJECT TO RETURN BY DEMAND.</p>		GENERAL ARRANGEMENT		
DRAWN BY	JB	CP-5K-6-GA-001		
DESIGN BY	JB			
CHECKED BY	BB			
DATE	4/4/2019			
SCALE	NTS			

4

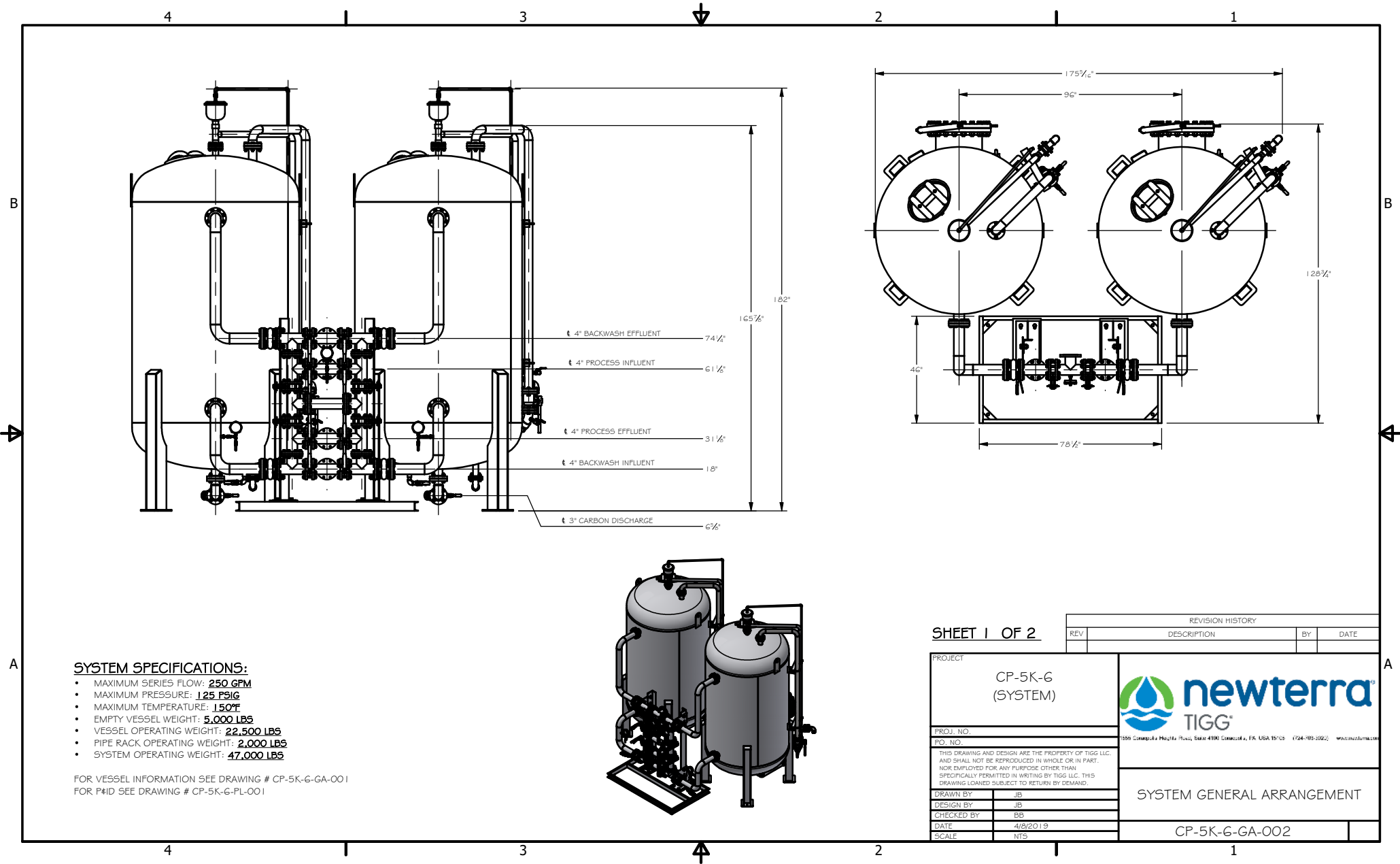
3

2

1

A

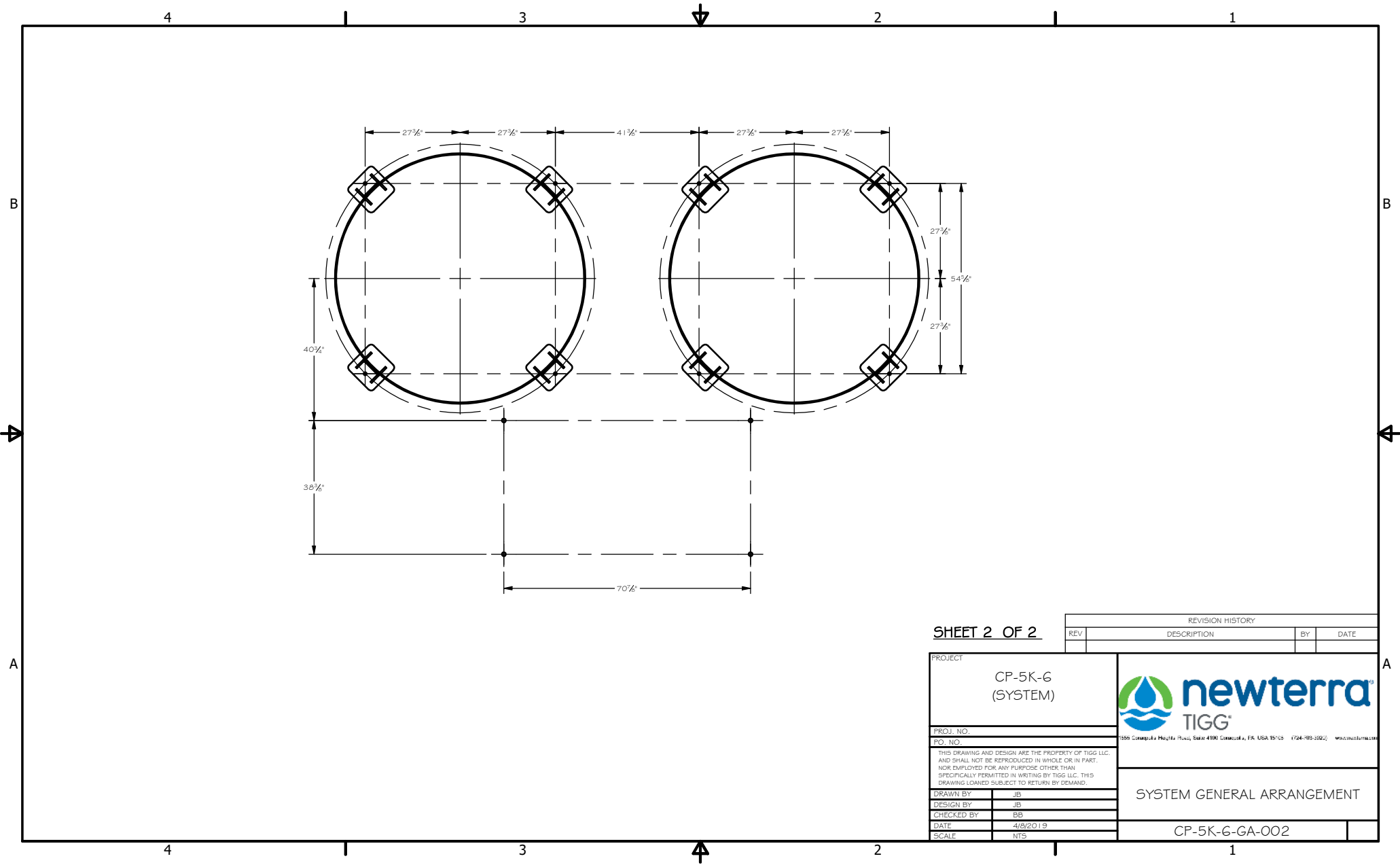
A



SHEET 1 OF 2

REVISION HISTORY			
REV	DESCRIPTION	BY	DATE

PROJECT		 3550 Comstock Highway, Suite 4100, Comstock, MI 48826 USA 15125 1724-995-2922 www.newterra.com
CP-5K-G (SYSTEM)		
PROJ. NO.		THIS DRAWING AND DESIGN ARE THE PROPERTY OF TIGG LLC. AND SHALL NOT BE REPRODUCED IN WHOLE OR IN PART. NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY TIGG LLC. THIS DRAWING LOANED SUBJECT TO RETURN BY DEMAND.
PO. NO.		
DRAWN BY	JB	SYSTEM GENERAL ARRANGEMENT
DESIGN BY	JB	
CHECKED BY	BB	
DATE	4/8/2019	
SCALE	NTS	CP-5K-G-GA-002



4

3

2

1

B

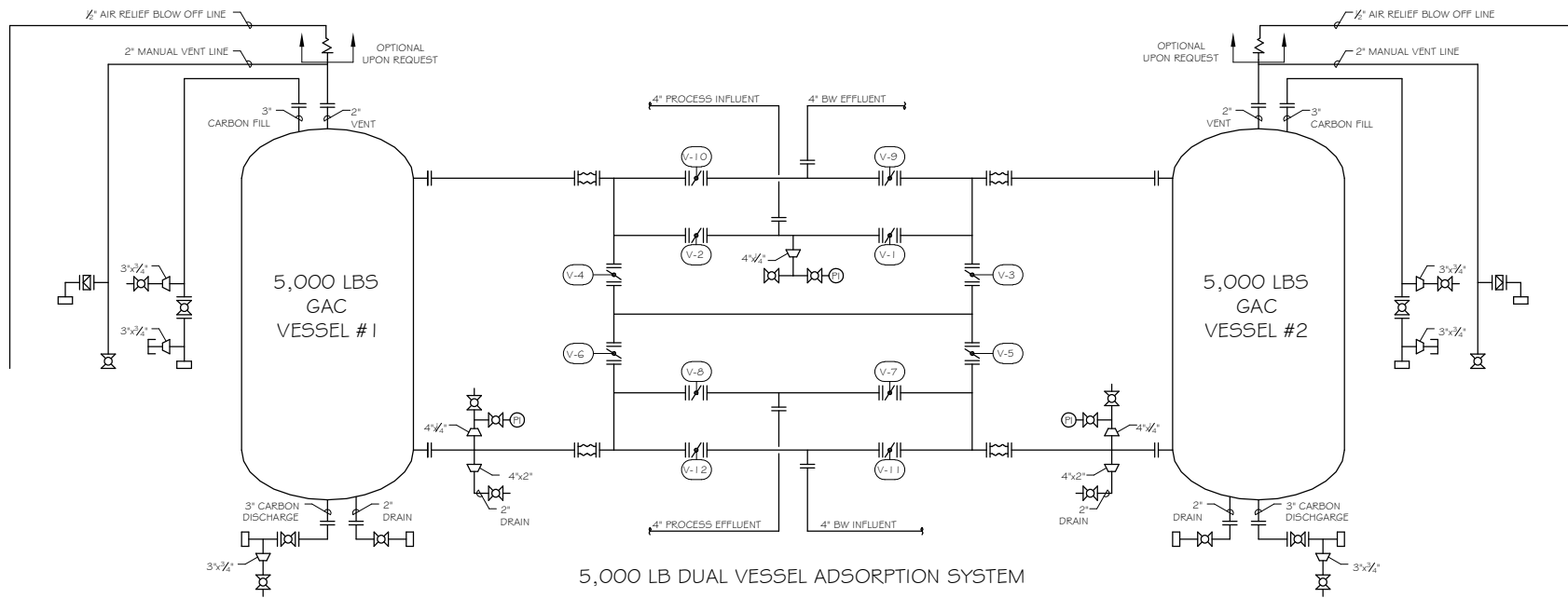
B

A

A

A

A



LEGEND					
	EXPANSION JOINT		REDUCER		RUPTURE DISK
	AIR RELIEF VALVE		QUICK CONNECT CAM LOCK FITTING		MANUALLY OPERATED BUTTERFLY VALVE
	BALL VALVE		PRESSURE GAUGE		

REVISION HISTORY			
REV	DESCRIPTION	BY	DATE
0			3/27/2019

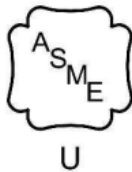
PROJECT		CP-5K-6 (SYSTEM)	
PROJ. NO.		SALES	
PO. NO.			
THIS DRAWING AND DESIGN ARE THE PROPERTY OF TIGG LLC. AND SHALL NOT BE REPRODUCED IN WHOLE OR IN PART. NOR EMPLOYED FOR ANY PURPOSE OTHER THAN SPECIFICALLY PERMITTED IN WRITING BY TIGG LLC. THIS DRAWING LOANED SUBJECT TO RETURN BY DEMAND.			
DRAWN BY		JB	
DESIGN BY		JB	
CHECKED BY		BB	
DATE		3/27/2019	
SCALE		NTS	

SYSTEM P#ID	
CP-5K-6-PL-001	
0	

1555 Coraopolis Heights Road, Suite 4100 Coraopolis, PA, USA 15108 (724-703-3020) www.newterra.com

ASME Certification

The American Society of Mechanical Engineers



CERTIFICATE OF AUTHORIZATION

The named company is authorized by The American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the ASME Single Certification Mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with the ASME Single Certification Mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY:

**Newterra Corporation, Inc.
250 Bolton Sullivan Dr.
Heber Springs, Arkansas 72543
United States**

SCOPE:

Manufacture of pressure vessels at the above location and field sites controlled by the above location (This authorization does not cover impregnated graphite)

AUTHORIZED: January 22, 2024

EXPIRES: January 22, 2027

CERTIFICATE NUMBER: 49679



Board Chair, Conformity Assessment



Managing Director, Standards & Engineering Services

ATTACHMENT F

Cyclopure DEXSORB Proposal and Supporting Information

DEXSORB® System for PFAS Treatment

Sonoma County, California

Project Overview. EKI Environment & Water has invited Cyclopure to prepare a proposal for a DEXSORB packed bed filtration (PBF) system to treat groundwater in Sonoma County, California. A PFAS treatment system is required to manage currently detected PFAS and possible future increases in PFAS concentrations and detections of new PFAS compounds. The existing treatment at the site is chlorination (addition in the order of 1 to 2 ppm) and the design flow rate is 120 gpm. The proposed treatment system will be installed outdoors (i.e., outside the existing pumphouse).

PFAS & General Water Quality. The groundwater contains PFOA at 2.2 ng/L and PFOS at 3.1 ng/L. Per input from EKI Environment & Water, the client is requesting system design on the assumption that PFAS concentrations will increase 3 to 5x in the future (i.e., PFOA up to 11 ng/L and PFOS up to 15.5 ng/L). Other PFAS have been detected at nearby wells (i.e., PFBA, PFBS, PFHxA, PFHxS, and PFPeA) at concentrations between 2 and 4 ng/L.

Per general water quality results shared by EKI Environment & Water, the groundwater has alkalinity of 72-96 mg/L, hardness of 41-44 mg/L, TDS of 160-190 mg/L. See [APPENDIX A](#) for detailed general water quality results.

System Design. The DEXSORB PBF system, detailed in [Table 1](#), consists of two 48"-diameter carbon steel vessels in lead-lag configuration, to support an operation flow rate of 120 gpm with an overall empty bed contact time (EBCT) of 6.0 minutes and total media loading of 3000 lbs. Each vessel will be loaded with 1500 lbs of DEXSORB to provide an EBCT of **3.0 minute per vessel**.

Backwash capabilities are incorporated in the system design, supporting a backwash flow rate of approximately 20 gpm per vessel.

System Process Location. The DEXSORB PBF system should be installed prior to chlorination. To remove TSS, a 5-micron filter should be installed prior to the DEXSORB PBF.

See [APPENDIX B](#) for the process flow diagram.

Table 1. DEXSORB System Design.

Parameters	Unit	
Overall System		
Vessels	2	#
Flow Rate	120	gpm
Total Media Loading	3000	pounds
Per Vessel		
Empty Bed Contact Time	3.0	min
Hydraulic Loading Rate	9.6	gpm/ft²
Vessel ID	48	inch
Overall Vessel Height	8.9	ft
Vessel Cross-section Area	12.6	ft²
Packed Bed Depth	3.8	ft
DEXSORB Media Loading	1500	pounds
Empty Space Ratio	36	%
Estimated Pressure Drop	<15	psi
Backwash Flow Rate	20	gpm

Capacity Estimate and Media Changeout. System capacity is estimated to be *18 to 24 months* before lead vessel replacement is needed. When the DEXSORB PBF system reaches treatment capacity, spent media in the lead vessel will be replaced with fresh media (1,500 lbs). The lag vessel will then operate as the lead vessel, and the vessel with fresh media will operate as the lag vessel.

Lead Time. Cyclopure can accommodate the project timeline as desired. DEXSORB media is in stock and can be mobilized to the site within a short timeline. Lead time for the vessels estimated to be 16 weeks, subject to confirmation with vessel supplier.

System Operation & Maintenance (O&M). The DEXSORB PBF system will provide smooth operation with minimal O&M requirements; operational backwash is not expected. Routine check on system pressure and flow rate is recommended. Cyclopure offers monthly in-house PFAS analysis at no charge. Samples from the DEXSORB system influent, midfluent, and effluent to be collected and shipped by the client.

PFAS Waste Handling. In addition to effectiveness and high capacity for PFAS removal, a unique feature of DEXSORB is that spent media can be regenerated in a process that isolates PFAS waste for efficient handling and destruction. Following PFAS treatment, Cyclopure will regenerate spent DEXSORB media and concentrate regeneration waste. Concentrated PFAS waste is compatible with destruction processes such as Hazardous Waste Incineration. Cyclopure will provide a Certificate of Destruction for PFAS waste. *PFAS waste handling and destruction are included in media cost.*

Cyclopure Services with Cost Estimates.

	Item	Cost
Initial Installation of DEXSORB PBF	Includes: <ul style="list-style-type: none"> • 48"-diameter lead-lag vessel system. • 3,000 lbs (96 cubic feet) of DEXSORB • Spent DEXSORB media handling. 	Vessels: [~\$50,000*] Media: \$30,000
On-site Support from Cyclopure Engineers	Includes: <ul style="list-style-type: none"> • Supervision of installation, setup, and commissioning of DEXSORB. 	\$5,000
Each Media Changeout (Every 18-24 months)¹	Includes: <ul style="list-style-type: none"> • 1,500 lbs (48 cubic feet) of DEXSORB. • Spent DEXSORB media handling. 	Media: \$15,000

*Subject to confirmation with vessel supplier.

¹ Excluding shipping costs to the installation site.

Appendix A

Table A1. General Water Quality Results

Parameters	Results
TOC	Unknown
TSS	Unknown
TDS	160–190 mg/L
VOC	Non-detect
Sulfate	2.2–3.3 mg/L
Nitrate	0.2–0.49 mg/L
Alkalinity (bicarbonate)	72–96 mg/L
Chloride	5.2–7.3 mg/L
Perchlorate	Non-detect
Hexavalent Chromium	0.57 micrograms/L
Arsenic	3.1–4 micrograms/L
Iron	ND since 2023 (max 0.58 mg/L in 2014)
Manganese	ND since 2014 (max 289 micrograms/L in 2014)
Hardness	41–44 mg/L
pH	6.9–7.2 (max 7.8 in 2014)

Appendix B

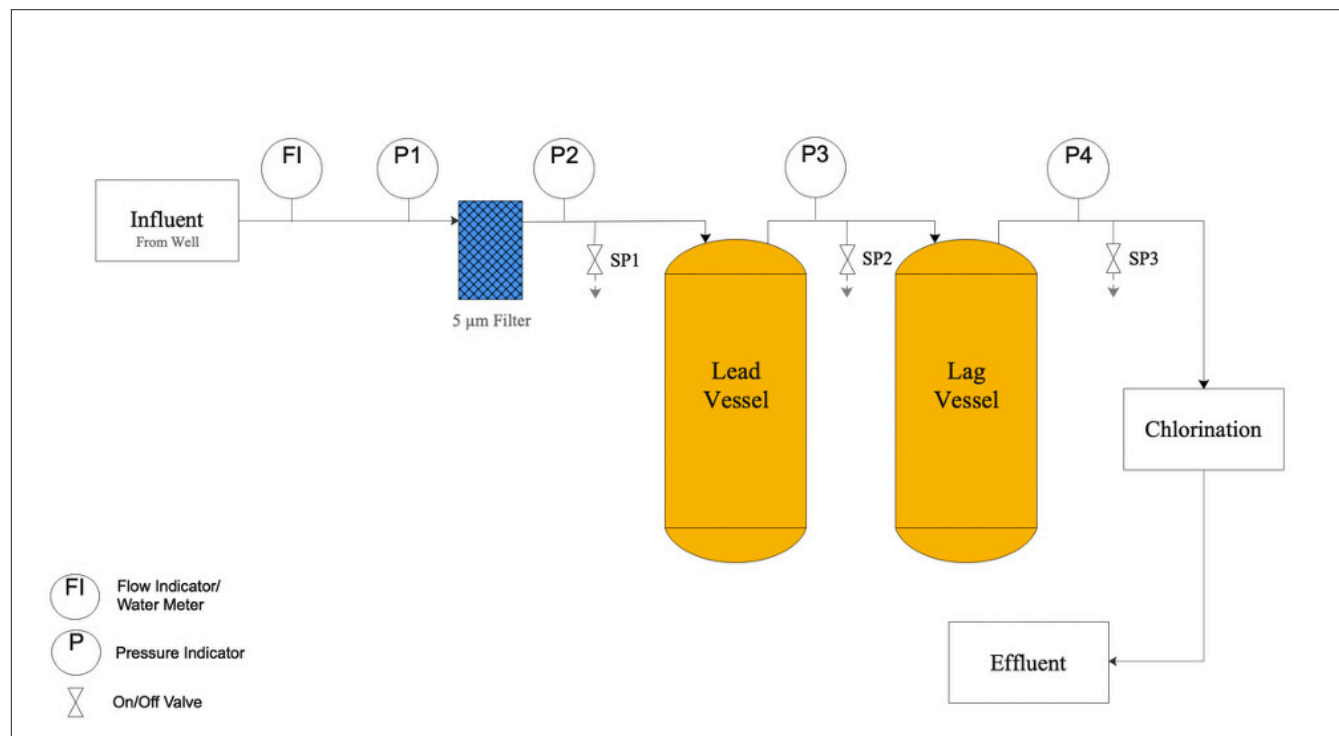


Figure B1. DEXSORB System Process Flow Diagram.



Figure B2. DEXSORB 2,000 lbs Lead Lag PBF in New Jersey

Attachment C

Valley of the Moon Water District
P.O. Box 280, El Verano, CA 95433
Telephone (707) 996-1037 - FAX (707) 996-7615

Some of the important terms of this agreement are printed on pages 2-4. For your protection, make sure that you read and understand all provisions before signing. The terms on pages 2-4 are incorporated in this document and will constitute a part of the agreement between the parties when signed.

TO: _____ DATE: _____

Project No. _____

(sent via email XXXXX)

The undersigned Contractor offers to furnish the following:

Per estimate dated XXXXX. Estimate attached.

Contract price (Not to Exceed): _____

Completion date: _____

Instructions: Sign and return the original. Upon acceptance by Valley of the Moon Water District, a copy will be signed by its authorized representative and promptly returned to you.

Insert below the names of your authorized representative(s).

Accepted: Matt Fullner
Valley of the Moon Water District

Contractor: _____
COMPANY NAME

Signature: _____
Title: General Manager

Signature: _____
Title: _____

Date: _____

Date: _____

Other authorized representative(s)
Clayton Church
Water System Manager

Other authorized representative(s)
Name: _____
Position: _____

Model 2.5 – Design Professional
(Including Architects, Engineers)

Indemnification – To the extent permitted by law, Design Professional agrees to indemnify, including the cost to defend, Valley of the Moon Water District and its officers, officials, employees, and authorized volunteers from and against any and all claims, demands, costs, or liability that arise out of, or pertain to, or relate to the negligence, recklessness, or willful misconduct of Design Professional and its employees or agents in the performance of services under this contract, but this indemnity does not apply to liability for damages arising from the sole negligence, active negligence, or willful acts of the Valley of the Moon Water District; and does not apply to any passive negligence of the Valley of the Moon Water District unless caused at least in part by the Design Professional.

Minimum Insurance Requirements: Design Professional shall procure and maintain for the duration of the contract insurance against claims for injuries or death to persons or damages to property which may arise from or in connection with the performance of the work hereunder and the results of that work by the Design Professional, his agents, representatives, employees or subcontractors.

Coverage - Coverage shall be at least as broad as the following:

1. **Commercial General Liability (CGL)** - Insurance Services Office (ISO) Commercial General Liability Coverage (Occurrence Form CG 00 01) including products and completed operations, property damage, bodily injury, personal and advertising injury with limit of at least two million dollars (\$2,000,000) per occurrence or the full per occurrence limits of the policies available, whichever is greater for. If a general aggregate limit applies, either the general aggregate limit shall apply separately to this project/location (coverage as broad as the ISO CG 25 03, or ISO CG 25 04 endorsement provided to Valley of the Moon Water District) or the general aggregate limit shall be twice the required occurrence limit.
2. **Automobile Liability** - (If necessary) Insurance Services Office (ISO) Business Auto Coverage (Form CA 0001), covering Symbol 1 (any auto) or if Design Professional has no owned autos, Symbol 8 (hired) and 9 (non-owned) with limit of one million dollars (\$1,000,000) for bodily injury and property damage each accident.
3. **Workers' Compensation Insurance** - as required by the State of California, with Statutory Limits, and Employer's Liability Insurance with limit of no less than \$1,000,000 per accident for bodily injury or disease. **Waiver of Subrogation:** The insurer(s) named above agree to waive all rights of subrogation against the Valley of the Moon Water District, its directors, officers, employees, and authorized volunteers for losses paid under the terms of this policy which arise from work performed by the Named Insured for the Agency; but this provision applies regardless of whether or not the Valley of the Moon Water District has received a waiver of subrogation from the insurer.
4. **Professional Liability** - (also known as Errors & Omission) Insurance appropriate to the Design Professional profession, with limits no less than \$1,000,000 per occurrence or claim, and \$2,000,000 policy aggregate.

If Claims Made Policies:

1. The Retroactive Date must be shown and must be before the date of the contract or the beginning of contract work.
2. Insurance must be maintained and evidence of insurance must be provided **for at least five (5) years after completion of the contract of work.**
3. If coverage is canceled or non-renewed, and not **replaced with another claims-made policy form with a Retroactive Date** prior to the contract effective date, the Design Professional must purchase "extended reporting" coverage for a minimum of **five (5) years** after completion of contract work.

If the Design Professional maintains broader coverage and/or higher limits than the minimums shown above, the Valley of the Moon Water District requires and shall be entitled to the broader coverage and/or higher limits maintained by the Design Professional. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the Valley of the Moon Water District.

Other Required Provisions - The Commercial General Liability policy must contain, or be endorsed to contain, the following provisions:

1. **Additional Insured Status:** Valley of the Moon Water District, its directors, officers, employees, and authorized volunteers are to be given insured status insurance (at least as broad as ISO Form CG 20 10 10 01 with respect to liability arising out of work or operations performed by or on behalf of the Design Professional including materials, parts, or equipment furnished in connection with such work or operations. General liability coverage can be provided in the form of an endorsement to the Design Professional's insurance.
2. **Primary Coverage:** For any claims related to this project, the Design Professional's insurance coverage shall be primary at least as broad as ISO CG 20 01 04 13 as respects to the Valley of the Moon Water District, its directors, officers, employees, and authorized volunteers. Any insurance or self-insurance maintained by the Valley of the Moon Water District, its directors, officers, employees, and authorized volunteers shall be excess of the Design Professional's insurance and shall not contribute with it.

Notice of Cancellation: Each insurance policy required above shall provide that coverage shall not be canceled, except with notice to the Valley of the Moon Water District.

Self-Insured Retentions - Self-insured retentions must be declared to and approved by the Valley of the Moon Water District. The Valley of the Moon Water District may require the Design Professional to provide proof of ability to pay losses and related investigations, claim administration, and defense expenses within the retention. The policy language shall provide, or be endorsed to provide, that the self-insured retention may be satisfied by either the named insured or Valley of the Moon Water District.

Acceptability of Insurers - Insurance is to be placed with insurers having a current A.M. Best rating of no less than A:VII or as otherwise approved by Valley of the Moon Water District.

Verification of Coverage – Design Professional shall furnish the Valley of the Moon Water District with certificates and amendatory endorsements or copies of the applicable policy language effecting coverage required by this clause. All certificates and endorsements are to be received and approved by the Valley of the Moon Water District before work commences. However, failure to obtain the required documents prior to the work beginning shall not waive the Design Professional's obligation to provide them. The Valley of the Moon Water District reserves the right to require complete, certified copies of all required insurance policies, including policy Declaration and Endorsements pages listing all policy endorsements.

Subcontractors - Design Professional shall require and verify that all subcontractors maintain insurance meeting all the requirements stated herein, and Design Professional shall ensure that Valley of the Moon Water District is an additional insured on insurance required from subcontractors.