



REQUEST FOR PROPOSALS

Engineering and Construction Management Services for

Seismic Valve Improvements

PROPOSALS DUE: August 17, 2026, by 2:00 p.m. (local time)

Proposals must be submitted electronically via BidLocker at <https://bidlocker.us/a/tualatinoregon/BidLocker>. Submissions by any other method will not be accepted.

CITY OF TUALATIN REQUEST FOR PROPOSALS

Introduction

The City of Tualatin requests proposals from qualified firms to provide professional engineering services for the Seismic Valve Improvements Capital Project. This project includes installation of seismic valves on the City's six distribution system storage tanks to provide automatic isolation of the tanks' inlets and outlets during an earthquake, thereby minimizing the potential loss of water that could be used for emergency purposes due to distribution system main breaks. Consultants are invited to submit a proposal demonstrating their project understanding, approach, and project team experience.

The City will screen and select prospective Consultants as provided in ORS 279C.110(5). Please do not submit any pricing information unless specifically requested by the City. The estimated cost of the required professional services is between \$180,000 and \$270,000, depending on the design options selected for sites with proposed alternatives. Subject to available funding, the City anticipates proceeding with Option 1 at each reservoir. The selected design option for each reservoir will be confirmed as part of the consultant's scope under Section 1.2, Final Design and Construction Documents. Cost estimates for all design alternatives are provided in Exhibit A, Basis of Design Report.

Point of Contact

The point of contact for the City for all process and contract questions as well as protests is:

Richard Contreras, Procurement & Contracts Administrator
18880 SW Martinazzi Ave., Tualatin, OR 97062
Phone: (503) 691-3080, Email: rcontreras@tualatin.gov

Anticipated RFP Schedule

The City anticipates the following general timeline for this Request for Proposals (RFP). The anticipated schedule may be changed as needed.

Issuance of RFP documents	July 24, 2026
Deadline for Proposal Submission	August 17, 2026 at 2:00 PM (local time)
Pricing Proposals Due	September 11, 2026 (estimated)
Notice of Intent to Award	September 22, 2026 (estimated)
Contract Award	September 29, 2026 (estimated)
Commencement of Contract	September 29, 2026 (estimated)

Submission Date and Location

Each proposer shall submit an electronic copy of their complete technical proposal via the BidLocker platform at <https://bidlocker.us/a/tualatinoregon> by August 17, 2026, at 2:00 pm (local time).

Proposals received after the specified date and time will not be given consideration. It is the Proposer's responsibility to ensure that proposals are submitted prior to the stated closing time. No method of delivery other than through the BidLocker platform will be allowed. Proposals may not be submitted via a link to a file-sharing site.

The City of Tualatin is not liable for any cost incurred by Consultants prior to issuance of a Contract.

Request for Proposal Documents

All solicitation documents may be viewed or printed from the City of Tualatin's online bid website at

<https://bidlocker.us/a/tualatinoregon> after creating an account and logging in. Please contact the Point of Contact with any technical questions regarding the website.

Addenda and Clarification Questions

Register on the City's BidLocker portal as a plan holder to receive addenda notifications. Proposers are responsible for checking the City's BidLocker portal for all addenda prior to submitting a proposal. Proposers will be held responsible for all addenda/changes to the documents and may be considered non-responsive if the submitted proposal does not reflect those addenda/changes.

Interested proposers may contact Richard Contreras, via phone at (503) 691-3080 or email (rcontreras@tualatin.gov) until 2:00 pm (local time) on August 7, 2026, with clarifying questions about the content of this RFP. If, in the course of such communication new information is shared with any party, the City will share this new information on the BidLocker portal no later than 2:00 pm (local time) on August 12, 2026.

Protests

All complaints or perceived inequities related to this RFP must be in writing and directed to the Point of Contact at the address listed in the RFP. Protests related to the solicitation must be received no more than seven (7) calendar days after issuance of the RFP. Protests of the award must be made within seven (7) calendar days after the City issues its Notice of Intent to Award.

Rejection of Proposals

The City of Tualatin may reject any proposal not in compliance with all prescribed public proposal procedures and requirements, and may reject any or all proposals in accordance with OAR 137-048-0250.

Withdrawal / Cancellation of Proposals

Unless otherwise specified, modification of the Proposal will not be permitted; however, a proposer may withdraw their Proposal at any time prior to the scheduled closing time for receipt of Proposals; any proposer may withdraw their Proposal through the BidLocker portal. Withdrawal of Proposal shall not disqualify the proposer from submitting another Proposal provided the time for receipt of Proposals has not expired.

The City of Tualatin reserves the right to cancel award of this contract at any time before execution of the contract by both parties if cancellation is deemed to be in the City of Tualatin's best interest. In no event shall the City of Tualatin have any liability for the cancellation of award.

Duration of Proposals

Unless otherwise specified, proposals must remain valid for at least 60 days. Proposals must be signed by an official authorized to bind the proposer.

Public Record

All proposals submitted are the property of the City of Tualatin and are public records. All documents received by the City are subject to public disclosure after the City selects a Consultant. Information deemed by the proposer as exempt under Oregon's public records law should be clearly marked by the proposer as "Proprietary". Marked pages should be placed in a group separate from the remainder of the proposal. The City will make an independent determination regarding exemptions applicable to information that has been properly marked and segregated.

Terms and Conditions

All proposers are required to comply with the provisions of Oregon Revised Statutes and the City of Tualatin Municipal Code.

The City of Tualatin reserves the right to:

1. Seek clarifications of each proposal.
2. Reject any or all proposals not in compliance with public bidding procedures.
3. Postpone award of the contract for a period not to exceed 60 days from the date of proposal opening.
4. Waive informalities in the proposals.
5. Select the proposal which appears to be in the best interest of the City.
6. Negotiate with the highest-ranking proposer to obtain agreement on:
 - Consultant's performance obligations and performance schedule
 - Compensation to the Consultant for services outlined in the Scope of Work

Proposer Certifications

By submitting a Proposal in response to this RFP, the Proposer certifies that:

1. The Proposer has reviewed the RFP, including all addenda, attachments, and the draft Professional Services Agreement attached as Exhibit B, understands the requested services, and is capable of performing the work described in the Scope of Services.
2. The Proposal is submitted in accordance with the requirements of this RFP, except for any exceptions or requested revisions clearly identified in the Proposal.
3. The Proposer has reviewed and can comply with the insurance requirements and material terms of the draft Professional Services Agreement attached as Exhibit B. Any requested revisions to Exhibit B must be clearly identified in the Proposal. The City is not required to accept any requested revisions.
4. The Proposer is familiar with the conditions under which the services will be performed.
5. To the best of the Proposer's knowledge, no City official or employee has a prohibited financial interest in the Proposal or any resulting contract, except as disclosed in the Proposal.
6. The Proposal is submitted without collusion and represents a firm offer valid for at least 60 days after the proposal due date.

SECTION 1: STATEMENT OF PROJECT

1.1 Overview

The City of Tualatin's (City's) 2023 Water System Master Plan (WSMP) identified a number of improvements to increase the resiliency of the water system during a seismic event. One of the key improvement recommendations is the installation of seismic valves on the City's six distribution system storage tanks to provide automatic isolation of the tanks' inlets and outlets during an earthquake, thereby minimizing the potential loss of water that could be used for emergency purposes due to distribution system main breaks. The City was recently awarded a \$1.75M grant (Exhibit C) from the State of Oregon Water Resources Department (OWRD) to fund the design and construction of these improvements. This funding requires that these improvements be designed, installed, and in service by the end of June 2027. All professional services provided under the contract to be awarded shall be performed in accordance with any applicable terms and conditions of the OWRD grant agreement.

The City of Tualatin intends to retain an engineering consultant to provide technical advisory support and prepare final design documents for seismic resiliency improvements at six existing potable water storage reservoirs. The improvements were conceptually developed in the City's Seismic Valve Improvements Preliminary Engineering/Basis of Design Report (June 2026), which will serve as the basis for final design.

The estimated cost of the required professional services is between \$180,000 and \$270,000, depending on the design options selected for sites with proposed alternatives. Subject to available funding, the City anticipates proceeding with Option 1 at each reservoir. The selected design option for each reservoir will be confirmed as part of the consultant's scope under Section 1.2, Final Design and Construction Documents. Cost estimates for all design alternatives are provided in Exhibit A, Basis of Design Report.

The consultant shall prepare final construction documents, permitting support (as needed), bidding assistance, and engineering services during construction.

1.2 Scope of Services

The following represents the minimum anticipated scope of services for the project. Proposers may recommend additional services or refinements necessary to support successful project delivery. The selected Consultant team is expected to include all disciplines necessary to complete the required investigations, design, permitting support, bidding assistance, construction support services, and reservoir seismic evaluations.

A more detailed overview of the project scope can be found in Exhibit A – Basis of Design Report.

Project Management

Consultant will prepare monthly invoices, including expenditures by task, hours worked by project personnel, and other direct expenses with the associated backup documentation. Monthly status reports will accompany each invoice and include comparisons of monthly expenditures and cumulative charges to budget by Task. Consultant will coordinate with the City, project stakeholders, project team, and subconsultants via phone, email, or meetings on scope, schedule, budget, and specific tasks as needed.

- Services may include: Stakeholder meetings; schedule and budget management; QA/QC; monthly meetings and reports; coordination with City staff and utilities.

Existing Conditions Verification

Consultant will verify existing conditions as outlined in the Basis of Design Report (Exhibit A) including confirming valve operability, surveying, potholing, and resolving uncertainties at Reservoirs A-2 and C-2 before final design

- Services may include: Review records, survey, utility locating, potholing, verify valve operability, restrained pipe, electrical and SCADA systems.
- Deliverables may include: Existing Conditions Memorandum, survey/base mapping.

Reservoir Seismic Evaluation

Consultant shall conduct seismic evaluations at all six reservoirs to identify and address seismic deficiencies.

- Services may include: Structural seismic evaluations of all six existing reservoirs including freeboard/sloshing review, anchorage, structural deficiencies, recommendations for mitigation, and integration of findings into final design.
- Deliverables may include: Seismic evaluation findings memorandum with recommended operational changes and/ or capital improvements to ensure water remains available in reservoirs after a seismic event.

Final Design & Construction Documents

- Services may include: Advise on design alternatives and select design option for each reservoir, prepare 30%, 60%, 90%, and Final design plans for civil, water, structural, electrical, and instrumentation/control designs for seismic valves, vaults, restrained piping, expansion joints, hydrants, SCADA integration, PLC programming, and related improvements.
- Deliverables may include: 30%, 60%, 90%, and Final design drawings, engineer's estimates

City Coordination and Design Review

- Services may include: Conduct design review page-turn meetings at 30%, 60%, 90%, and final milestones
- Deliverables may include: 30%, 60%, 90%, and final design plans

Operational Planning and Construction Sequencing

- Services may include: Developing reservoir outage sequencing, temporary operations plans, water quality coordination, startup planning, and construction sequencing
- Deliverables may include: seismic valve operating standard operating procedures documentation.

Permitting and Agency Coordination (as needed)

- Services may include: Support coordination with OWRD, Oregon Health Authority, PGE, utilities, and other agencies
- Deliverables may include: prepare permit/ coordination supporting documents (if required).

Funding Coordination (as needed)

- Services may include: Support grant compliance, reporting, schedule documentation, and coordination with funding agency.

Support During Bidding (as needed)

- Services may include: Attend pre-bid meeting, respond to RFIs, prepare addenda, assist with bid evaluation and recommendation of award
- Deliverables may include: Responses to RFIs, addenda to bid documents

Support During Construction

- Services may include: Provide engineering services during construction including submittal review, RFIs, on-site inspections, change order support, startup, testing, training, punch list, record drawings, and closeout.
- Deliverables may include: Inspection reports, punch list, submittal review responses

1.3 Project Timeline

The currently anticipated timeframe is:

Design	September – December 2026
Bidding Services	December 2026 – January 2027
Construction	January – May 2027
Project Completion	No later than June 30, 2027

SECTION 2: EVALUATION

2.1 Evaluation and Scoring

The criteria listed below will be used to evaluate proposals and select the design team with which to begin scoping and contract negotiations. The City reserves the right to select the proposal that appears to be in the City's best interest.

The City will screen and select prospective Consultants as provided in ORS 279C.110(5). After evaluation of the Technical Proposals, the City will announce the evaluation scores for each prospective consultant and shall request a pricing proposal pursuant to ORS 279C.110(5)(c) from up to three of the top-ranked Consultants. Please do not submit a pricing proposal until requested in writing by the City. A prospective Consultant may elect to withdraw from consideration if they do not wish to provide a pricing proposal when requested.

Proposals will be evaluated based on the following criteria. Points awarded in each phase are cumulative and carry forward to subsequent phases; scores are not reset between phases.

Evaluation Criteria	Possible Points
Technical Proposal	
Introductory Letter	Pass/Fail
Project Understanding and Approach	35
Project Team, Experience and Quality of Service	25
Project Samples	25
Subtotal (Technical Proposal)	85
Pricing Proposal	15
Total Possible Points	100

2.2 TECHNICAL PROPOSAL CONTENT

Include the content listed below. The proposal should meet submittal requirements described in this RFP. The City encourages clear, concise proposals that make it easy for reviewers to find pertinent information.

A. Introductory Letter (Pass/Fail)

Provide an introductory letter expressing interest in the project. Include full name of firm, RFP contact person, email address, mailing address, and telephone number. Also include a statement in the introductory letter specifically stating that all terms and conditions contained in the RFP and the Exhibit B sample Professional Services Contract are acceptable to the Consultant, or specifically state any revisions the proposer requests. The letter must be signed by a person(s) authorized to represent the proposer in any negotiations and sign any contract which may result.

B. Project Understanding and Approach (35 points)

Describe how your team would manage, design, engineer, and deliver this project, including:

1. Outline project challenges and explain how they could be addressed.
2. Explain your approach to communicating technical information and coordinating with various groups involved on the project.
3. What do you envision as an appropriate schedule for this project?
4. What does good public involvement look like on this project?
5. Describe your preferred ways to work with City staff throughout the project.
6. Describe your team's quality control procedures.

C. Project Team, Experience and Quality of Service (25 points)

List experience, qualifications, office locations, and organization of the project team. Describe how your project team is particularly able to help the City complete the project successfully. Include resumes in the Appendices of the proposal which reflect education, registrations and experience of key project staff. Additionally, provide detailed information on any subconsultants you plan to engage, including their roles, experience, and how their involvement will contribute to the project's success. All plans must be stamped by a Professional Engineer registered in Oregon. The City values collaborative relationships and expects to have ready access to review the work and talk with the people who are performing the work at no additional cost to the City. Please feel free to describe any other ways that project team members would be well-suited to this project.

D. Project Samples (25 points)

Provide project descriptions for at least three (3) recent projects similar in nature to the proposed project, including completion dates, measures that indicate quality and successful project completion, and a client reference name and phone number for each project. Please only include projects for which key members of the project team had a significant role in delivering the project, and specifically describe that role. Please describe how each project demonstrates experience relative to this project and how experience gained from that project will help the team with this project. Feel free to provide any additional information you believe may help the city understand the team's experience on similar projects.

E. Appendices

The following information may be included in an appendix:

1. Resumes of key staff
2. Project sample description sheets

SUBMITTAL REQUIREMENTS:

Technical proposals must be submitted primarily on letter-sized (8.5" X 11") paper. Margins must be at least ½" on all sides. Text font size in the main body of the proposal can be no smaller than Arial 10. "Side" text such as map legends, etc., may be smaller than 10 pt font. Proposals may be a maximum of 7 pages (with each side counting as a page, and each 11x17 side counting as two pages) plus an additional 10 pages allowed for appendices.

2.3 PRICING PROPOSAL – (15 points)

The City shall request pricing information at a later stage. Please do not submit pricing information unless requested by the City.

Pricing proposals will be evaluated as part of a **best value** assessment. Scoring will consider not only the proposed cost, but also the quality and clarity of the proposed scope and task descriptions. Because this stage is the City's first opportunity to review a detailed proposed scope, the pricing proposal will be evaluated both as a cost estimate and as a reflection of the proposer's understanding of the project and approach to delivering the work.

SECTION 3: CONTRACT AWARD

3. Negotiations with Top-Ranked Consultant

After completion of proposal evaluations, the City will enter into negotiations with the top-ranked Proposer regarding conditions, compensation level, schedule, and performance of the scope of services. The Proposer will be required to enter into an agreement with a maximum compensation level. If, after good faith negotiations, the City and the top ranked Proposer are unable to agree, then the City will move to the

second ranked Proposer and enter negotiations. The process shall repeat until the City and a Proposer come to an agreement, or the City elects to re-scope and re-solicit the Work.

SECTION 4: EXHIBITS

- A – Basis of Design Report
- B – Sample Professional Services Agreement
- C – Oregon Water Resources Department Grant Agreement



CITY OF TUALATIN, OR

Seismic Valve Improvements Preliminary Engineering

JULY 2026

EXHIBIT A

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Basis of Design Report

City of Tualatin, OR

July 2026

Conсор

One SW Columbia Street
Suite 1700
Portland, OR 97204

EXHIBIT A

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Acknowledgements

Appreciation is expressed to all who contributed to the completion of this report.

City of Tualatin

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EXHIBIT A

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CHAPTER 1

Introduction

1.1 Purpose

The City of Tualatin's (City's) 2023 Water System Master Plan (WSMP) identified a number of improvements to increase the resiliency of the water system during a seismic event. One of the key improvement recommendations is the installation of seismic valves on the City's six distribution systems storage tanks to provide automatic isolation of the tanks' inlets and outlets during an earthquake, thereby minimizing the potential for loss of water that could be used for emergency purposes due to distribution system main breaks. The City was recently awarded a grant from the State of Oregon Water Resources Department (OWRD) to fund the design and construction of these improvements. This funding requires that these improvements be designed, installed, and in service by the end of June 2027. This Basis of Design Report (Report, BODR) summarizes conceptual design options at each reservoir site to serve as the basis of scope development for final design.

1.2 Water System Overview

The City provides potable water to more than 50,000 permanent residents and daily commuters through over 7,050 residential, commercial, industrial, and institutional service connections. The existing service area includes all areas within the current city limits and additional areas within the Metro Urban Growth Boundary (UGB). The City water supply is provided by wholesale purchasing of treated water from the Portland Water Bureau (PWB) through a single 36-inch diameter supply line, the Tualatin Supply Main (TSM), extending south from the Washington County Supply Line (WCSL), a major regional transmission main supplying wholesale water supply from PWB to water providers in Washington County. In summer months, the City historically has also had limited supplementary supply from its Aquifer Storage and Recovery (ASR) well. The ASR well is currently not operable due to a broken well shaft. The City is conducting an analysis to determine next steps.

In an emergency, the City can also supply or receive water via several emergency interties with neighboring cities, including the Cities of Tigard, Sherwood, Wilsonville, and Lake Oswego, and the Rivergrove Water District. These interties connect neighboring distribution systems and have normally closed isolation valves. The manually operated interties have limited capacity based on the size and configuration of the distribution system piping in the City's system and the adjacent water provider's system at the intertie. If the City needs emergency supply, they require verbal agreement from the other water provider to manually open the isolation valve. Additionally, the intertie would need to be monitored manually to manage water quality concerns, track flow, and maintain required pressures in both systems. These interties are useful to address localized distribution system outages but are not considered sufficiently reliable to address a system-wide supply interruption.

The City's existing distribution system is divided into four pressure zones - A, B, C, and Bridgeport Village (BV) Levels - supplied by six steel storage facilities, three pump stations (two of which are for emergency operations only), and the ASR well. Within the A, B, and C Levels, storage reservoirs provide gravity supply to looped distribution piping that serves customers throughout the service area. The BV Level is supplied directly from the TSM through a pressure reducing valve (PRV). The water system has 12.8 million gallons

EXHIBIT A

(MG) of available storage, used for water system equalizing, fire suppression, and emergency conditions. All six of the City's existing reservoirs have a single, combined inlet/outlet line.

The seventh and only concrete reservoir in the system, Reservoir B-3, is currently under construction with the City's fourth pump station. This reservoir will be equipped with seismic protection as recommended for the six existing reservoirs and is therefore omitted from this Report.

A summary of the six existing reservoirs can be found in Table 1-1.

Table 1-1 | Storage Reservoirs Summary

Site Name	Reservoir Name	Nominal Volume (mg)	Floor Elevation/ Overflow Elevation (ft)	Diameter (ft)	Year Built	Inlet/Outlet Piping Diameter (in) and Material
Avery	A-1	2.2	248' / 297'	90'	1971	12" cast iron
	A-2	5.0	248' / 295'	135'	2006	18" ductile iron
Norwood	B-1	2.2	352' / 399'	90'	1971	12" ductile iron
	B-2	2.8	352' / 399'	100'	1989	12" ductile iron
Frobase	C-1	0.8	458.5' / 507.5'	54'	1981	12" ductile iron
	C-2	1.0	458.5' / 507.5'	59'	2016	12" ductile iron

1.3 Seismic Resilience

Cities throughout the region are increasingly aware of the risk to their infrastructure from potential seismic activity. Following recent seismic research, which presented persuasive evidence on the eminent threat and extreme risk of a Cascadia Subduction Zone (CSZ) earthquake, the State of Oregon developed the Oregon Resilience Plan (ORP) in 2013. The ORP established target timelines for water utilities to provide service following a seismic event. The ORP also recognized that water providers and existing water infrastructure are currently unable to meet these recovery goals. To improve existing water systems' seismic resilience, one of the ORP's key recommendations was for water utilities to complete a seismic risk assessment and mitigation plan as part of their periodic Water System Master Plan (WSMP) update. The State of Oregon formalized this recommendation under 333-061-0060(5)(J) and now cities located in seismic hazard areas are required to include a seismic risk assessment and mitigation plan in their WSMPs.

As part of the 2023 WSMP, the City completed a seismic risk assessment of their existing water system. The scope of the evaluation included risk findings and general recommendations regarding seismic design standards for future water infrastructure. It was determined that the A-1, B-1, and B-2 reservoirs are classified as higher-priority Tier 1 facilities, while the A-2, C-1, and C-2 reservoirs are lower-priority Tier 2 facilities.

To help mitigate reservoir water loss due to transmission mains failing during a seismic event, multiple methods were developed as part of the WSMP. It is assumed that future reservoir structures will be designed to meet earthquake standards consistent with current Structural and Mechanical Specialty codes, and these codes should be considered when the City is evaluating the condition, performance, and rehabilitation needs of existing reservoirs. The two key design considerations associated with reservoir configuration and connections to the distribution system are the pipe to reservoir connections and automated isolation valves at reservoir inlet and outlet piping connections.

The 2023 WSMP seismic resilience evaluation recommended installing new flexible connections and seismic isolation valves at all six of the City's existing reservoirs. These upgrades were included in the City's Capital Improvement Program (CIP) as CIP# 605 (both C Level reservoirs), 608 (B-1 reservoir seismic improvements), 613 (A-1 reservoir seismic improvements), and 614 (A-2 reservoir seismic improvements).

CHAPTER 2

Seismic Upgrades

2.1 Seismic Valves

The intent of a seismic valve is to maintain maximum capacity of the adjacent reservoir after a seismic event and protect downstream property impacted by infrastructure failures. Water main breaks are likely to occur during an earthquake. Determining the location of breaks may not be obvious and with limited city staff, isolating the damaged mains before the reservoir has fully drained through a break may not be possible. Therefore, it is encouraged to install seismic valves on all reservoir outlet lines as close to the reservoir as possible to limit the potential for a break between the seismic valve and the reservoir outlet.

Seismic isolation valve assemblies typically consist of butterfly valves equipped with a motorized actuator, an electrical switch that can detect seismic activity, and an independent backup power supply. These valves can also be manually or remotely actuated or controlled by other logic programming if needed. Photos of a seismic valve, comprised of an 18-inch diameter butterfly valve and Rotork actuator, are shown in **Figure 2-1**. The general set-up, appearance, and footprint is indistinguishable from that of a typical butterfly valve with motorized actuator. The seismic switch is installed nearby in the building and cannot be seen in the photos.

The seismic switch model recommended by Consor is located on site, can be mounted to a vault wall, and requires no regular maintenance. This instrument registers ground acceleration during a seismic event and sends a signal to a programmable logic controller (PLC) when an event exceeding a pre-determined magnitude is detected. It allows the seismic valve to be remotely monitored and controlled via the City's telemetry and SCADA system. Programming can be set up to automatically signal the actuator to close the valve, hydraulically isolating the reservoir from the distribution system. Logic could also require additional conditions such as changes in reservoir water level, flow, or pressure be present in order to close the valve. Following a triggering event, this seismic switch must be manually reset though operators may remotely reopen the valve.

In addition to the onsite seismic switch, there are regional earthquake warning systems, such as ShakeAlert Earthquake Early Warning System managed by USGS, that provide early-access knowledge of seismic activity. These warning systems have more sensitive sensors that can detect activity before it is felt on the surface. By using these systems, valves can be closed prior to damage occurring to the water system. These warning systems can be retroactively implemented to the seismic valves and SCADA systems once installed. Logic programming allows for significant flexibility in seismic valve operation. Onsite seismic switches, regional earthquake warning systems, and miscellaneous hydraulic conditions can all be factors in the logic programming that determines whether or not a particular seismic valve in the City should close or remain open. As of the preparation of this Report, it is understood that the City is very likely to incorporate ShakeAlert into their operations.

Any isolation valve could be implemented for use as a seismic valve, including butterfly valves, gate valves, and automatic control valves. For most applications, butterfly valves best serve the function of seismic valve as gate valves are slow to close and automatic control valves are more excessive in cost and function than is necessary for the application. For butterfly valves acting as a seismic valve, Consor recommends the installation of a high-performance butterfly valve, such as an eccentric butterfly valve. In the event of

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several pipe breaks in a pressure zone due to an earthquake, the outlet and seismic valve of a reservoir with a 45-foot water height could experience velocities up to 54 feet per second. A double-offset butterfly valve features a shaft that is offset from both the disc body's centerline and the pipe's centerline. During the operation of a concentric or single-offset butterfly valve, the disc is always in contact with the valve body, causing friction. The disc of a double-offset valve moves away from the seat, creating less friction, which decreases the wearing process, prolonging its operational life. This design also performs better under high velocities like a seismic valve may experience. A more resilient double-offset butterfly valve is well suited for critical infrastructure such as a seismic valve.

An additional option that can be considered during final design is the use of an altitude valve as a seismic valve, which would require updates to the existing control valve configurations. The addition of a motorized pilot would allow electronic control by the SCADA system, converting the existing control valve into a seismic valve. The same seismic switch as described above would work with the control valve. Similar to double-offset butterfly valves, altitude valves can withstand high velocities. Retrofitting existing altitude valves could be a cost-effective option if the existing control valve is operational and replacing the equipment would result in higher construction costs but would differ in operation and maintenance from seismic valves that utilize butterfly valves.

With the exception of the City pursuing retrofitting existing altitude valves to reduce construction costs, Consor recommends standardizing the seismic valve equipment. Standardization of seismic valve equipment across the City's water system streamlines equipment servicing processes and promotes ease of operations and maintenance by City staff. **Consor recommends that the City specify all future seismic valves to be identical to the seismic valve currently being installed at their SW 108th Avenue Reservoir B-3.** This seismic valve consists of the following three components:

- Double-Offset Butterfly Valve by Val-Matic
- Limitorque QX Actuator by Flowserve
- Model 510 Seismic Actuated Electrical Switch by Pacific Seismic Products, Inc

Figure 2-1 | 18" BFV with Seismically-Activated Motorized Actuator



2.2 Restrained Pipe

Unrestrained piping has been widely installed throughout water systems for years, but unrestrained pipe does not protect against longitudinal forces in the pipe that could separate pipe segments at the connecting joints. Prior to the development of restrained piping, thrust blocks were constructed to keep piping in place at locations where longitudinal forces are acting, such as bends and dead ends. Restrained pipe maintains the easy-to-install push-on assembly system while removing the need for cumbersome thrust blocking. Historically, restrained piping was often installed only in place of thrust blocks – in locations experiencing longitudinal forces. As of the past decade, it has become standard practice in the region for any newly constructed pipe to be restrained.

Because the City's six existing reservoirs were all constructed more than 10 years ago, it is probable that all existing onsite piping is unrestrained. **Consor recommends the use of flange joints or restraining all push-on and mechanical joints between a reservoir outlet and seismic valve to minimize the risk of a pipe break upstream of a seismic valve. Existing unrestrained piping should be removed and replaced with more resilient restrained ductile iron piping.**

2.3 Flexible Expansion Joints

Flexible expansion joints are couplings with joints (flanged or mechanical) and expansion sleeves that allow deflection in any direction while simultaneously expanding or contracting. They serve as a location that allows for expansion/contraction and extreme deflection compared to the allowable deflection of a typical pipe segment. Flexible expansion joints are common additions to newly constructed reservoirs. While typically installed to combat long-term differential settlement under a new reservoir as their primary function, these joints can expand/contract and deflect to mitigate potential breaking of pipe caused by sudden settlement or differential movement during an earthquake. Flexible expansion joints can be installed retroactively as part of seismic improvements, though they must be installed on restrained piping.

Consor recommends installing flexible expansion joints between reservoir outlets and seismic valves where space allows and piping is or can be restrained.

2.4 Low-Pressure Hydrants

Following a seismic event, it is expected that multiple locations of the water system will be broken and therefore, the reservoir should be isolated from the system. Where other parts of the infrastructure may be failing, it is crucial that the water stored in the reservoirs can still be accessed. If reservoirs and other supply sources are isolated from the distribution system, customers cannot receive water.

Low-pressure hydrants offer a simple solution to access the water within the reservoir onsite. Currently, in order to access the stored reservoir water, operators would need to utilize the fire hydrant located nearest to the reservoir. This assumes that all piping between the fire hydrant and reservoir is intact and operational. Installing a low-pressure hydrant at the reservoir outlet, prior to the seismic valve, allows for uninhibited access to the emergency water within the reservoir located on a secure, gated site that can be accessed by City staff. The City may then distribute that resource in accordance with their Emergency Water Plan.

A low-pressure hydrant could be a conventional fire hydrant with a 6-inch tee and isolation valve connecting it to reservoir outlet piping or a smaller post hydrant, such as an AVK Series 67 Post Hydrant, which are typically available at diameters of 2 to 4 inches. At reservoirs where a 6-inch connection is not feasible, a

2-inch tap for a post hydrant could be installed instead. **Conсор recommends installing hydrants on all six reservoir outlets. At a minimum, at least one hydrant should be installed at each of the four reservoir sites.** Option 1 on **Figure 3-1** through **Figure 3-4** shows schematic hydrant locations. Final locations should be determined during final design and should include removable bollards for additional protection.

2.5 Seismic Evaluation of Existing Reservoirs

The City's six existing reservoirs are 10 to 55 years old. Though seismic upgrades were completed on four of the reservoirs 20 years ago, significant changes have been made to design and construction standards since then as a result of recent seismic research, as briefly discussed in **Chapter 1**.

Conсор recommends that the City conduct seismic evaluations of all six of the existing reservoirs to identify and address seismic deficiencies. For steel reservoirs of a similar age, it is often determined that these reservoirs will have inadequate freeboard during a sloshing event such as an earthquake. This could result in a catastrophic failure of the reservoir, rendering any seismic improvements recommended in this Report insufficient.

Resolving inadequate freeboard can be a simple and inexpensive solution such as lowering the operational high-water level of the tank via telemetry and SCADA, if suitable with overall water system operations. For the purposes of this project, a simpler, less expensive freeboard/slosh height analysis can be conducted to determine the maximum acceptable water level. Lowering the operational high-water level in the reservoirs serves as a temporary remedy until the City can perform full seismic evaluations and construct recommended retrofits. The slosh height analysis for all six tanks is anticipated to cost approximately \$10,000.

CHAPTER 3

Proposed Improvements

Recommended improvement options for each site are described below. Some sites include multiple options to allow the City to evaluate the risks associated with a seismic event at each reservoir and make informed decisions on the seismic improvements. The proposed alternatives range from providing the minimum level of improvements to protect a reservoir's supply in a seismic event to incorporating all of the seismic resiliency methods described in **Chapter 2**.

It is recommended that the City implement Option 1 for each reservoir, which encompasses the greatest seismic improvements at each reservoir location. Option 2, when provided, gives the minimum improvements for each reservoir to install a seismic valve but will not provide full seismic resiliency compared to Option 1. One of the largest differences between the alternatives is access to the water if the valves are closed. Option 2 does not include low-pressure fire hydrants that access the reservoirs if the seismic valves are closed. While it is important to prevent water loss after a seismic event, it may be equally as important to access that emergency reserve if needed. At a minimum, it is recommended that full seismic resiliency improvements (Option 1) be installed for at least one of the reservoirs in each of the A, B, and C levels. Reservoir B-3, which is currently under construction, includes the full seismic resilient elements. This could act as the B-level reservoir that is protected in the system. Therefore, the City may choose to forego adding additional improvements to the B-1 and B-2 reservoirs. It is recommended that as many reservoirs are improved as possible with the available funds, but it should be noted that there will be a seismically resilient reservoir within the B-level after construction of Reservoir B-3 is complete.

3.1 Reservoir A-1

3.1.1 Existing Conditions

Reservoir A-1 is one of two tanks that serve the A Level pressure zone in the Tualatin water system. It is a 90-foot diameter, 50-foot tall, welded steel tank with a maximum capacity of 2.2 million gallons and an operating capacity of 1.8 million gallons. The reservoir sits on a plot located near the intersection of SW Teton Avenue and SW Killarney Lane and was installed in 1971. Reservoir A-1 was part of a seismic retrofit project in 2006.

Reservoir A-1 has a combined 12-inch cast iron inlet/outlet that exits the reservoir above grade before connecting to a pair of vertical 90-degree bend and piping below grade. This subsurface piping, assumed to be unrestrained, extends to an existing altitude valve located within a manhole. Two butterfly valves are located outside of the structure with the valve south of the structure stuck in the open position.

3.1.2 Proposed Alternatives

3.1.2.1 Option 1

The first proposed alternative includes removing the existing manhole, altitude valve, two buried butterfly valves, and all piping between the northern butterfly valve and the subsurface vertical 90-degree bend. The existing butterfly valves are either operational but near their end-of-life or non-operational. The existing manhole is also too small for City operations staff to access easily, and the subsurface piping is unrestrained. A new 12-inch seismic valve will be located within a new 6-foot by 8-foot precast concrete vault. If the

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existing 12-inch altitude valve is operational, it will be installed in the new valve vault. If not, a new 12-inch altitude valve will be installed. A new 12-inch butterfly valve will be installed north of the vault, connecting to the existing piping. A 12-inch flexible expansion joint will be installed adjacent to the buried vertical 90-degree bend and a 6-inch low-pressure fire hydrant will be included for emergency access to the reservoir supply. All new 12-inch piping will be restrained ductile iron pipe. This option requires draining the reservoir as all valves on site will be removed during construction. Since both onsite butterfly valves will be removed and the reservoir will be drained, it is necessary to isolate the reservoir from the rest of the system by locating the first isolation valve downstream of the existing onsite valves. This should be investigated early in design to determine if the installation of a new isolation valve is necessary.

The City plans to pursue additional improvements to Reservoir A-1 outside of the scope of this project. Coordination during the design and construction phases of this seismic valves project may allow for the City to conduct the inspection while this reservoir is drained for construction.

As noted by City staff, the condition of the existing 12-inch gate valve on the reservoir drain line is of concern. This valve could be replaced with either the seismic valves project or upcoming Reservoir A-1 rehabilitation project. Its replacement has not been included in the cost estimate.

3.1.2.2 Option 2

The second alternative proposes removing the existing above-grade spool between the reservoir outlet and the above-grade vertical 90-degree bend. A new 12-inch seismic valve and actuator will be installed above-grade within a security enclosure. This option requires draining the reservoir as there are no valves between the reservoir wall and the existing above-grade bend.

Options 1 and 2 for Reservoir A-1 are shown in **Figure 3-1**.

3.1.2.3 Option 3

As mentioned in **Chapter 2**, during final design, the City could also explore retrofitting the existing altitude valve to function as a seismic valve. Piping between the reservoir outlet and altitude valve should be restrained as part of this option. Additional improvements included in Option 1 could also be implemented.

An estimated cost has not been provided for Option 3 as part of conceptual design. It is anticipated that the cost of retrofitting the existing altitude valve would be cheaper than installing a new double-offset butterfly valve with a motorized actuator.

3.1.3 Electrical

3.1.3.1 Existing Conditions

The Reservoir A-1 site has an existing 240/120 Volt 1-phase electrical service and no standby generator. The service meter is currently free-standing on conduit without a support frame.

The service feeds a small 100 Amp six-circuit load center, located within an insulated reservoir level sensor cabinet. There are currently five single-pole circuit breakers in the load center. According to a recent conversation with Portland General Electric (PGE), there is a 100A service from the existing utility transformer to the meter base. Record drawings show that the service conductors from the meter to the small existing panel are sized at 8 AWG, which corresponds to a 40 Amp capacity

3.1.3.2 Electrical Improvements

A new strut H-frame can be mounted to new cement footings to support the existing meter.

To provide power to the new seismic valve actuator, the existing service conductors from the meter will be replaced with 1 AWG (100A capacity) conductors to a new 100A panel. This new panel will be similar to the exterior-rated panel at the A-2 reservoir site. This panel will provide the capacity to feed the existing load center circuits, feed the new loads for the seismic valve, and provide spare circuits for future improvements. There is not enough space within the level sensor cabinet to house the new panel, so this panel will be mounted to strut H-frame on the existing cement pad located along the reservoir perimeter. This H-frame will be located adjacent to the water quality analyzer enclosure. Additionally, the contractor will install a stainless-steel enclosure with a new uninterruptible power supply (UPS), mounted to a new strut H-frame, which will provide backup power to the seismic valve actuator in the event of a power outage. Conduit and conductors will be installed per the National Electrical Code (NEC) and connections to the seismic valve equipment will be made per manufacturer requirements.

These electrical improvements are included in both Options 1 and 2 for Reservoir A-1.

3.1.3.3 Additional Electrical Improvements

The existing meter base is rusted; the electrical contractor can coordinate with Portland General Electric (PGE) to replace the meter base.

This additional improvement is included in Option 1 only.

3.1.4 Controls

3.1.4.1 Existing Conditions

There is an existing telemetry (SCADA) controls cabinet located on the site. There is an Allen-Bradley PanelView Plus 7 Operator Interface Terminal (OIT) mounted on the swing-out door. Inside the cabinet is an Allen-Bradley CompactLogix 5380 PLC with a 5069-L310ER CPU. There is one 5069-IB16 DC input module, one 5069-OW16 AC/DC relay output module, and one 5069-IF8 4-20mA analog input module. Based on the shop drawings inside the cabinet, there are 5 spare DC inputs, 6 spare relay outputs going to existing interpose relays and an additional 8 unused spare relay outputs, and 4 spare analog inputs. Control Systems Northwest (CSNW) is the City's designated instrumentation and controls integrator.

3.1.4.2 Controls Improvements

The electrical contractor will add the required I/O for operating the new seismic valve. To monitor and operate the seismic valve actuator from the existing PLC/SCADA system, three digital inputs are required (valve fully open, valve closed, and seismic event status) as well as two digital outputs (call open and call close). The contractor shall coordinate with CSNW for I/O availability and programming.

These controls improvements are included in both Options 1 and 2 for Reservoir A-1.

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3.1.5 Cost Estimate

Table 3-1 | Reservoir A-1 Option 1 Estimate

Item	Estimated Quantity	Unit	Unit Cost	Total Cost
Mobilization, bonds, insurance, and demobilization	1	LS	\$14,000.00	\$14,000.00
Erosion control	1	LS	\$5,000.00	\$5,000.00
Construction survey and staking	1	LS	\$5,000.00	\$5,000.00
Tree protection and removal, clearing, and grubbing	1	LS	\$5,000.00	\$5,000.00
Removal of existing vault, valves, and piping	1	LS	\$15,000.00	\$15,000.00
Furnish and install 12-inch diameter restrained ductile iron pipe	40	LF	\$350.00	\$14,000.00
Furnish and install 12-inch diameter flexible expansion joint	1	EA	\$14,000.00	\$14,000.00
Furnish and install 12-inch diameter ductile iron 90-degree bend	1	EA	\$2,100.00	\$2,100.00
Furnish and install 6-inch diameter low pressure hydrant assembly	1	LS	\$14,000.00	\$14,000.00
Furnish and install vault	1	LS	\$50,000.00	\$50,000.00
Furnish and install 12-inch diameter seismically-actuated BFV	1	EA	\$25,000.00	\$25,000.00
Reinstall existing 12-inch diameter altitude valve	1	EA	\$5,000.00	\$5,000.00
Furnish and install buried 12-inch diameter BFV	1	EA	\$4,000.00	\$4,000.00
Connect to existing piping	2	EA	\$5,000.00	\$10,000.00
Hydrostatic testing, flushing, and disinfection of water piping	1	LS	\$10,000.00	\$10,000.00
Electrical and I&C improvements	1	LS	\$30,000.00	\$30,000.00
Additional electrical improvements	1	LS	\$1,500.00	\$1,500.00
Final site grading, surface restoration, and site clean-up	1	LS	\$5,000.00	\$5,000.00
Estimated Construction Cost:				\$228,600.00
Final Design (15%):				\$34,290.00
Construction Management (10%):				\$22,860.00
Subtotal:				\$285,750.00
Contingency (30%):				\$86,000.00
Total:				\$371,750.00

Table 3-2 | Reservoir A-1 Option 2 Estimate

Item	Estimated Quantity	Unit	Unit Cost	Total Cost
Mobilization, bonds, insurance, and demobilization	1	LS	\$6,000.00	\$6,000.00
Removal of existing above grade piping	1	LS	\$5,000.00	\$5,000.00
Furnish and install above-grade valve enclosure	1	LS	\$20,000.00	\$20,000.00
Furnish and install 12-inch diameter seismically-actuated BFV	1	EA	\$25,000.00	\$25,000.00
Connect to existing piping	2	EA	\$5,000.00	\$10,000.00
Hydrostatic testing, flushing, and disinfection of water piping	1	LS	\$10,000.00	\$10,000.00
Electrical and I&C improvements	1	LS	\$30,000.00	\$30,000.00
Estimated Construction Cost:				\$107,000.00
Final Design (15%):				\$16,050.00
Construction Management (10%):				\$10,700.00
Subtotal:				\$133,750.00
Contingency (30%):				\$41,000.00
Total:				\$174,750.00

3.2 Reservoir A-2

3.2.1 Existing Conditions

Reservoir A-2 is a 135-foot diameter, 52-foot tall, welded steel tank that was constructed in 2006. It has a maximum capacity of 5.0 million gallons and an operating capacity of 4.2 million gallons. The site is located near the intersection of SW Tualatin-Sherwood Road and SW Oregon Street. This reservoir has an 18-inch ductile iron combined inlet/outlet pipe and includes an existing vault with two gate valves and an altitude valve on site.

3.2.2 Proposed Alternatives

3.2.2.1 Option 1

Reservoir A-2 sits on a large, flat site and there is ample available space for the proposed improvements. With this reservoir having the largest capacity in the system, it is recommended that A-2 has the maximum level of seismic improvements installed.

The existing 18-inch ductile iron outlet pipe will be removed beginning at the gate valve adjacent to the reservoir. An 18-inch flexible expansion joint will be installed adjacent to the existing gate valve. A 6-inch low-pressure fire hydrant will be installed adjacent to the expansion joint for emergency access to the reservoir supply. A new 18-inch seismic valve will be installed in a new 6-foot by 8-foot precast concrete vault. Piping north of the vault will be connected to the existing 18-inch ductile iron pipe. All new 18-inch piping will be restrained ductile iron pipe. The existing vault and valves will not be impacted and will be protected in place during construction. With this option, Reservoir A-2 will not need to be drained if the existing gate valve adjacent to the reservoir is operational.

Option 1 for Reservoir A-2 is shown in **Figure 3-2**.

3.2.2.2 Option 2

The City could also explore retrofitting the existing altitude valve to function as a seismic valve. Piping between the reservoir outlet and altitude valve should be restrained as part of this option. Additional improvements included in Option 1 could also be implemented.

An estimated cost has not been provided for Option 3 as part of conceptual design. It is anticipated that the cost of retrofitting the existing altitude valve would be cheaper than installing a new double-offset butterfly valve with a motorized actuator.

3.2.3 Electrical

3.2.3.1 Existing Conditions

The Reservoir A-2 site has an existing 240/120 Volt 1-phase electrical service and no standby generator. The service feeds a 42-circuit panel with a 225 Amp bus and 100 Amp main breaker. This existing panel has a few spare breakers available for a new feed to the seismic valve loads.

3.2.3.2 Electrical Improvements

To provide power to the new seismic valve actuator, the electrical contractor will use an existing breaker in the existing panel. The contractor will install a stainless steel enclosure with a new UPS, wall-mounted

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next to the existing electrical panel within the doghouse, which will provide backup power to the seismic valve actuator in the event of a power outage. Conduit and conductors will be installed per the NEC and connections to the seismic valve equipment will be made per manufacturer requirements.

These electrical improvements are included in Option 1 for Reservoir A-2.

3.2.4 Controls

3.2.4.1 Existing Conditions

There is an existing telemetry (SCADA) controls cabinet located on the site. There is an Allen-Bradley PanelView Plus 7 OIT mounted on the swing-out door. Inside the cabinet is an Allen-Bradley CompactLogix 5380 PLC with a 5069-L310ER CPU. There is one 5069-IB16 DC input module, one 5069-OW16 AC/DC relay output module, and one 5069-IF8 4-20mA analog input module. Based on the shop drawings inside the cabinet, there are 6 spare DC inputs, 6 spare relay outputs going to existing interpose relays and an additional 8 unused spare relay outputs, and 4 spare analog inputs.

3.2.4.2 Controls Improvements

The electrical contractor will add the required I/O for operating the new seismic valve. To monitor and operate the seismic valve actuator from the existing PLC/SCADA system, three digital inputs are required (valve fully open, valve closed, and seismic event status) as well as two digital outputs (call open and call close). The contractor shall coordinate with CSNW for I/O availability and programming.

These controls improvements are included in Option 1 for Reservoir A-2.

3.2.5 Cost Estimate

Table 3-3 | Reservoir A-2 Option 1 Estimate

Item	Estimated Quantity	Unit	Unit Cost	Total Cost
Mobilization, bonds, insurance, and demobilization	1	LS	\$13,000.00	\$13,000.00
Erosion control	1	LS	\$5,000.00	\$5,000.00
Construction survey and staking	1	LS	\$5,000.00	\$5,000.00
Removal of existing piping	1	LS	\$7,500.00	\$7,500.00
Furnish and install 18-inch diameter restrained ductile iron pipe	20	LF	\$400.00	\$8,000.00
Furnish and install 18-inch diameter flexible expansion joint	1	EA	\$25,000.00	\$25,000.00
Furnish and install 6-inch diameter low pressure hydrant assembly	1	EA	\$14,000.00	\$14,000.00
Furnish and install vault	1	LS	\$50,000.00	\$50,000.00
Furnish and install 18-inch diameter seismically-actuated BFM	1	EA	\$35,000.00	\$35,000.00
Connect to existing piping	2	EA	\$5,000.00	\$10,000.00
Hydrostatic testing, flushing, and disinfection of water main	1	LS	\$10,000.00	\$10,000.00
Electrical and I&C improvements	1	LS	\$20,000.00	\$20,000.00
Final site grading, surface restoration, and site clean-up	1	LS	\$5,000.00	\$5,000.00
Estimated Construction Cost:				\$207,500.00
Final Design (15%):				\$31,125.00
Construction Management (10%):				\$20,750.00
Subtotal:				\$259,375.00
Contingency (30%):				\$78,000.00
Total:				\$337,375.00

3.3 Reservoir B-1

3.3.1 Existing Conditions

Reservoir B-1 is one of two reservoirs located on the same site that serve the City's B Level pressure zone. The site is located near the intersection of SW Norwood Road and SW 89th Avenue in a residential neighborhood. Similar to Reservoir A-1, Reservoir B-1 is a 90-foot diameter, 50-foot tall, welded steel tank constructed in 1971 and seismically retrofitted in 2006. The maximum capacity of this reservoir is 2.2 million gallons and the available capacity is also 2.2 million gallons.

The reservoir has a combined 12-inch above-grade inlet/outlet pipe that connects to a pair of vertical 90-degree bends and a buried butterfly valve, continuing to below ground piping leading to a manhole housing an altitude valve. There is a second buried butterfly valve located north of the altitude valve.

3.3.2 Proposed Alternatives

3.3.2.1 Option 1

Option 1 involves removing the existing above grade spool, vertical piping, existing manhole, and butterfly valves. An above-grade flexible expansion joint will be installed adjacent to the existing above-ground flange outside of the reservoir wall. Vertical 90-degree bends and restrained piping will transition the inlet/outlet piping underground to a new valve vault. A 12-inch seismic valve will be installed in a 6-foot by 8-foot precast concrete vault. The existing altitude valve will be reinstalled in the valve vault, if operational. If not, a new 12-inch altitude valve will be installed. A new 12-inch butterfly valve will be installed north of the vault, connecting to existing piping prior to the existing 45-degree bend. A 6-inch low-pressure fire hydrant will also be installed to allow for emergency access to the water. All new 12-inch piping will be restrained ductile iron pipe. Since all valves adjacent to Reservoir B-1 will be removed, the tank will need to be fully drained to complete the construction described in this alternative.

3.3.2.2 Option 2

Option 2 involves removing the above-grade spool and installing a new above-grade 12-inch seismic valve in its place. The new valve will connect to the existing above-grade vertical 90-degree bend and include a security enclosure for the valve and actuator. The existing vertical pipe, valve vault, and butterfly valves are to be protected in place and continue to be in operation after construction. With no valves located on the above-grade spool section of the inlet/outlet piping, the reservoir will need to be drained to install Option 2.

Options 1 and 2 for Reservoir B-1 are shown in **Figure 3-3**.

3.3.2.3 Option 3

The City could also explore retrofitting the existing altitude valve to function as a seismic valve. Piping between the reservoir outlet and altitude valve should be restrained as part of this option. Additional improvements included in Option 1 could also be implemented.

An estimated cost has not been provided for Option 3 as part of conceptual design. It is anticipated that the cost of retrofitting the existing altitude valve would be cheaper than installing a new double-offset butterfly valve with a motorized actuator.

3.3.3 Electrical

3.3.3.1 Existing Conditions

The Norwood site has an existing 480/277 Volt 3-phase electrical service and a standby generator. Within the Norwood Pump Station is a transformer-fed 3-phase 208V panel with a 100 Amp bus and 60 Amp main breaker. This existing panel has several spare breakers available for a new feed to the seismic valve loads for Reservoir B-1.

3.3.3.2 Electrical Improvements

To provide power to the new seismic valve actuator, the electrical contractor will use an existing breaker in the existing panel. Conduit and conductors will be installed per the NEC and connections to the seismic valve equipment will be made per manufacturer requirements.

These electrical improvements are included in both Options 1 and 2 for Reservoir B-1.

3.3.3.3 Additional Electrical Improvements

The contractor can install a stainless-steel enclosure with a new UPS, surface-mounted to a wall within the Norwood Pump Station, which can provide continuous power during the transition between the utility and generator power feed during a power outage. This UPS would also function for Reservoir B-2.

This additional improvement is included in Option 1 only.

3.3.4 Controls

3.3.4.1 Existing Conditions

There is an existing telemetry (SCADA) controls cabinet located on the site. Based on the design drawings on record, there is an Allen-Bradley PanelView OIT mounted on the cabinet. Inside the cabinet is an Allen-Bradley CompactLogix 5380 PLC with a 5069-L310ER CPU. There are two 5069-IB16 DC input modules, one 5069-OW16 AC/DC relay output module, two 5069-IF8 4-20mA analog input modules, and one 5069-OF4 analog output module. Based on the drawings dated February 2024 by CSNW, the City's designated instrumentation and controls integrator, there are 9 spare DC inputs, 5 spare relay outputs going to existing interpose relays and an additional 8 unused spare relay outputs, 5 spare analog inputs, and 2 analog outputs. However, based on updated drawings from the generator addition project, there are now only 2 spare DC inputs.

3.3.4.2 Controls Improvements

The electrical contractor will add the required I/O for operating the new seismic valve. To monitor and operate the seismic valve actuator from the existing PLC/SCADA system, three digital inputs are required (valve fully open, valve closed, and seismic event status) as well as two digital outputs (call open and call close). The contractor shall coordinate with CSNW for I/O availability and programming. As part of this coordination, an additional digital input module will be added.

These controls improvements are included in both Options 1 and 2 for Reservoir B-1.

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3.3.5 Cost Estimate

Table 3-4 | Reservoir B-1 Option 1 Estimate

Item	Estimated Quantity	Unit	Unit Cost	Total Cost
Mobilization, bonds, insurance, and demobilization	1	LS	\$13,000.00	\$13,000.00
Erosion control	1	LS	\$5,000.00	\$5,000.00
Construction survey and staking	1	LS	\$5,000.00	\$5,000.00
Removal of existing manhole, valves, and piping	1	LS	\$15,000.00	\$15,000.00
Furnish and install 12-inch diameter restrained ductile iron pipe	20	LF	\$350.00	\$7,000.00
Furnish and install 12-inch diameter flexible expansion joint	1	EA	\$14,000.00	\$14,000.00
Furnish and install 12-inch diameter ductile iron 90-degree bend	2	EA	\$2,100.00	\$4,200.00
Furnish and install 6-inch diameter low pressure hydrant assembly	1	EA	\$14,000.00	\$14,000.00
Furnish and install vault	1	LS	\$50,000.00	\$50,000.00
Furnish and install 12-inch diameter seismically-actuated BFV	1	EA	\$25,000.00	\$25,000.00
Reinstall existing 12-inch diameter altitude valve	1	EA	\$5,000.00	\$5,000.00
Furnish and install buried 12-inch diameter BFV	1	EA	\$4,000.00	\$4,000.00
Connect to existing piping	2	EA	\$5,000.00	\$10,000.00
Hydrostatic testing, flushing, and disinfection of water main	1	LS	\$10,000.00	\$10,000.00
Electrical and I&C improvements	1	LS	\$10,000.00	\$10,000.00
Digital Input Module	1	LS	\$2,000.00	\$2,000.00
Additional electrical improvements	1	LS	\$10,000.00	\$10,000.00
Final site grading, surface restoration, and site clean-up	1	LS	\$5,000.00	\$5,000.00
Estimated Construction Cost:				\$208,200.00
Final Design (15%):				\$31,230.00
Construction Management (10%):				\$20,820.00
Subtotal:				\$260,250.00
Contingency (30%):				\$78,075.00
Total:				\$338,325.00

Table 3-5 | Reservoir B-1 Option 2 Estimate

Item	Estimated Quantity	Unit	Unit Cost	Total Cost
Mobilization, bonds, insurance, and demobilization	1	LS	\$6,000.00	\$6,000.00
Removal of existing above grade piping	1	LS	\$5,000.00	\$5,000.00
Furnish and install above-grade valve enclosure	1	LS	\$20,000.00	\$20,000.00
Furnish and install 12-inch diameter seismically-actuated BFV	1	EA	\$25,000.00	\$25,000.00
Connect to existing piping	2	EA	\$5,000.00	\$10,000.00
Hydrostatic testing, flushing, and disinfection of water piping	1	LS	\$10,000.00	\$10,000.00
Electrical and I&C improvements	1	LS	\$20,000.00	\$10,000.00
Estimated Construction Cost:				\$86,000.00
Final Design (15%):				\$12,900.00
Construction Management (10%):				\$8,600.00
Subtotal:				\$107,500.00
Contingency (30%):				\$33,000.00
Total:				\$140,500.00

3.4 Reservoir B-2

3.4.1 Existing Conditions

Reservoir B-2 is the second reservoir serving the B Level in the Tualatin water system. It is located to the west of B-1 on the same site. This reservoir was built in 1989 and was part of the same 2006 seismic retrofit project as B-1. It is a 100-foot diameter, 50-foot tall, welded steel tank with a maximum and operational capacity of 2.8 million gallons.

The 12-inch combined inlet/outlet piping includes an existing 12-inch gate valve outside the reservoir foundation. A nearby existing altitude valve is housed in a concrete vault. North of the vault, there is a modular block retaining wall supporting the adjacent site access road.

3.4.2 Proposed Alternatives

3.4.2.1 Option 1

There is limited available space caused by the modular block wall and extended reservoir footing adjacent to the altitude valve vault. Option 1 involves replacing the existing gate valve adjacent to the reservoir foundation with a direct bury 12-inch seismic valve and above-grade actuator. The actuator will be housed in a security enclosure but unlike Option 2 for Reservoir B-1, the butterfly valve will be buried. A 2-inch low-pressure yard hydrant could likely be installed between the seismic valve and reservoir, if space allows. The existing altitude valve and vault will be protected in place. Due to the removal of the existing gate valve, the reservoir must be drained for this installation as there are no other valves between the reservoir and the seismic valve location.

Another alternative was considered which included removing the valve vault, but this option would impact the modular wall and access road and would likely require shutting down both B Level reservoirs. It was deemed too expensive to include access road rehabilitation as part of this project, even though it would potentially allow for more seismically resilient infrastructure.

Option 1 for Reservoir B-2 is shown in **Figure 3-3**.

3.4.2.2 Option 2

The City could also explore retrofitting the existing altitude valve to function as a seismic valve. An estimated cost has not been provided for Option 3 as part of conceptual design. It is anticipated that the cost of retrofitting the existing altitude valve would be cheaper than installing a new double-offset butterfly valve with a motorized actuator.

3.4.3 Electrical

3.4.3.1 Existing Conditions

See description under **Section 3.3**.

3.4.3.2 Electrical Improvements

To provide power to the new seismic valve actuator, the electrical contractor will use an existing breaker in the existing panel. The contractor can install a stainless steel enclosure with a new UPS (provided under Option 2 for Reservoir B-1, if installed), surface-mounted to a wall within the Norwood Pump Station, which

EXHIBIT A

can provide continuous power during the transition between the utility and generator during a power outage. Conduit and conductors will be installed per the NEC and connections to the seismic valve equipment will be made per manufacturer requirements.

These electrical improvements are included in Option 1 for Reservoir B-2.

3.4.3.3 Additional Electrical Improvements

The UPS is included under Reservoir B-1 Option 1 and would function for both reservoirs.

3.4.4 Controls

3.4.4.1 Existing Conditions

See description under **Section 3.3**.

3.4.4.2 Controls Improvements

The electrical contractor will add the required I/O for operating the new seismic valve. To monitor and operate the seismic valve actuator from the existing PLC/SCADA system, two digital inputs are required (valve fully open and valve closed) as well as two digital outputs (call open and call close). The seismic sensor input is covered under Reservoir B-1. The contractor shall coordinate with CSNW for I/O availability and programming.

These controls improvements are included in Option 1 for Reservoir B-2. (Note: the required additional input module is included under Option 1 for Reservoir B-1, above.)

3.4.5 Cost Estimate

Table 3-6 | Reservoir B-2 Option 1 Estimate

Item	Estimated Quantity	Unit	Unit Cost	Total Cost
Mobilization, bonds, insurance, and demobilization	1	LS	\$9,000.00	\$9,000.00
Erosion control	1	LS	\$5,000.00	\$5,000.00
Construction survey and staking	1	LS	\$5,000.00	\$5,000.00
Removal of existing gate valve	1	LS	\$7,500.00	\$7,500.00
Furnish and install 2-inch diameter low pressure hydrant assembly	1	EA	\$10,000.00	\$10,000.00
Furnish and install direct-bury 12-inch diameter seismically-actuated BFV with above-grade actuator enclosure	1	EA	\$75,000.00	\$75,000.00
Connect to existing piping	2	EA	\$5,000.00	\$10,000.00
Hydrostatic testing, flushing, and disinfection of water main	1	LS	\$10,000.00	\$10,000.00
Electrical and I&C improvements	1	LS	\$10,000.00	\$10,000.00
Estimated Construction Cost:				\$141,500.00
Final Design (15%):				\$21,225.00
Construction Management (10%):				\$14,150.00
Subtotal:				\$176,875.00
Contingency (30%):				\$54,000.00
Total:				\$230,875.00

3.5 Reservoir C-1

3.5.1 Existing Conditions

Reservoir C-1 is one of two reservoirs that serve the C Level of the Tualatin water system. It is located directly west of Reservoir C-2, approximately 2,000-feet south of the SW 82nd Avenue and SW Frobase Road intersection. This reservoir is the smallest in the system, with a maximum volume and operational volume of 0.8 million gallons. It is a 54-foot diameter, 53-foot tall, welded steel tank that was built in 1981.

The reservoir has a combined subsurface 12-inch ductile iron inlet/outlet pipe connected to a 12-inch butterfly valve. The piping between the reservoir wall and butterfly valve is assumed to be unrestrained, but impractical to replace due to the extended concrete pad. There is a potential for a break in this piping section, but that risk is minimal due to the small length of the existing pipe. Following the butterfly valve is a manhole housing an existing 12-inch altitude valve. North of the existing vault is another 12-inch butterfly valve where the Reservoir C-1 piping combines with flow to/from Reservoir C-2.

3.5.2 Proposed Alternatives

3.5.2.1 Option 1

Ultimately it was determined that the existing 72-inch diameter manhole should remain in place as removing it may cause damage to the surrounding infrastructure. The City has expressed concern with the accessing the existing valve in the vault since the manhole lid does not provide adequate working space for City operations staff. Therefore, it is recommended that the structure lid be removed and replaced with an H-20-rated 4-foot square access hatch and lid and new access ladder. The existing altitude valve is no longer needed as Reservoir C-2 does not have one and the two reservoirs are hydraulically connected. The water level of the two C Level reservoirs and is monitored and maintained via telemetry and SCADA. The existing altitude valve is to be removed from the vault and replaced with a seismic valve connected to the existing piping. All other valves will be protected in place. A 2-inch tap for a low-pressure yard hydrant could be included inside the manhole if space allows. The butterfly valve adjacent to the reservoir will be closed during construction which will prevent the need to drain the reservoir during construction.

Option 1 for Reservoir C-1 is shown in **Figure 3-4**.

3.5.2.2 Option 2

The City could also explore retrofitting the existing altitude valve to function as a seismic valve. An estimated cost has not been provided for Option 3 as part of conceptual design. It is anticipated that the cost of retrofitting the existing altitude valve would be cheaper than installing a new double-offset butterfly valve with a motorized actuator.

3.5.3 Electrical

3.5.3.1 Existing Conditions

The Frobase site has an existing 240/120 Volt 1-phase electrical service and no standby generator. The service feeds a 30-circuit panel with a 100 Amp bus and 100 Amp main breaker. This existing panel has several spare breakers available for a new feed to the seismic valve loads for Reservoir C-1.

3.5.3.2 Electrical Improvements

To provide power to the new seismic valve actuator, the electrical contractor will use an existing breaker in the existing panel. The contractor will install a stainless steel enclosure with a new UPS, surface-mounted to the cement base of the reservoir supporting the existing electrical panel, which will provide backup power to the seismic valve actuator in the event of a power outage. Conduit and conductors will be installed per the NEC and connections to the seismic valve equipment will be made per manufacturer requirements.

These electrical improvements are included in Option 1 for Reservoir C-1.

3.5.4 Controls

3.5.4.1 Existing Conditions

There is an existing telemetry (SCADA) controls cabinet located on the site. There is an Allen-Bradley PanelView Plus 7 OIT mounted on the swing-out door. Inside the cabinet is an Allen-Bradley CompactLogix 5380 PLC with a 5069-L310ER CPU. There are two 5069-IB16 DC input modules, one 5069-OW16 AC/DC relay output module, and one 5069-IF8 4-20mA analog input module. Based on the shop drawings inside the cabinet, there are 15 spare DC inputs, 5 spare relay outputs going to existing interpose relays and an additional 8 unused spare relay outputs, and no spare analog inputs.

3.5.4.1 Controls Improvements

The electrical contractor will add the required I/O for operating the new seismic valve. To monitor and operate the seismic valve actuator from the existing PLC/SCADA system, three digital inputs are required (valve fully open, valve closed, and seismic event status) as well as two digital outputs (call open and call close). The contractor shall coordinate with CSNW for I/O availability and programming.

These controls improvements are included in Option 1 for Reservoir C-1.

3.5.5 Cost Estimate

Table 3-7 | Reservoir C-1 Option 1 Estimate

Item	Estimated Quantity	Unit	Unit Cost	Total Cost
Mobilization, bonds, insurance, and demobilization	1	LS	\$7,000.00	\$7,000.00
Removal of existing altitude valve	1	LS	\$5,000.00	\$5,000.00
Furnish and install 2-inch diameter low pressure hydrant assembly	1	EA	\$10,000.00	\$10,000.00
Furnish and install 12-inch diameter seismically-actuated BFM	1	EA	\$25,000.00	\$25,000.00
Remove and replace manhole lid, hatch, and ladder	1	LS	\$15,000.00	\$15,000.00
Connect to existing piping	2	EA	\$5,000.00	\$10,000.00
Hydrostatic testing, flushing, and disinfection of water main	1	LS	\$10,000.00	\$10,000.00
Electrical and I&C improvements	1	LS	\$20,000.00	\$20,000.00
Estimated Construction Cost:				\$102,000.00
Final Design (15%):				\$15,300.00
Construction Management (10%):				\$10,200.00
Subtotal:				\$127,500.00
Contingency (30%):				\$39,000.00
Total:				\$166,500.00

3.6 Reservoir C-2

3.6.1 Existing Conditions

Reservoir C-2 is the second reservoir serving the C Level for Tualatin. This is the newest reservoir in the system being constructed in 2016. The size of C-2 is slightly larger than C-1, with a diameter of 59 feet and a height of 53 feet. The maximum and available water volume for Reservoir C-2 is 1.0 million gallons. The reservoir has a combined 12-inch inlet/outlet ductile iron pipe and an existing gate valve prior to an existing vault. The vault contains a single length of continuous piping without joints or valving.

3.6.2 Proposed Alternatives

3.6.2.1 Option 1

It could not be determined from as-built drawings and site visits if the existing ductile iron pipe is restrained or unrestrained. In order to install full seismic improvements, the proposed alternatives are dependent on whether the existing piping is restrained or not. It is recommended that the subsurface pipe condition is confirmed prior to selecting an option.

Option 1 assumes that the existing piping is restrained. A new seismic valve will be installed in the existing valve vault. There is sufficient space for this installation without impacting the existing vault. A 6-inch low-pressure fire hydrant will also be installed for emergency access to the reservoir capacity. The existing gate valve is to be protected and, if the valve is operational, the reservoir would not be drained during construction.

3.6.2.2 Option 2

Option 2 assumes that the existing pipe is unrestrained. In this instance, the existing vault and piping will be removed. A new flexible expansion joint will be installed adjacent to the existing 12-inch gate valve, which is to be protected in place. A new precast concrete vault that includes a new 12-inch seismic valve will be installed and restrained ductile iron pipe will be used to connect the proposed improvements. Like Option 1, if the existing gate valve is operational, Reservoir C-2 would not need to be drained for construction.

Options 1 and 2 for Reservoir B-2 are shown in **Figure 3-4**.

3.6.3 Electrical

3.6.3.1 Existing Conditions

See description under **Section 3.5**.

3.6.3.2 Electrical Improvements

To provide power to the new seismic valve actuator, the electrical contractor will use an existing breaker in the existing panel. The contractor will install a stainless steel enclosure with a new UPS (provided under Option 1 for Reservoir C-1), surface-mounted to the cement base of the reservoir supporting the existing electrical panel, which will provide backup power to the seismic valve actuator in the event of a power outage. Conduit and conductors will be installed per the NEC and connections to the seismic valve equipment will be made per manufacturer requirements.

EXHIBIT A

These electrical improvements are included in both Options 1 and 2 for Reservoir C-2.

3.6.4 Controls

3.6.4.1 Existing Conditions

See description under **Section 3.5**.

3.6.4.2 Controls Improvements

The electrical contractor will add the required I/O for operating the new seismic valve. To monitor and operate the seismic valve actuator from the existing PLC/SCADA system, two digital inputs are required (valve fully open and valve closed) as well as two digital outputs (call open and call close). The seismic sensor input is covered under Reservoir C-1. The contractor shall coordinate with CSNW for I/O availability and programming.

These controls improvements are included in both Options 1 and 2 for Reservoir C-2.

3.6.5 Cost Estimate

Table 3-8 | Reservoir C-2 Option 1 Estimate

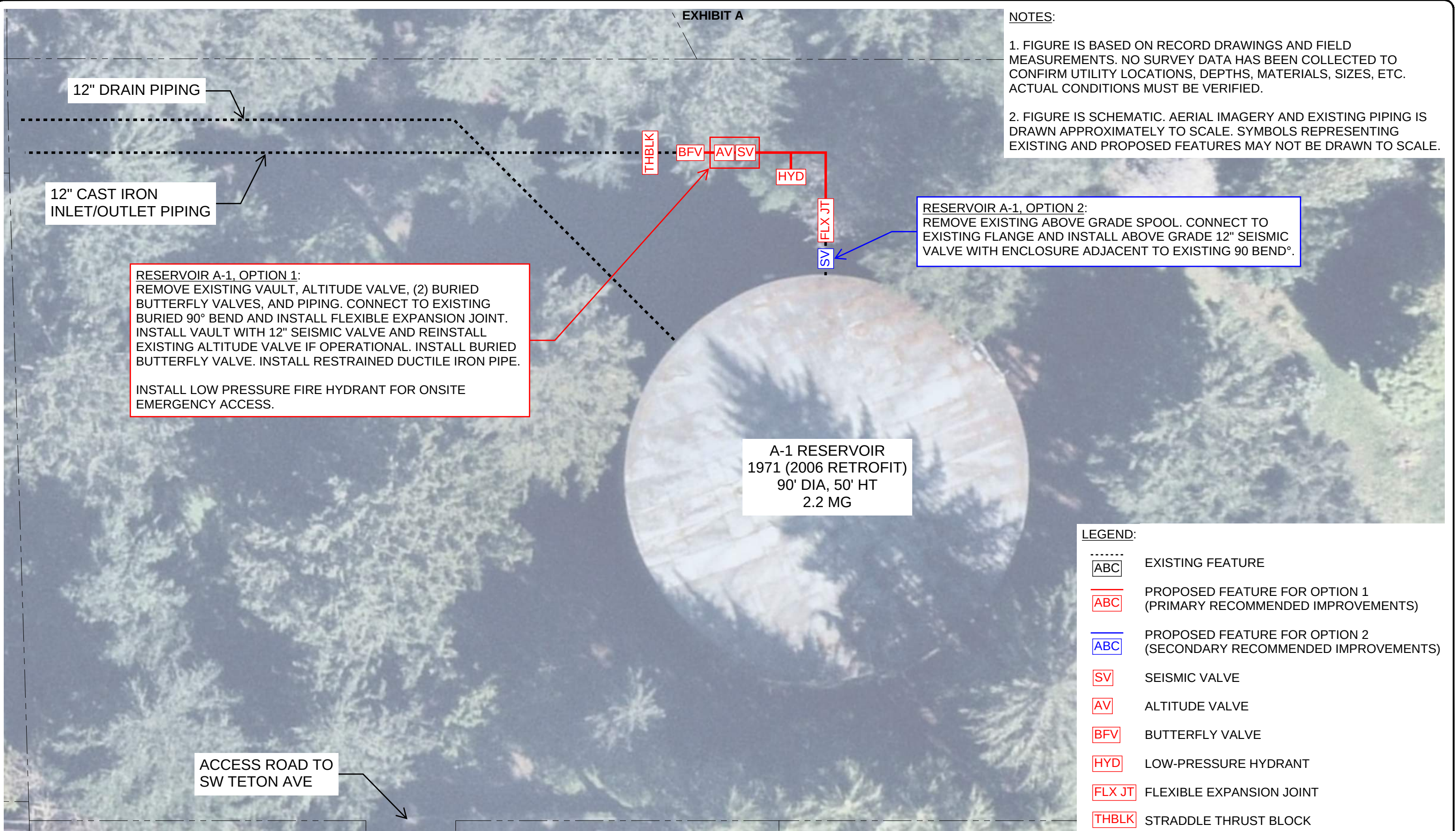
Item	Estimated Quantity	Unit	Unit Cost	Total Cost
Mobilization, bonds, insurance, and demobilization	1	LS	\$6,000.00	\$6,000.00
Removal of existing piping in vault	1	LS	\$7,500.00	\$7,500.00
Furnish and install 6-inch diameter low pressure hydrant assembly	1	EA	\$14,000.00	\$14,000.00
Furnish and install 12-inch diameter seismically-actuated BFV	1	EA	\$25,000.00	\$25,000.00
Connect to existing piping	2	EA	\$5,000.00	\$10,000.00
Hydrostatic testing, flushing, and disinfection of water main	1	LS	\$10,000.00	\$10,000.00
Electrical and I&C improvements	1	LS	\$10,000.00	\$10,000.00
Estimated Construction Cost:				\$81,500.00
Final Design (15%):				\$12,225.00
Construction Management (10%):				\$8,150.00
Subtotal:				\$101,875.00
Contingency (30%):				\$31,000.00
Total:				\$132,875.00

Table 3-9 | Reservoir C-2 Option 2 Estimate

Item	Estimated Quantity	Unit	Unit Cost	Total Cost
Mobilization, bonds, insurance, and demobilization	1	LS	\$12,000.00	\$12,000.00
Erosion control	1	LS	\$5,000.00	\$5,000.00
Construction survey and staking	1	LS	\$5,000.00	\$5,000.00
Removal of existing vault and piping	1	LS	\$15,000.00	\$15,000.00
Furnish and install 12-inch diameter restrained ductile iron pipe	20	LF	\$350.00	\$7,000.00
Furnish and install 12-inch diameter flexible expansion joint	1	EA	\$14,000.00	\$14,000.00

EXHIBIT A

Item	Estimated Quantity	Unit	Unit Cost	Total Cost
Furnish and install 6-inch diameter low pressure hydrant assembly	1	LS	\$14,000.00	\$14,000.00
Furnish and install vault	1	LS	\$50,000.00	\$50,000.00
Furnish and install 12-inch diameter seismically-actuated BFV	1	EA	\$25,000.00	\$25,000.00
Connect to existing piping	2	EA	\$5,000.00	\$10,000.00
Hydrostatic testing, flushing, and disinfection of water main	1	LS	\$10,000.00	\$10,000.00
Electrical and I&C improvements	1	LS	\$10,000.00	\$10,000.00
Final site grading, surface restoration, and site clean-up	1	LS	\$5,000.00	\$5,000.00
Estimated Construction Cost:				\$182,000.00
Final Design (15%):				\$27,300.00
Construction Management (10%):				\$18,200.00
Subtotal:				\$227,500.00
Contingency (30%):				\$69,000.00
Total:				\$296,500.00



Consultant:



Client:



CITY OF TUALATIN

Project Title:

PRELIMINARY ENGINEERING
SEISMIC VALVE IMPROVEMENTS

Figure Title:

A-1 RESERVOIR
AVERY SITE

Figure No:

3-1

Date:

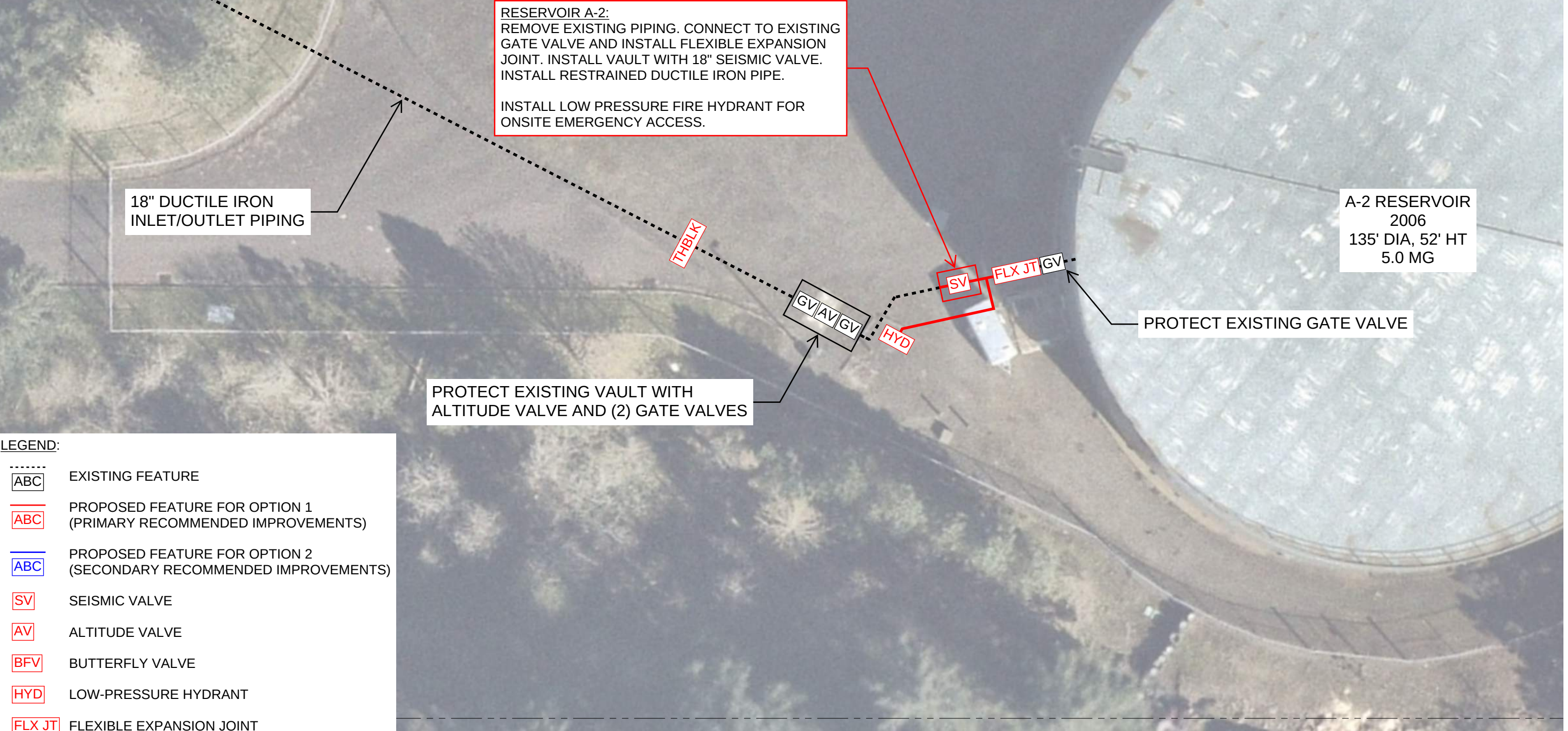
06/12/2026

Job No:

W260907OR.00

NOTES:

1. FIGURE IS BASED ON RECORD DRAWINGS AND FIELD MEASUREMENTS. NO SURVEY DATA HAS BEEN COLLECTED TO CONFIRM UTILITY LOCATIONS, DEPTHS, MATERIALS, SIZES, ETC. ACTUAL CONDITIONS MUST BE VERIFIED.
2. FIGURE IS SCHEMATIC. AERIAL IMAGERY AND EXISTING PIPING IS DRAWN APPROXIMATELY TO SCALE. SYMBOLS REPRESENTING EXISTING AND PROPOSED FEATURES MAY NOT BE DRAWN TO SCALE.



Consultant:



Client:



CITY OF TUALATIN

Project Title:

PRELIMINARY ENGINEERING
SEISMIC VALVE IMPROVEMENTS

Figure Title:

A-2 RESERVOIR SITE

Figure No:

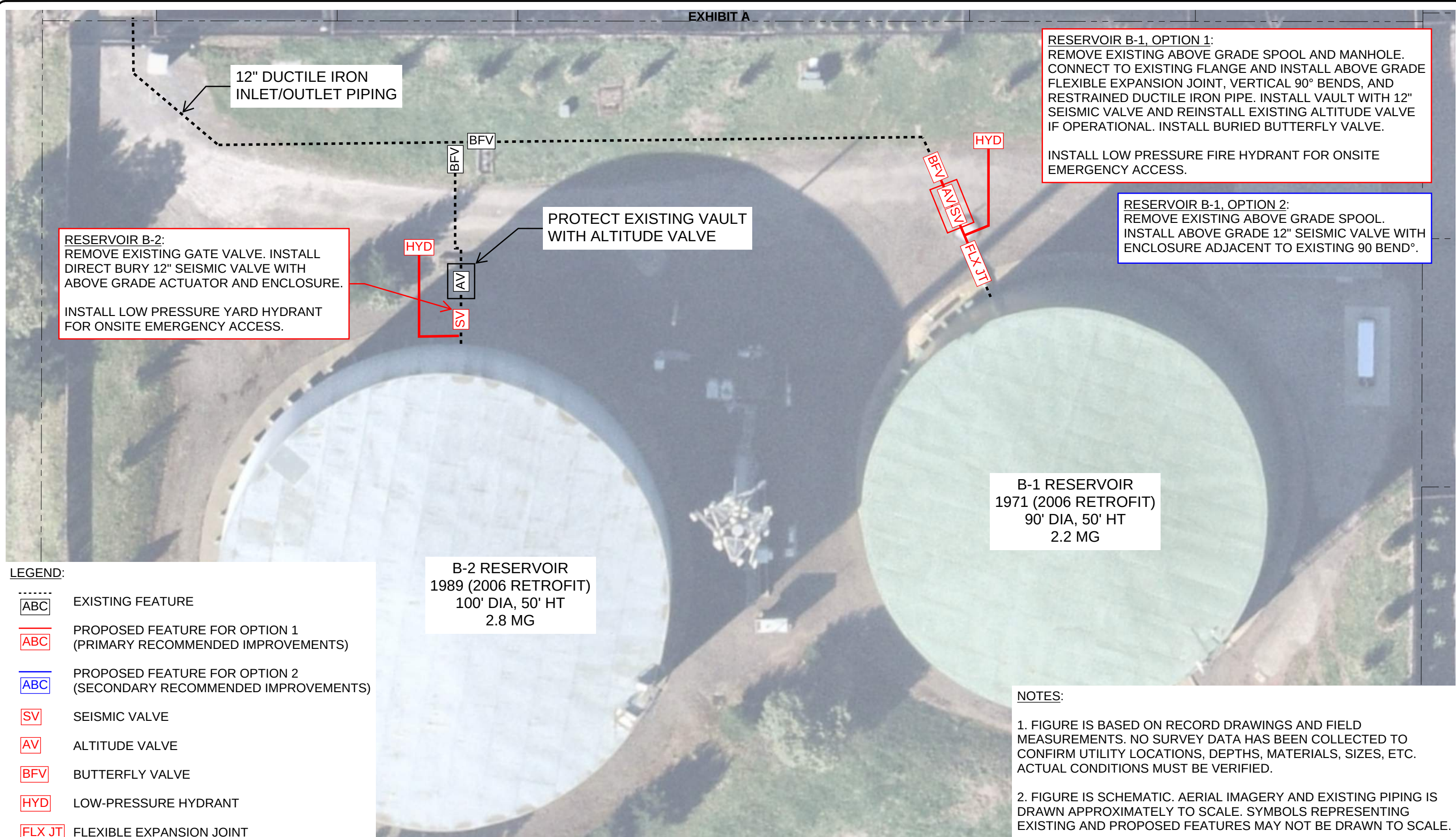
3-2

Date:

06/12/2026

Job No:

W260907OR.00



LEGEND:

- ABC

EXISTING FEATURE
- ABC

PROPOSED FEATURE FOR OPTION 1
(PRIMARY RECOMMENDED IMPROVEMENTS)
- ABC

PROPOSED FEATURE FOR OPTION 2
(SECONDARY RECOMMENDED IMPROVEMENTS)
- SV

SEISMIC VALVE
- AV

ALTITUDE VALVE
- BFV

BUTTERFLY VALVE
- HYD

LOW-PRESSURE HYDRANT
- FLX JT

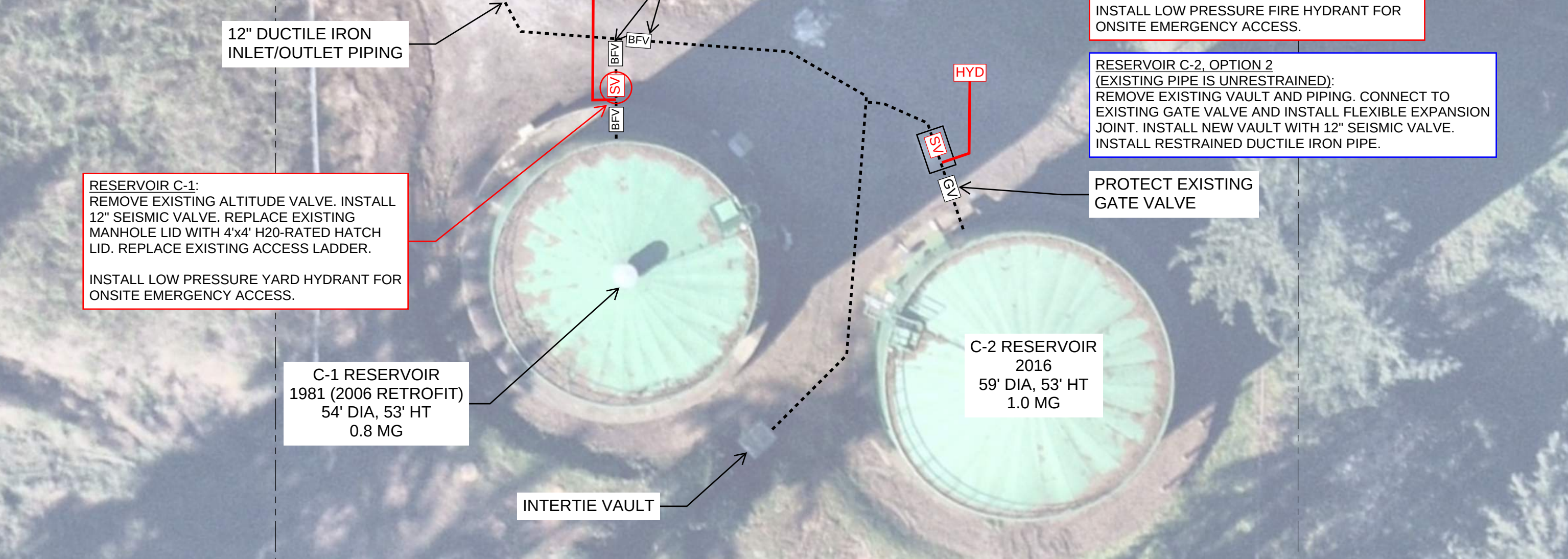
FLEXIBLE EXPANSION JOINT
- THBLK

STRADDLE THRUST BLOCK

EXHIBIT A

NOTES:

1. FIGURE IS BASED ON RECORD DRAWINGS AND FIELD MEASUREMENTS. NO SURVEY DATA HAS BEEN COLLECTED TO CONFIRM UTILITY LOCATIONS, DEPTHS, MATERIALS, SIZES, ETC. ACTUAL CONDITIONS MUST BE VERIFIED.
2. FIGURE IS SCHEMATIC. AERIAL IMAGERY AND EXISTING PIPING IS DRAWN APPROXIMATELY TO SCALE. SYMBOLS REPRESENTING EXISTING AND PROPOSED FEATURES MAY NOT BE DRAWN TO SCALE.



PLAN
SCALE: 1" = 20'



Consultant:



Client:



CITY OF TUALATIN

Project Title:

PRELIMINARY ENGINEERING
SEISMIC VALVE IMPROVEMENTS

Figure Title:

C-1 AND C-2 RESERVOIRS
FROBASE SITE

Figure No:

3-4

Date:

06/12/2026

Job No:

W260907OR.00

CHAPTER 4

Final Design and Construction Considerations

4.1 Final Design

This Basis of Design Report serves as a conceptual design for the potential improvements at each reservoir. As part of the final design phase, the selected consultant will need to work closely with the City of Tualatin to determine the appropriate improvements to implement. Depending on the estimated costs of the improvements, the complete seismic resiliency improvements as recommended in this Report may not be within the project budget for all of the City's reservoirs. The City should be prepared to make decisions to maximize the protection of the water system.

4.1.1 Verification of Existing Facilities

A key component of the design will be the verification of the condition of the existing facilities. Some of the options outlined in **Chapter 3** include reinstallation of existing altitude valves, restraining existing piping, or are dependent upon the operation of an existing isolation valve to prevent the need to drain a reservoir during construction. Communication with the City of Tualatin Public Works Department should allow for confirmation of the serviceability and attributes of current facilities. The City may need to test valves to determine their operability and see if construction can be performed safely adjacent to the closed valves. Survey and potholing should occur early in the final design phase to minimize risk and ensure that final designs are constructable.

During the research phase of this report, Reservoirs A-2 and C-2 were found to have conflicting or incomplete information based on the as-built documents. For Reservoir A-2, field investigation indicated a differing pipe layout compared to the design and construction documents. An underground survey and potholing investigation would be needed to confirm the layout of the piping to accurately incorporate the proposed solutions outlined in **Chapter 3**. The two options provided for Reservoir C-2 are dependent on whether the existing piping from the reservoir is restrained or unrestrained. As-built drawings do not show the specifics of the pipe connections and therefore must be verified in the field. It is encouraged that this is determined early in the final design phase, as the cost difference between Option 1 and Option 2 is significant for Reservoir C-2.

4.1.2 Seismic Resiliency

Ideally, there will be budget to improve all reservoirs to maximize the seismic resiliency of each reservoir. In the event that lesser improvements must be selected to save costs, the City should consider the impacts to the entire water system if a reservoir will not have full seismic resilient improvements.

A full seismically resilient solution minimizes the risk of a pipe break between the reservoir and the seismic valve. **Chapter 2** describes how a seismic valve will close in the event of an earthquake to prevent the reservoir from draining if there is a break in the main line. If a seismic valve is installed on a run of

unrestrained pipe, the water system runs the risk of a pipe break between the reservoir and seismic valve. Therefore, the fully seismic resilient options include restraining reservoir outlet piping.

It is recommended that at least one reservoir in each of the A, B, and C Level pressure zones is retrofitted with the full seismically resilient solution. Installing a hydrant on the reservoir outlet piping upstream of the seismic valve will allow for emergency access to the closed tank that may be necessary depending on the severity of the event.

4.2 Construction Considerations

The final design and construction timeline for the remainder of the project is short, making construction methods and coordination with public works critical to ensuring a successful project at these secure sites. Open communication between all parties will allow for minimal impacts to the water system and water users.

4.2.1 Reservoir Downtime

The City of Tualatin sees a change in usage between seasons. The fall and winter seasons typically see the lowest usage of water by customers, while demand increases in spring and summer. With some reservoirs requiring the need to be drained to install the improvements, the City will need to require the construction of the selected improvements to be constrained to the low season. A clear understanding of the subsurface conditions and open communication with the contractor will be necessary to minimize the downtime of a reservoir.

Taking a reservoir offline takes time, planning, and coordination with City staff. The City will need to lower the reservoir level through typical demand over multiple days, until the dead storage limit is reached. Then, the remaining volume will need to be drained to allow for a clear and dry construction area.

If the reservoirs remain closed and no one enters them during construction, it is not anticipated that the drained reservoirs will require disinfection prior to refilling them. It is recommended that the City conduct sampling and testing to confirm that water quality is appropriate for distribution prior to bringing them back online. With this strategy, the City risks the water and time necessary to refill and drain the reservoirs once again if testing concludes that water quality is inadequate.

4.2.2 Sequencing

As mentioned, taking a reservoir offline takes multiple days. It will be important to minimize the length of time that a reservoir is offline, yet there are multiple work items that will need to be coordinated while a reservoir is offline. It is likely that a reservoir will be in the process of draining while work is occurring at another location. The contractor will need to have a firm schedule, so a tank is not sitting offline with no work occurring. In addition to the piping construction, there are also electrical changes to each of these sites that may require coordination with PGE. Communication and coordination with the utilities on site will be necessary to minimize reservoir downtime. This construction sequencing will be a challenge during the early construction phases of the project.

4.2.3 Protecting Existing Equipment

Although the protection of existing equipment is a common piece of most municipal engineering and construction projects, the facilities that will be called out to be protected in the final design of these improvements will be noteworthy. There will be some valves isolating full reservoirs with no backup valve

to close in case of a break due to construction error. There may also be valves connecting to a shared mainline between two adjacent reservoirs that must be protected to prevent both reservoirs in a zone from going offline. Communicating these risks to the selected contractor is extremely important and must be protected despite the difficulty of managing the other considerations above.

4.2.4 Dead-End Conditions

When closing isolation valves and removing piping, vaults, and other appurtenances between the valve and reservoir, dead-end conditions are created. If existing piping is unrestrained, additional thrust blocking must be installed to protect the valve and unrestrained piping during the temporary dead-end condition. Straddle thrust blocks will need to be installed by the contractor and the concrete brought to adequate strength prior to removing piping between the closed valve and reservoir.

4.3 Construction Cost Summary

Table 4-1 below summarizes the proposed improvements from **Chapter 3**. The total minimum cost of the proposed improvements is \$1,182,875. This corresponds to the selection of the lower cost improvements for each reservoir. If all the higher cost improvements are selected, the total cost is estimated to be \$1,741,325. In total, the final design, construction management, and construction of these proposed improvements is expected to be between \$1.2 and \$1.8 million.

Table 4-1 | Reservoir Improvements Cost Estimate

Reservoir	Est. Const. Cost	Final Design (15%)	Const. Mgmt. (10%)	Subtotal	Contingency (30%)	Total Cost
A1 Option 1	\$228,600.00	\$34,290.00	\$22,860.00	\$285,750.00	\$86,000.00	\$371,750.00
A1 Option 2	\$107,000.00	\$16,050.00	\$10,700.00	\$133,750.00	\$41,000.00	\$174,750.00
A2 Option 1	\$207,500.00	\$31,125.00	\$20,750.00	\$259,375.00	\$78,000.00	\$337,375.00
B1 Option 1	\$208,200.00	\$31,230.00	\$20,820.00	\$260,250.00	\$78,075.00	\$338,325.00
B1 Option 2	\$86,000.00	\$12,900.00	\$8,600.00	\$107,500.00	\$33,000.00	\$140,500.00
B2 Option 1	\$141,500.00	\$21,225.00	\$14,150.00	\$176,875.00	\$54,000.00	\$230,875.00
C1 Option 1	\$102,000.00	\$15,300.00	\$10,200.00	\$127,500.00	\$39,000.00	\$166,500.00
C2 Option 1	\$81,500.00	\$12,225.00	\$8,150.00	\$101,875.00	\$31,000.00	\$132,875.00
C2 Option 2	\$182,000.00	\$27,300.00	\$18,200.00	\$227,500.00	\$69,000.00	\$296,500.00

EXHIBIT A

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EXHIBIT B

Sample Professional Services Agreement



Professional Services Agreement Engineering and Construction Management Services for the Seismic Valve Improvements

THIS PROFESSIONAL SERVICES AGREEMENT is entered into by and between the CITY OF TUALATIN, a municipality organized under ORS 221.110 to 221.230 ("City"), and _____ ("Consultant"), collectively, "The Parties."

Section 1. Contract Documents. The Contract Documents, which together form the complete Agreement between the parties, consists of the following documents in descending order of precedence:

- (i) This Agreement;
- (ii) Any documents specifically referenced in this Agreement;
- (iii) The attached Scope of Work (Attachment 1);
- (iv) The attached Hourly Rate Schedule (Attachment 2); and
- (v) The Tualatin Public Works Construction Code.

To the extent there is any conflict between the Contract Documents, the conflict is resolved by the order of precedence above. There are no other Contract Documents other than those listed.

Section 2. Work.

- A. Completion.** Consultant must complete all Work that is generally described as set forth in Attachment 1, which is incorporated into this Agreement as if fully set forth.
- B. Authenticity by Consultant.** All plans, drawings, specifications, reports, and other documents prepared by Consultant that are required by applicable law or the applicable permitting authority to bear the seal of a licensed professional shall be stamped, signed, and dated by the appropriately licensed engineer, land surveyor, architect, or other design professional responsible for their preparation.
- C. Qualified Professionals.** All Work must be performed by qualified engineers and other professionals that are properly licensed under the laws of the State of Oregon.
- D. City Standards.** All design work must be according to City of Tualatin standards, including but not limited to, the Tualatin Municipal Code and Tualatin Public Works Construction Code, applicable Master plans, and all other applicable documents referenced in any of these documents.
- E. Solely Responsible.** Consultant is solely responsible for all Work under this Agreement, including all services, labor, materials and supplies, documents, and other requirements to complete the Work, whether produced by Consultant or any of Consultant's subconsultants, except for those items identified as the responsibility of the City.

EXHIBIT B

- F. Sufficient Plans.** Consultant warrants that the Agreement specifications and plans, if any, prepared by Consultant will be developed in accordance with the Standard of Care defined in Section 5, and that review or approval by the owner of the plans and specifications does not relieve Consultant of this obligation.
- G. Project Costs.** In providing opinions of cost, financial analyses, economic feasibility projections, and schedules for the project, given the uncertainty with such projections, City acknowledges Consultant makes no warranty that City's actual project costs, financial aspects, economic feasibility, or schedules will not vary from Consultant's opinions, analyses, projections, or estimates.
- H. Subsurface Investigations.** City acknowledges Consultant makes no warranty about subsurface conditions and cost/execution effects, even if analyzed, as soils, foundation, ground water, and other subsurface investigations may vary significantly between successive test points and sample intervals.
- I. Record Drawings.** Record drawings, if required, will be prepared, in part, on the basis of information compiled and furnished by others, and may not always represent the exact location, type of various components, or exact manner in which the Project was finally constructed. Consultant is not responsible for errors or omissions in the information from others that are incorporated into the record drawings.
- J. Additional Work.** If City requests Consultant to provide additional services not included in the Work described on Attachment 1, the parties will enter into a written amendment to include such Work. The Agreement price for such additional Work will not exceed Consultant's hourly rate as agreed to in Attachment 2. No compensation for additional services will be paid or owing unless both parties specifically agree in writing to such additional compensation and services.

Section 3. Effective Date. The effective date of this Agreement is the date both Parties sign this Agreement ("Effective Date"). If the parties sign on separate dates, the date of the last signature is the Effective Date.

Section 4. Time is of the Essence. Consultant agrees that time is of the essence under this Agreement.

Section 5. Standard of Care. In the performance of its professional or technical services, Consultant must use that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession practicing in the State of Oregon. Consultant will reperform any services not meeting this standard without additional compensation. Consultant's reperformance of any services, even if done at City's request, will not be considered as a limitation or waiver by City of any other remedies or claims it may have arising out of Consultant's failure to perform in accordance with the applicable standard of care or this Agreement.

Section 6. Duty to Inform. If during the performance of this Agreement or in the future, Consultant becomes aware of actual or potential problems, faults, or defects in the projects, any nonconformance with the federal, state or local law, rule, or regulation, or has any objection to a decision or order made by City with respect to such laws, rules, or regulations, Consultant must give prompt written notice to City's Project Manager.

Section 7. Independent Contractor; No Conflicts of Interest; Responsibility for Taxes and Withholding.

- A. Independent Contractor.** Consultant will perform all Work as an independent contractor. The City reserves the right (i) to determine and modify the delivery schedule for the Work and (ii) to evaluate the quality of the Work Product; however, the City may not and will not control the means or manner of Consultant's performance. Consultant is responsible for determining the appropriate means and manner of performing the Work.

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- B. No Conflicts of Interest.** Consultant certifies that to the best of Consultant's knowledge and belief, no elected official or employee of the City, or person whose salary is payable in whole or part by the City, has a direct or indirect financial interest in this Agreement, or in the services to which it relates, or in any of the profits thereof, other than as disclosed by Consultant as applicable.
- C. Not an Officer, Employee or Agent.** Consultant is not an "officer", "employee", or "agent" of the City, as those terms are used in ORS 30.265.
- D. Federal and State Taxes.** Consultant is responsible for all federal or state taxes applicable to compensation or payments paid to Consultant under this Agreement and, unless Consultant is subject to backup withholding, City will not withhold from such compensation or payments any amount(s) to cover Consultant's federal or state tax obligations. Consultant is not eligible for any social security, unemployment insurance or workers' compensation benefits from City under this Agreement. Consultant is not entitled to, and expressly waives all claims to City benefits, including but not limited to health and disability insurance, paid leave, and retirement.

Section 8. Subcontracting. Except for those subcontracts identified in Attachment 1, Consultant's services are unique and as such, will not enter into any subcontracts for any of the Work required by this Agreement without City's prior written consent. Any subcontract will not relieve Consultant of any of its duties or obligations under this Agreement. All subcontracts for services must be issued under written agreements that include all provisions required under Oregon Public Contracting law. Upon request by the City, Consultant must provide City a copy of all agreements with subconsultants who are performing work under this Agreement.

Section 9. Agreement Price.

- A. Hourly Rate.** City agrees to pay Consultant on an hourly basis for actual hours worked on this project. The hourly rates are reflected on Attachment 2, which is attached hereto and incorporated into this Agreement as if fully set forth.
- B. Maximum Fee.** City agrees to pay Consultant the not to exceed price of \$_____, which is inclusive of all hours necessary to complete the Work

Section 10. City Funds for Payment. (Check One Below)

- ☐ City certifies that it has sufficient funds currently authorized to finance the full costs of this Agreement.
- ☐ Consultant understands and agrees that City's payment of amounts under this Agreement is contingent on City receiving appropriations or other expenditure authority sufficient to allow City, in the exercise of its reasonable administrative discretion, to continue to make payments under this Agreement.

Section 11. Payment Process.

- A. Invoices.** Consultant must furnish City an invoice for services on a monthly basis. The invoice must contain an itemized statement showing the number of hours worked on the project by Consultant and the specific Work or portions of the Work performed.
- B. Reimbursable Expenses and Travel.** City's Payment for reimbursable expenses is limited to those reimbursable expenses set forth on Attachment 1, which are actually incurred by Consultant and itemized on Consultant's invoice for services. Travel-related costs, including time spent traveling to and from the Consultant's regular place of business, residence, or other non-City location, are not reimbursable unless set forth on Attachment 1 or expressly

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authorized in advance by the City.

- C. Payment for Services.** City will pay Consultant for services invoiced within thirty (30) days of receiving an itemized invoice ("net thirty"), unless City disputes the invoice, in which case City will only pay for those services not in dispute.

Section 12. Consultant's Representations.

- A.** In order to induce City to enter into this Agreement, Consultant makes the following representations and warranties:
- (i) Consultant has the power and authority to enter into and perform this Agreement;
 - (ii) This Agreement, when executed and delivered, is a valid and binding obligation of Consultant enforceable in accordance with its terms;
 - (iii) Consultant has examined and carefully studied all Contract Documents and the other related data identified in the Contract Documents;
 - (iv) Consultant has become familiar with those conditions at or relating to the Project that are reasonably ascertainable at this stage and that may materially affect the cost, progress, or performance of the Work;
 - (v) Consultant has the skill and knowledge possessed by reputable members of the same profession practicing under similar circumstances in the State of Oregon and will perform the Work in accordance with the Standard of Care set forth in Section 5;
 - (vi) Consultant must, at all times during the term of this Agreement, be qualified, professionally competent, and duly licensed to perform the Work; and
 - (vii) Consultant prepared its proposal related to this Agreement, if any, independently from all other proposers, and without collusion, fraud, or other dishonesty.
- B. Relationship to Other Obligations.** The representations and warranties in this Section supplement, and do not limit, Consultant's other obligations under this Agreement. However, nothing in this Section is intended to impose a warranty of perfect performance or a guarantee of outcome beyond the Standard of Care defined in Section 5.

Section 13. Suspension of Work. The City may suspend work by causing a written "stop work order" to be sent to Consultant as provided in the notice provisions of this Agreement and documenting the reasons for stopping the work. Consultant must stop all work upon receiving the "stop work order."

Section 14. Notice to Parties. Except as otherwise expressly provided in this Agreement, any communications between the parties hereto or notices to be given hereunder must be given in writing by personal delivery, mail facsimile, or email.

- A. Notice by Personal Delivery.** Any communication or notice given by personal delivery is effective when actually delivered.
- B. Notice by Mail.** Notice given by mail must be by postage prepaid, to Consultant or City at the address, set forth herein, or to such other addresses or numbers as either party may indicate pursuant to this Section. Any communication or notice so addressed and mailed is effective five (5) days after mailing.
- C. Notice by Email.** Any communication or notice given by email is effective upon the sender's receipt of confirmation generated by the recipient's email system that the notice has been

EXHIBIT B

received by the recipient's email system.

- D. Party to be Notified.** Unless otherwise notified in writing as set forth above, notices must be given to the Project Managers. If a Party's Project Manager is changed, notification of the change must be promptly made in writing to the other party. If a party receives a communication from the other party not executed by the Project Manager, the party may request clarification by the other party's Project Manager, which must be promptly furnished.

1. City's Project Manager

2. Consultant's Project Manager

Section 15. City's Obligations. In addition to obligations of City described in other parts of the Agreement Documents, City is responsible for providing the following:

- A. Timely Response.** City will respond in a timely manner to all properly submitted requests from Consultant.
- B. Cooperation.** City will cooperate with Consultant to promptly review, comment on and approve all proposals and work that comply with the requirements of this Agreement.

Section 16. Assignment of Agreement. No assignment of any rights, duties, responsibilities, or interests in the Agreement will be binding on the other party without the written consent of the party sought to be bound. No assignment will release or discharge the assignor from any duty or responsibility under the Agreement Documents.

Section 17. Successors and Assigns. The provisions of this Agreement are binding upon and inure to the benefit of the parties, their respective successors, and permitted assigns.

Section 18. Severability. If any term or provision of this Agreement is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and provisions will not be affected, and the rights and obligations of the parties must be construed and enforced as if the Agreement did not contain the particular term or provision held to be invalid.

Section 19. Merger Clause; Waiver. This Agreement and attached exhibits constitute the entire agreement between the parties on the subject matter hereof. There are no understandings, agreements, or representations, oral or written, not specified herein regarding this Agreement. No waiver, consent, modification or change of terms of this Agreement will bind the parties unless in writing and signed by both parties and all necessary City approvals have been obtained. Such waiver, consent, modification or change, if made, is effective only in the specific instance and for the specific purpose given.

Section 20. Agreement Construction. This Agreement shall not be construed against either party regardless of which party drafted it. Other than as modified by this Agreement, the applicable rules of Agreement construction and evidence will apply.

Section 21. Ownership and Use of Work Product.

- A. Work Product.** All reports, plans, drawings, designs, specifications, calculations, analyses, datasets, software, photographs, documentation, and other materials or deliverables created specifically by Consultant or its subconsultants in performing the Work under this Agreement are collectively referred to as "Work Product." Upon payment for the applicable Work Product, Consultant assigns to the City all right, title, and interest Consultant may have in the Work Product, including all applicable intellectual property rights. Consultant shall execute any documents reasonably requested by the City to confirm or perfect the City's rights under this Section.

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- B. Grant-Funded Work Product; Public Domain.** The Work is funded in whole or in part with grant moneys provided by the Oregon Water Resources Department. Consistent with the applicable requirements of the grant agreement, all Work Product developed using grant moneys must remain in the public domain and may not be designated, licensed, restricted, or used for proprietary purposes. Consultant shall not assert any copyright, trade-secret, confidentiality, or other proprietary restriction that would prevent the City or the Oregon Water Resources Department from releasing, reproducing, distributing, publishing, modifying, or otherwise using the Work Product. To the extent necessary to satisfy this requirement, Consultant irrevocably waives, releases, or assigns any rights that would prevent the Work Product from remaining in the public domain.
- C. City's Use of Work Product.** The City may use, reproduce, publish, disclose, distribute, transfer, modify, and create derivative works from the Work Product for any public purpose without further authorization from or compensation to Consultant. The City may also authorize its employees, contractors, consultants, governmental partners, and members of the public to exercise those rights. Consultant is not responsible for changes made to the Work Product by the City or another person without Consultant's written approval, or for use of the Work Product for a purpose materially different from the purpose for which it was prepared.
- D. Consultant Background Materials.** Consultant retains ownership of methods, processes, know-how, templates, calculations, software, details, standards, and other intellectual property developed independently of this Agreement and not specifically created for the City under this Agreement ("Consultant Background Materials"). Consultant shall identify any Consultant Background Materials incorporated into the Work Product. By incorporating Consultant Background Materials into the Work Product, Consultant grants the City and its authorized users a perpetual, irrevocable, worldwide, nonexclusive, transferable, sublicensable, and royalty-free license to use, reproduce, publish, disclose, distribute, modify, and create derivative works from those materials as necessary to use the Work Product for any public purpose. Consultant may continue to use its Consultant Background Materials, provided that such use does not disclose confidential City information or restrict the public-domain status or use of the Work Product.
- E. Third-Party Materials.** Consultant shall not incorporate materials owned by a third party into the Work Product unless Consultant has obtained all rights and licenses necessary for the City and its authorized users to use those materials as provided in this Section. Unless otherwise approved in writing by the City, each license must be perpetual, irrevocable, worldwide, transferable, sublicensable, and royalty-free and must permit use, reproduction, publication, disclosure, distribution, modification, and creation of derivative works. Consultant is responsible for all licensing costs and shall provide evidence of the applicable rights or licenses upon request. If the required rights cannot be obtained, Consultant shall notify the City and obtain the City's written approval before incorporating the third-party materials.

Section 22. Records Maintenance; Access. Consultant must maintain all financial records relating to this Agreement in accordance with generally accepted accounting principles, and any other records pertinent to this Agreement in such a manner as to clearly document Consultant's performance, for a minimum of six (6) years following final payment or termination of this Agreement. City may have access to all documents, whether in paper, electronic or other form, to perform examinations and audits and make excerpts and transcripts.

Section 23. No Third-Party Beneficiaries. There are no intended third-party beneficiaries to this Agreement. Consultant and the City are the only parties to this Agreement and are intended to be the only entities entitled to exercise and enforce the rights and obligations created by this Agreement.

Section 24. Nondiscrimination; Compliance with Applicable Law. Consultant agrees that no person shall, on the grounds of race, color, religion, sex, marital status, familial status, domestic partnership, national origin,

EXHIBIT B

age, mental or physical disability, sexual orientation, gender identity, source of income, or veteran status suffer discrimination in the performance of this Agreement. Consultant must comply with all federal, state and local laws, regulations, executive orders and ordinances applicable to the Work under this Agreement. Consultant will not discriminate against minority-owned, women-owned, or emerging small businesses. Consultant must include a provision in each subcontract requiring subconsultants to comply with the requirement of this provision.

Section 25. Public Contracting Requirements. Consultant must comply with provisions of ORS 279A.110; 279B.220, 279B.225, 279B.230, and 279B.235, which are incorporated by reference herein. City's performance under the Agreement is conditioned upon Consultant's compliance.

Section 26. Certification of Compliance with Tax Laws. As required by ORS 279B.110(2)(e), Consultant represents and warrants that Consultant has complied with the tax laws of this state, the City, and applicable political subdivisions of this state, including but not limited to ORS 305.620 and ORS chapters 316, 317 and 318, hereafter ("Tax Laws"). Consultant further covenants to continue to comply with the Tax Laws during the term of this Agreement and Consultant covenants and acknowledges that the failure to comply with the Tax Laws is a default for which City may terminate this Agreement and seek damages.

Section 27. Registered in Oregon and City of Tualatin. If Consultant is not domiciled in or registered to do business in the State of Oregon, Consultant must promptly provide to the Oregon Department of Revenue and the Secretary of State Corporation Division all information required by those agencies relative to this Agreement. Consultant must demonstrate its legal capacity to perform the Work under this Agreement in the State of Oregon prior to entering into this Agreement. Consultant must have or acquire a City business license prior to executing this Agreement.

Section 28. Force Majeure. Neither City nor Consultant will be held responsible for delay or default caused by fire, riot, acts of God, terrorist acts, or other acts of political sabotage, or war where such cause was beyond the reasonable control of City or Consultant, respectively. Consultant must make all reasonable efforts to remove or eliminate such a cause of delay or default and must diligently pursue performance of its obligations under this Contract.

Section 29. Survival. All rights and obligations of the parties will cease upon termination or expiration of this Contract, except for the rights and obligations of a party for payment of completed Work, indemnity, dispute resolution, maintenance of insurance, and those provisions, including, but not limited to, provisions concerning property rights and governing laws which, by their nature, must survive termination to accomplish the intent of the parties as expressed in this Contract.

Section 30. Joint and Several Liability. In the event Consultant includes more than one person or entity, all such persons or entities will be jointly and severally liable for all conditions herein.

Section 31. Indemnification.

- A. **General Indemnity.** Consultant must defend, save, hold harmless, and indemnify the City, its officers, employees and agents, and the State of Oregon, the Oregon Water Resources Department, and their officers, employees, and agents, from and against all claims, suits, actions, losses, damages, liabilities, costs and expenses of any nature whatsoever (including attorneys' fees awarded to a third party against the City), resulting from, arising out of, or relating to the activities of Consultant or its officers, employees, subconsultants, or agents under this Agreement. Notwithstanding the foregoing:
 - a. Consultant's indemnity and defense obligations arising out of professional errors and omissions is provided to the extent caused by Consultant's negligent acts, errors, or omissions.
 - b. Consultant's duty to defend the City against claims for professional negligence is limited to the extent that the Consultant's liability or fault is determined by adjudication,

EXHIBIT B

alternative dispute resolution, or resolved by a settlement agreement, and shall not exceed the proportionate fault of the Consultant.

- B. Control of Defense and Settlement.** Consultant will have control of the defense and settlement of any claim that is subject to this Section; however, neither Consultant nor any attorney engaged by Consultant will defend the claim in the name of the City, the State of Oregon, the Oregon Water Resources Department, nor purport to act as legal representative of the City or the State of Oregon, or any of their officers, employees, or agents without first receiving from the City or, as applicable, the State of Oregon, in a form and manner determined appropriate by the applicable entity, authority to act as legal counsel for the applicable entity, nor will Consultant settle any claim on behalf of the City or the State of Oregon without the approval of the applicable entity. The City may, at its election and expense, assume its own defense and settlement in the event that the City determines that the Consultant is prohibited from defending the City, or is not adequately defending the City's interests, or that an important governmental principle is at issue and the City desires to assume its own defense.

Section 32. Insurance. Consultant shall procure and maintain, at its own expense, the insurance described in this Section from insurers authorized to do business in the State of Oregon and reasonably acceptable to the City. Prior to execution of this Agreement, Consultant shall provide certificates of insurance, and upon the City's request, copies of applicable policy endorsements, demonstrating the required coverage. Consultant shall maintain the required insurance throughout the term of this Agreement. Professional Liability Insurance written on a claims-made basis shall be maintained continuously, or an extended reporting period shall be maintained, for not less than three (3) years following completion of the Work. All other required insurance shall be written on an occurrence basis.

Except for Professional Liability and Workers' Compensation coverage, the City, its officers, employees, and agents shall be included as additional insureds to the extent available under the applicable policy. Such coverage shall be primary with respect to any insurance maintained by the City, and any insurance maintained by the City shall be excess and noncontributory. Consultant shall be responsible for all deductibles and self-insured retentions.

Consultant shall provide the City with notice of cancellation, nonrenewal, or material reduction in coverage to the extent such notice is provided by the applicable insurance policy. Failure to maintain the insurance required by this Agreement constitutes a material breach of this Agreement. In addition to any other remedy available under this Agreement or applicable law, the City may suspend the Work, withhold payments otherwise due, or terminate this Agreement until the required coverage is restored.

A. Automobile Liability. Automobile liability insurance covering owned, hired, and non-owned vehicles used in connection with the Work, with a combined single limit of not less than \$1,000,000 per accident for bodily injury and property damage.

B. Commercial General Liability. Commercial General Liability insurance covering bodily injury, personal injury, and property damage arising out of Consultant's operations, including the acts or omissions of Consultant and its officers, employees, agents, and subcontractors, with limits of not less than \$2,000,000 per occurrence and \$2,000,000 general aggregate.

C. Professional Liability. Professional Liability (Errors and Omissions) insurance covering negligent acts, errors, or omissions arising from Consultant's professional services under this Agreement, with limits of not less than \$2,000,000 each claim and \$2,000,000 annual aggregate. If Consultant utilizes subconsultants providing professional services, the City may require such subconsultants to maintain Professional Liability Insurance meeting the requirements of this Section.

D. Policy Coverage. Coverage required under Sections 32.A and 32.B shall be primary with respect to the City, and any insurance maintained by the City shall be excess and noncontributory.

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Consultant shall be responsible for all deductibles and self-insured retentions applicable to the required insurance.

E. Workers' Compensation. Consultant, its subconsultants, if any, and all employers providing services under this Agreement shall comply with the Oregon Workers' Compensation Law, including ORS 656.017, and shall maintain Employers Liability Insurance with limits required by law.

Section 33. Grant Compliance. Consultant acknowledges that the Project is funded in whole or in part by a grant from the Oregon Water Resources Department ("OWRD"). Consultant shall cooperate with the City in satisfying applicable grant requirements, including providing information and documentation reasonably requested by the City to support grant administration, reimbursement requests, progress reports, final reporting, audits, engineering review, inspections, and project closeout. Consultant shall incorporate into the design documents and construction contract documents all grant-required provisions identified by the City. Consultant shall promptly notify the City of any circumstance that Consultant reasonably believes may affect compliance with applicable grant requirements or project eligibility.

Section 34. Default; Remedies; Termination.

A. Default by Consultant. Consultant is in default under this Agreement if Consultant commits any material breach or default of any covenant, warranty, obligation or agreement under this Agreement, fails to perform the Work under this Agreement within the time specified herein or any extension thereof, or so fails to pursue the Work as to endanger Consultant's performance under this Agreement in accordance with its terms, and such breach, default or failure is not cured within fourteen (14) calendar days after City's notice, or such longer period as City may specify in such notice. If the City, in its reasonable discretion, determines that the default is of a nature that cannot be cured (including but not limited to instances of irreparable harm to City, fraud, criminal conduct, or violation of local, state or federal law), the City may immediately terminate the Agreement pursuant to Section 34(E)(iv). City shall specify the basis on which the agreement is being terminated, including a description of the breach.

B. City's Remedies for Consultant's Default. In the event Consultant is in default, City may, at its option, pursue any or all of the remedies available to it under this Agreement and at law or in equity; including, but not limited to:

- (i) Termination of this Agreement;
- (ii) Withholding all monies due for Work and Work Products that Consultant has failed to deliver within any scheduled completion dates or has performed inadequately or defectively;
- (iii) Initiation of an action or proceeding for damages, specific performance, or declaratory or injunctive relief;
- (iv) Exercise of its right of setoff.

These remedies are cumulative to the extent the remedies are not inconsistent, and City may pursue any remedy or remedies singly, collectively, successively or in any order whatsoever. If a court determines that Consultant was not in default, then Consultant is entitled to the same remedies as if this Agreement was terminated.

C. Default by City. City is in default under this Agreement if:

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- (i) City fails to pay Consultant any amount pursuant to the terms of this Agreement, and City fails to cure such failure within thirty (30) calendar days after Consultant's notice or such longer period as Consultant may specify in such notice; or
- (ii) City commits any material breach or default of any covenant, warranty, or obligation under this Agreement, and such breach or default is not cured within thirty (30) calendar days after Consultant's notice or such longer period as Consultant may specify in such notice.

D. Consultant's Remedies for City's Default. In the event City terminates the Agreement, or in the event City is in default and whether or not Consultant elects to exercise its right to terminate the Agreement, Consultant's sole monetary remedy is (i) with respect to services compensable on an hourly basis, a claim for unpaid invoices, hours worked within any limits set forth in this Agreement but not yet billed, authorized expenses incurred and interest of two-thirds of one percent per month, but not more than eight percent per annum, and (ii) with respect to deliverable based Work, a claim for the sum designated for completing the deliverable multiplied by the percentage of Work completed and accepted by City, less previous amounts paid and any claim(s) that City has against Consultant. In no event will City be liable to Consultant for any expenses related to termination of this Agreement or for any anticipated profits. If previous amounts paid to Consultant exceed the amount due to Consultant under this subsection, Consultant must pay immediately any excess to City upon written demand provided.

E. Termination by City. At its sole discretion, City may terminate this Agreement:

- (i) For any reason upon thirty (30) days' prior written notice by City to Consultant;
- (ii) Immediately upon written notice if City fails to receive funding or expenditure authority at levels sufficient to pay for the Work or Work Products; or
- (iii) Immediately upon written notice if federal or state laws, regulations, or guidelines are modified or interpreted in such a way that the City's purchase of the Work or Work Products under this Agreement is prohibited or City is prohibited from paying for such Work or Work Products from the planned funding source.
- (iv) Immediately upon written notice by City to Consultant if Consultant is in default of this Agreement.

F. Termination by Consultant. Consultant may terminate this Agreement with such written notice to City upon the occurrence of the following events.

- (i) City is in default because City fails to pay Consultant any amount pursuant to the terms of this Agreement, and City fails to cure such failure within thirty (30) calendar days after Consultant's notice of the failure to pay or such longer period as Consultant may specify in such notice; or
- (ii) City is in default because City commits any material breach or default of any covenant, warranty, or obligation under this Agreement, fails to perform its commitments hereunder within the time specified or any extension thereof, and City fails to cure such failure within thirty (30) calendar days after Consultant's notice or such longer period as Consultant may specify in such notice.

G. Return of Property upon Termination. Upon termination of this Agreement for any reason whatsoever, Consultant must immediately deliver to City all of City's property (including without limitation any Work or Work Products for which City has made payment in whole or in

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part) that is in the possession or under the control of Consultant in whatever stage of development and form of recordation such City property is expressed or embodied at that time. Upon receiving a notice of termination of this Agreement, Consultant must immediately cease all activities under this Agreement, unless City expressly directs otherwise in such notice of termination. Upon City's request, Consultant must surrender to anyone City designates, all documents, research or objects or other tangible things needed to complete the Work and the Work Products.

- H. City's Remedies Cumulative.** In the event of termination, in addition to the remedies provided herein, City shall have any remedy available to it in law or equity. City shall also have such remedies as are available to it in law or equity for Consultant's breach without the requirement that City first terminate this Agreement.

Section 35. Dispute Resolution.

- A. Process.** If Consultant is not in agreement with a decision of the City under this Agreement, Consultant must comply with the following process:
- (i) Consultant must file a written notice of appeal with the City's Project Manager within fifteen (15) days following receipt of the City's written decision.
 - (ii) The City's Project Manager will have sixty (60) days for review of the appeal prior to presenting a decision to Consultant. During the sixty (60) day period, the City's Project Manager will appoint a three-person management team as the authorized review panel. The review panel may call on the resources appropriate to evaluate the merit of the appeal. This may include; but not be limited to, City's attorney, Consultant, and any employee of City.
 - (iii) Prior to the end of the sixty (60) day review period, the City's Project Manager will issue a written decision to Consultant. If Consultant is agreeable with this decision, a Change Order will be processed consistent with the decision.
 - (iv) If Consultant is in disagreement with the City's Project Manager's decision, Consultant may seek review of the decision by the City's Public Works Director, or designee, by filing a request for review within 10 days of the City's Project Manager's written decision.
 - (v) The City's Public Works Director will have 14 days to review the request and make a decision. If Consultant is agreeable with the City's Public Works Director, a Change Order will be processed consistent with the decision.
- B. Exhaustion of Remedies.** If Consultant is not in agreement with the written decision of Public Works Director, Consultant will only then be entitled to initiate legal action as the prescribed administrative remedies have been exhausted.
- C. Complaint.** Any claim that cannot be resolved between the parties as set forth in this Section shall be initiated by filing a complaint in the appropriate court as provided in this Agreement. The claim and all cross and counter-claims filed in response to the complaint shall be submitted to mediation. If the parties cannot agree on a mediator, the Presiding Judge for Washington County will select the mediator. Only if the dispute cannot be resolved by mediation, will the parties proceed to litigate the claim in court.

Section 36. Attorney Fees. If any suit, action, arbitration or other proceeding is instituted upon this Agreement or to enforce any rights herein or otherwise pursue, defend or litigate issues related to this

EXHIBIT B

Agreement, each party will be liable for their own attorneys' fee and costs, including those on appeal. The parties each agree and hereby waive any right to attorney fees granted by statute or rule that conflicts with this provision.

Section 37. Execution of Agreement; Electronic Signature. This Agreement may be executed in one or more counterparts, all of which when taken together constitute one agreement binding on all parties, notwithstanding that all parties are not signatories to the same counterpart. Each copy of the Agreement so executed constitutes an original. A signature of a party provided by email, "pdf," or other electronic data file constitutes an original signature of that party.

Section 38. Governing Law; Venue; Consent to Jurisdiction. This Agreement is governed by and will be construed in accordance with the laws of the State of Oregon without regard to principles of law. Any claim, action, suit or proceeding (collectively, "Claim") between City and Consultant that arises from or relates to this Agreement shall be brought and conducted solely and exclusively within the Circuit Court of Washington County for the State of Oregon; provided, however, if a Claim must be brought in a federal forum, then it shall be brought and conducted solely and exclusively within the United States District Court for the District of Oregon. In no event will this Section be construed as a waiver of any form of defense or immunity from any Claim or from the jurisdiction of any court. Consultant, BY EXECUTION OF THIS AGREEMENT, HEREBY CONSENTS TO THE IN PERSONAM JURISDICTION OF SAID COURTS.

Section 39. Authority to Bind. City and Consultant each represent and warrant that the individual(s) executing this Agreement have taken all steps necessary to secure full authority to bind the City and Consultant, respectively, for the acts, expenditures, and obligations contemplated in this Agreement to be performed by each of them. BY EXECUTION OF THIS AGREEMENT, EACH PARTY HEREBY ACKNOWLEDGES THAT THEY HAVE READ THIS AGREEMENT, UNDERSTAND IT, AND AGREES TO BE BOUND BY ITS TERMS AND CONDITIONS.

APPROVED AND ENTERED ON _____.

By:

City of Tualatin
By:

Date

Date

General Fund

GRANT AGREEMENT

WPG-D-0021-25

Tualatin Water Reservoir Seismic Valves

By: City of Tualatin

OREGON WATER RESOURCES DEPARTMENT



EXHIBIT C

GRANT AGREEMENT

WPG-D-0021-25

Tualatin Water Reservoir Seismic Valves

BETWEEN: **State of Oregon**, acting by and through its
Oregon Water Resources Department (Grantor),
Address: 725 Summer Street NE, Suite A, Salem, Oregon 97301-1266
Phone Number: (503) 979-9160
Facsimile Number: (503) 986-0903
E-Mail Address: OWRD.Grants@water.oregon.gov
The Grantor's Coordinator for this Grant is
Louisa Mariki

AND: City of Tualatin (Grantee)
Attn: Nic Westendorf
Title: Deputy Public Works Director
Address: 10699 SW Herman Road, Tualatin, Oregon 97062
Telephone Number: (503) 691-3673
E-Mail Address: nwestendorf@tualatin.gov

SECTION 1
LEGAL BASIS OF AWARD

Section 1.01 Legal Basis of Award. Pursuant to House Bill 5006 (2025), Oregon Laws 2025, chapter 628, Grantor is authorized to enter into a grant agreement and to make an award from moneys available to the Oregon Water Resources Department to Grantee for the purposes set forth herein.

Section 1.02 Agreement Documents. This grant agreement (“Grant Agreement” or “Agreement”) consists of this Agreement and the exhibits listed below. Exhibits A, B, C and D are attached hereto and all of the exhibits (Exhibits A through D) are incorporated into this Agreement by reference. In the event of a conflict between two or more of the documents comprising this Agreement, the language in the document with the highest precedence shall control. The precedence of each of the documents comprising this Agreement is as follows, listed from highest precedence to lowest precedence:

- i. This Grant Agreement, less all exhibits;
- ii. **Exhibit A** (Conditions of Agreement);
- iii. **Exhibit B** (Grant Budget);
- iv. **Exhibit C** (Project Description); and
- v. **Exhibit D** (Permits and Regulatory Approvals).

Section 1.03 Agreement Term. This Agreement shall be effective when it is signed by the Grantor and Grantee (“Parties”) and approved as required by law (the “Effective Date”). Unless terminated earlier pursuant to Section 6 of this Agreement, this Agreement will **terminate on June 30, 2027**, or on the date that Grantor disburses the final ten percent (10%) of Grant moneys as provided in Section 2.03 of this Agreement, whichever comes first (the “Expiration Date”).

EXHIBIT C

SECTION 2 GRANT AWARD

Section 2.01 Notice of Grant Award. In accordance with the terms and conditions of this Agreement, Grantor shall provide Grantee with a maximum of **\$1,750,000** (the “Grant”) from the General Fund to financially support the water resource project activities designated within the project description set forth in Exhibit C (the “Project”). The Grant amount may not be increased without a written amendment(s) to this Grant Agreement. The Grant Budget is set forth in Exhibit B.

Section 2.02 Grant Availability. Grantee shall not submit, and Grantor shall not pay, any reimbursement request (“Fund Request”) for expenditures that occur before the Effective Date or after the Expiration Date.

Section 2.03 Disbursement of Grant Moneys. Subject to Sections 2.04 and 2.05, Grantor shall disburse the Grant moneys to Grantee upon submission of the most current Fund Request Form provided by Grantor to Grantee. The Fund Request Form must be completed and signed by the Grantee with appropriate documentation of expenditures prior to approval and payout of any Grant moneys by Grantor. The Grantor will disburse the Grant moneys only as reimbursement for costs incurred by Grantee for the Project. The final 10% of Grant moneys will be disbursed to Grantee only after Grantee submits and Grantor approves the Final Report described in Exhibit A under item no. 3 and shall be contingent upon Grantee adherence to all conditions within Exhibit A. The Grantor may disburse Grant moneys after the Grant Expiration Date for reimbursement requests submitted by July 30, 2027, for expenses incurred prior to the Grant Expiration Date. Grantee may submit a Fund Request no more often than monthly.

Section 2.04 Conditions Precedent to this Agreement or any Amendment to this Agreement. Grantor’s obligations under this Agreement or under any amendment to this Agreement are subject to compliance by Grantee with all its reporting obligations under any earlier or other existing grant agreements with the Grantor.

Section 2.05 Conditions Precedent to Disbursements. Grantor’s obligation to disburse Grant moneys to Grantee pursuant to Section 2.03 is subject to satisfaction, with respect to each disbursement, of each of the following conditions precedent:

- (a) Grantee shall hold and maintain registration as a legal entity with the Oregon Secretary of State prior to, and throughout, the duration of the Grant;
- (b) Grantor has received sufficient funding, appropriations limitations, allotments, or other expenditure authorizations to allow Grantor, in the reasonable exercise of its administrative discretion, to make the disbursement;
- (c) Grantee’s representations and warranties set forth in Section 4 are true and correct on the date of disbursement with the same effect as though made on the date of disbursement;
- (d) Grantee is in compliance with all reporting requirements of this Agreement identified in Exhibit A;
- (e) Grantee has submitted to the Grantor, the required permits and regulatory approvals listed in Exhibit C “Project Description” and Exhibit D “Permits and Regulatory Approvals” or as are otherwise required for the Project. As required by ORS 541.692(1), Grantee must obtain all applicable local, state, and federal permits prior to release of funds for the Project. Grantor shall require that Grantee obtain all permits or regulatory approvals required for the Project, even those not previously identified by the Grantee, before disbursing Grant moneys. In its sole discretion, Grantor may condition the release of funds based on specific circumstances of the Project. By executing this Agreement, Grantee acknowledges that it has reviewed Exhibit A Conditions of Agreement.
- (f) For Project tasks that take place on private land(s), Grantee has submitted to the Grantor:

EXHIBIT C

- 1) Evidence that landowner(s) are aware of and agree to the task. Evidence shall include, but is not limited to: (i) landowner(s) certification that the landowner owns the land where the work will be carried out and (ii) landowner's agreement to allow Grantee to carry out the work, or a portion of the work on the Landowner's property; or
 - 2) Evidence documenting legal easement on all lands where the work will be carried out. Evidence shall include, but is not limited to: (i) documentation of easement and (ii) easement holder's agreement to allow Grantee to carry out the work, or a portion of the work on the servient estate;
- (g) No default as described in Section 6.03 has occurred; and
- (h) Grantee has submitted to Grantor a Fund Request that is in a format acceptable to and approved by Grantor and that is accompanied by all necessary supporting documentation.

SECTION 3 USES OF GRANT

Section 3.01 Eligible Uses of Grant. Grantee's use of the Grant moneys is limited to those expenditures necessary to successfully execute the Project tasks described in Exhibit C and that are in accordance with the allowable costs and budget procedures guidance document provided by the Grantor. Equipment purchases of a durable nature may not be financed with Grant moneys unless expressly authorized by Grantor in writing apart from and in addition to the approved Fund Request.

Section 3.02 Ineligible Uses of Grant. Notwithstanding Section 3.01, Grantee shall not use the Grant moneys to pay principal or interest on any debt; reimburse any person or entity for expenditures made or expenses incurred prior to the Effective Date; make loans or grants to third parties; pay indirect costs that cannot be directly attributable to the Project; or pay internal costs charged to the Project by Grantee or payments made to Related Parties. A Related Party for this purpose includes members of the same controlled group within the meaning of 26 C.F.R. § 1.150-1(e). No more than 10% of the Grant may be used to pay for the administrative costs of Grantee. The aggregate of all disbursements of the Grant shall not exceed the maximum Grant amount set forth in Section 2.01.

Section 3.03 Mis-expended and Unexpended Grant Moneys. Any Grant moneys disbursed to Grantee that are not expended by Grantee in accordance with this Agreement ("Mis-expended Moneys") or are not expended by the earlier of the Expiration Date or the date this Agreement is terminated pursuant to Section 6 of this Agreement ("Unexpended Moneys") shall be returned to Grantor. Grantee shall return all Mis-expended or Unexpended Moneys to Grantor within fifteen (15) days after the earlier of the Expiration Date, the date this Agreement is terminated or Grantor's demand.

SECTION 4 GRANTEE'S REPRESENTATIONS AND WARRANTIES

Grantee represents and warrants to Grantor as follows:

Section 4.01 Existence and Power. Grantee is legally formed and in good standing under Oregon law and has full power and authority to transact the business in which it is engaged and the legal right to execute and deliver this Agreement and incur and perform its obligations hereunder.

Section 4.02 Authority, No Contravention. The making and performance by Grantee of this Agreement (a)

EXHIBIT C

has been duly authorized by all necessary action of Grantee, (b) does not and will not violate any provision of any applicable law, rule, or regulation or order of any court, regulatory commission, board or other administrative body or any provision of Grantee's organization documents and (c) does not and will not result in the breach of, or constitute a default or require any consent under, any other agreement or instrument to which Grantee is a party or by which Grantee or any of its properties are bound or affected.

Section 4.03 Binding Obligation. This Agreement has been duly authorized, executed and delivered on behalf of Grantee and constitutes the legal, valid, and binding obligation of Grantee, enforceable in accordance with its terms.

Section 4.04 Approvals. No authorization, consent, license, or approval of, filing or registration with, or notification to, any governmental body or regulatory or supervisory authority is required for the execution, delivery or performance by Grantee of this Agreement.

Section 4.05 Required Permits. To the best of Grantee's knowledge the permits and regulatory approvals listed in Exhibit D to this Agreement constitute the permits and regulatory approvals required to construct, complete, and thereafter operate the Project as contemplated in this Agreement. If during the term of this Agreement, Grantee becomes aware of additional permits or regulatory approvals that are needed and not previously identified, Grantee shall promptly notify Grantor of the additional permit(s) or regulatory approval(s) by submitting an addendum to the Grantor setting forth the additional permit(s) or regulatory approval(s).

SECTION 5 GRANTEE'S SUB-AGREEMENTS AND PROCUREMENTS

Section 5.01 Sub-agreements.

- (a) Grantee may enter into agreements with sub-recipients, contractors or sub-contractors ("Sub-agreements") for performance of the Project. Regarding sub-agreements over \$25,000, the Grantee must have available and shall provide upon request documentation describing the Project tasks which the sub-agreement is intended to help complete, the cost of the Sub-agreement, and a description of the selection process by which the Sub-agreement was awarded. All Sub-agreements must be in writing and duly executed by the Grantee and must incorporate and pass through all of the applicable requirements of this Agreement to the other party or parties to the Sub-agreements. Grantee agrees to provide the Grantor with a copy of any signed Sub-agreements upon request by the Grantor. Any material breach of a term or condition of Sub-agreements relating to funds covered by this Agreement must be reported by the Grantee to the Grantor within ten (10) days of it being discovered. Use of a Sub-agreement does not relieve the Grantee of its responsibilities under this Agreement.
- (b) Grantee's Sub-agreement(s) shall require the other party to such Sub-agreements(s) that is not a unit of local government as defined in ORS 190.003, if any, to indemnify, defend, save and hold harmless the Grantor and its officers, employees and agents from and against any and all claims, actions, liabilities, damages, losses, or expenses, including attorneys' fees, caused, or alleged to be caused, in whole or in part, by the negligent or willful acts or omissions of the other party to Grantee's Sub-agreement or any of such party's officers, agents, employees or subcontractors ("Claims"). It is the specific intention of the Parties that the Grantor shall, in all instances, except for Claims arising solely from the negligent or willful acts or omissions of the Grantor, be indemnified by the other party to Grantee's Sub-agreement(s) from and against any and all Claims.
- (c) Any such indemnification shall also provide that neither Grantee's subrecipient(s), contractor(s) nor subcontractor(s), nor any attorney engaged by Grantee's subrecipient(s), contractor(s) or

EXHIBIT C

subcontractor(s) shall defend any claim in the name of the Grantor or any agency of the State of Oregon, nor purport to act as legal representative of the State of Oregon or any of its agencies, without the prior written consent of the Oregon Attorney General. The Grantor may, at any time at its election, assume its own defense and settlement in the event that it determines that Grantee's subrecipient is prohibited from defending the State, or that Grantee's subrecipient is not adequately defending the Grantor's interests, or that an important governmental principle is at issue or that it is in the best interests of the Grantor to do so. The Grantor reserves all rights to pursue claims it may have against Grantee's subrecipient if the State of Oregon elects to assume its own defense.

Section 5.02 Procurements for Public Entities. If Grantee is a public entity subject to the Oregon Public Contracting code, Grantee shall make purchases of any equipment, materials, or services for the Project under procedures that comply with Oregon law, including all applicable provisions of the Oregon Public Contracting Code and rules.

Section 5.03 Procurements for Private Entities. If Grantee is a private entity:

- (a) For procurements over \$25,000, Grantee must solicit quotes or bids from at least three sources.
- (b) The Grantee shall retain and provide upon request documentation of the bidding and selection process for all procurements over \$25,000.

Section 5.04 Sole Source Procurement for Private Entities. If Grantee is a private entity:

- (a) Grantee may make the determination that competitive procurement is not feasible if one of the following circumstances exist:
 - (i) Item or service is available only from a single source; or
 - (ii) A public exigency or emergency will not permit a delay resulting from a competitive solicitation or it can be shown unequivocally that desired time frames for delivery must be met or the entire Project will suffer as a direct result of the delay.
- (b) For all sole source procurements Grantee shall provide documentation to the Grantor in writing which shall contain:
 - (i) a brief description of the Project, the amount to be designated for the sole source procurement, and the purpose of the contract;
 - (ii) explanation of why it is necessary to contract in a noncompetitive manner; and,
 - (iii) a declaration that this action is in the "best interest" of the Grantor.

Section 5.05 Compliance with Laws, including Prevailing Wage.

- (a) Grantee shall comply with state prevailing wage law as set forth in ORS 279C.800 through 279C.870, and the administrative rules promulgated thereunder (OAR Chapter 839, Division 25) (collectively, state "PWR"). This includes but is not limited to imposing an obligation that when PWR applies to the Project, contractors and subcontractors on the Project must pay the prevailing rate of wage for workers in each trade or occupation in each locality as determined by the Commissioner of the Bureau of Labor and Industries ("BOLI") under ORS 279C.815.
- (b) When the federal Davis-Bacon Act applies to the Project, contractors and subcontractors on the Project must pay the prevailing rate of wage as determined by the United States Secretary of Labor under the Davis-Bacon Act (40 U.S.C. 3141 et seq.).

EXHIBIT C

- (c) Notwithstanding (1) and (2) above, when both PWR and the federal Davis-Bacon Act apply to the Project, contractors and subcontractors on the Project must pay a rate of wage that meets or exceeds the greater of the rate provided in (3)(a) or (3)(b) above.
- (d) When PWR applies, Grantee and its contractors and subcontractors shall not contract with any contractor on BOLI's current List of Contractors Ineligible to Receive Public Works Contracts.
- (e) When PWR applies, Grantee shall be responsible for both providing the notice to the BOLI Commissioner required by ORS 279C.835 and the payment of any prevailing wage fee(s) required under ORS 279C.825 and BOLI's rules, including OAR 839-025-0200 to OAR 839-025-0230. For avoidance of any doubt, Grantee contractually agrees to pay applicable prevailing wage fees for the Project rather than OHCS, the public agency providing Financing Proceeds under this Contract.
- (f) When PWR applies, and before starting work, Contractor shall file with the Construction Contractors Board, and maintain in full force and effect, the separate public works bond required by ORS 279C.836 and OAR 839-025-0015, unless otherwise exempt under those provisions. The Contractor shall also include in every subcontract a provision requiring any subcontractor to have a public works bond filed with the Construction Contractors Board before starting Work, unless otherwise exempt, and shall verify that the subcontractor has filed a public works bond before permitting the subcontractor to start Work.
- (g) Pursuant to ORS 279C.817, Grantee and any contractors or subcontractors may request that the BOLI Commissioner make a determination about whether the Project is a public works on which payment of the prevailing rate of wage is required under ORS 279C.840 (i.e. whether PWR applies).

SECTION 6 TERMINATION AND DEFAULT

Section 6.01 Mutual Termination. This Agreement may be terminated by mutual written consent of both Parties.

Section 6.02 Termination by Grantor. Grantor may terminate this Agreement, for any reason, upon 30 days advance written notice to Grantee. In addition, Grantor may terminate this Agreement effective immediately upon written notice to Grantee, or effective on such later date as may be established by Grantor in such notice, under any of the following circumstances:

- (a) Grantor fails to receive sufficient appropriations or other expenditure authorization to allow Grantor, in the reasonable exercise of its administrative discretion, to continue making payments under this Agreement; or,
- (b) The Grantor does not have sufficient funds to continue making payments under this Agreement; or,
- (c) There is a change in federal or state laws, rules, regulations or guidelines so that the Project funded by this Agreement is no longer eligible for funding; or,
- (d) In accordance with Section 6.04.

Section 6.03 Default. Grantee shall be in default under this Agreement upon the occurrence of any of the following events:

- (a) Grantee fails to perform, observe or discharge any of its covenants, agreements or obligations contained herein or in any exhibit attached hereto; or

EXHIBIT C

- (b) Any representation, warranty or statement made by Grantee herein or in any documents or reports relied upon by Grantor to measure progress on the activities funded by the Grant, the expenditure of Grant moneys or the performance by Grantee is untrue in any material respect when made; or
- (c) Grantee (i) applies for or consents to the appointment of, or the taking of possession by, a receiver, custodian, trustee, or liquidator of itself or of all of its property, (ii) admits in writing its inability, or is generally unable, to pay its debts as they become due, (iii) makes a general assignment for the benefit of its creditors, (iv) commences a voluntary case under the federal Bankruptcy Code (as now or hereafter in effect), (v) files a petition seeking to take advantage of any other law relating to bankruptcy, insolvency, reorganization, winding-up, or composition or adjustment of debts, (vi) fails to controvert in a timely and appropriate manner, or acquiesces in writing to, any petition filed against it in an involuntary case under the federal Bankruptcy Code (as now or hereafter in effect), or (vii) takes any action for the purpose of effecting any of the foregoing; or
- (d) A proceeding or case is commenced, without the application or consent of Grantee, in any court of competent jurisdiction, seeking (i) the liquidation, dissolution or winding-up, or the composition or readjustment of debts, of Grantee, (ii) the appointment of a trustee, receiver, custodian, liquidator, or the like of Grantee or of all or any substantial part of its assets, or (iii) similar relief in respect to Grantee under any law relating to bankruptcy, insolvency, reorganization, winding-up, or composition or adjustment of debts, and such proceeding or case continues undismissed, or an order, judgment, or decree approving or ordering any of the foregoing is entered and continues unstayed and in effect for a period of sixty (60) consecutive days, or an order for relief against Grantee is entered in an involuntary case under the federal Bankruptcy Code (as now or hereafter in effect).

Section 6.04 Remedies Upon Default. If Grantee's default is not cured within fifteen (15) days of written notice thereof to Grantee from Grantor or such longer period as Grantor may authorize in its sole discretion, Grantor may pursue any remedies available under this Agreement, at law or in equity. Such remedies include, but are not limited to, termination of this Agreement, return of all or a portion of the Grant moneys, payment of interest earned on the Grant moneys, reallocation of funds allocated to the Project but not used, and declaration of ineligibility for the receipt of future funding from the Grantor.

SECTION 7 MISCELLANEOUS

Section 7.01 No Implied Waiver, Cumulative Remedies. The failure of Grantor to exercise, and any delay in exercising, any right, power, or privilege under this Agreement shall not operate as a waiver thereof, nor shall any single or partial exercise of any right, power, or privilege under this Agreement preclude any other or further exercise thereof or the exercise of any other such right, power, or privilege. The remedies provided herein are cumulative and not exclusive of any remedies provided by law.

Section 7.02 Choice of Law; Designation of Forum; Federal Forum.

- (a) The laws of the State of Oregon (without giving effect to its conflicts of law principles) govern all matters arising out of or relating to this Agreement, including, without limitation, its validity, interpretation, construction, performance, and enforcement.
- (b) Any Party bringing a legal action or proceeding against any other Party arising out of or relating to this Agreement shall bring the legal action or proceeding in the Circuit Court of the State of Oregon for Marion County (unless Oregon law requires that it be brought and conducted in another county). Each Party hereby consents to the exclusive jurisdiction of such court, waives any objection to venue, and waives any claim that such forum is an inconvenient forum.

- (c) Notwithstanding Section 7.02(b), if a claim must be brought in a federal forum, then it must be brought and adjudicated solely and exclusively within the United States District Court for the District of Oregon. This Section applies to a claim brought against the State of Oregon only to the extent Congress has appropriately abrogated the State of Oregon's sovereign immunity and is not consent by the State of Oregon to be sued in federal court. This Section is also not a waiver by the State of Oregon of any form of defense or immunity, including but not limited to sovereign immunity and immunity based on the Eleventh Amendment to the Constitution of the United States.

Section 7.03 Notices. Except as otherwise expressly provided in this Agreement, any notices or demands required or permitted to be given hereunder shall be given in writing by personal delivery, facsimile, or mailing the same, postage prepaid to Grantee or Grantor at the address or number set forth on page 2 of this Agreement, or to such other addresses or numbers as either Party may hereafter indicate pursuant to this section. Any such notice or demand so addressed and mailed shall be deemed to be given five (5) days after mailing. Any notice or demand delivered by facsimile shall be deemed to be given when receipt of the transmission is generated by the transmitting machine. Any notice or demand by personal delivery shall be deemed to be given when actually delivered.

Section 7.04 Amendments. This Agreement may not be altered, modified, supplemented, extended or amended in any manner except by written instrument signed by both Parties. No term of this Agreement may be waived unless such waiver is agreed to in writing by the Party against whom such waiver is sought to be enforced.

Section 7.05 Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of Grantor, Grantee, and their respective successors and assigns, except that Grantee may not assign or transfer its rights or obligations hereunder or any interest herein without the prior consent in writing of Grantor.

Section 7.06 Entire Agreement. This Agreement constitutes the entire agreement between the Parties on the subject matter hereof. There are no understandings, agreements, or representations, oral or written, not specified herein regarding this Agreement.

Section 7.07 Contribution.

- (a) If any third party makes any claim or brings any action, suit or proceeding alleging a tort as now or hereafter defined in ORS 30.260 ("Third-Party Tort Claim") against a party to this Agreement (the "Notified Party") with respect to which the other party may have liability, the Notified Party must promptly notify the other party in writing and deliver a copy of the claim, process, and all legal pleadings related to the Third-Party Tort Claim. Either party is entitled to participate in the defense of a Third-Party Tort Claim, and to defend a Third-Party Tort Claim with counsel of its own choosing. The foregoing provisions are conditions precedent for either party's liability to the other in regard to the Third-Party Claim.

If the parties are jointly liable (or would be if joined in the Third-Party Tort Claim), the parties shall contribute to the amount of expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred and paid or payable in such proportion as is appropriate to reflect their respective relative fault. The relative fault of the parties shall be determined by reference to, among other things, the parties' relative intent, knowledge, access to information and opportunity to correct or prevent the circumstances resulting in such expenses, judgments, fines or settlement amounts. Each party's contribution amount in any instance is capped to the same extent it would have been capped under Oregon law if that party had sole liability in the proceeding. This Section shall survive termination of this Agreement.

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- (b) Recipient shall take all reasonable steps to require its contractor(s) that are not units of local government as defined in ORS 190.003, if any, to indemnify, defend (subject to ORS chapter 180), save and hold harmless the State of Oregon and its officers, employees and agents (“Indemnatee”) from and against any and all claims, actions, liabilities, damages, losses, or expenses (including attorneys’ fees) arising from a tort (as now or hereafter defined in ORS 30.260) caused, or alleged to be caused, in whole or in part, by the negligent or willful acts or omissions of Recipient’s contractor or any of the officers, agents, employees or subcontractors of the contractor (“Contractor Tort Claims”). It is the specific intention of the parties that the Indemnatee shall, in all instances, except for Contractor Tort Claims arising solely from the negligent or willful acts or omissions of the Indemnatee, be indemnified by the contractor from and against any and all Contractor Tort Claims. This Section shall survive termination of this Agreement.
- (c) Except for Third-Party Tort Claims and Contractor Tort Claims as provided above, to the extent authorized by law, Recipient shall defend, indemnify, save and hold harmless and release the State, Agency, and their officers, employees and agents from and against any and all claims, demands, suits, actions, proceedings, losses, damages, liability and court awards including but not limited to costs, expenses, and reasonable attorneys’ fees incurred (collectively, “Non-Tort Claims”), related to any actual or alleged act or omission by Recipient, or its officers, employees, contractors, or agents in connection with this Agreement, and the Project, including without limitation, any expenses incurred or amounts paid in connection with an inquiry, investigation, audit or similar proceeding by the Internal Revenue Service, Treasury and any other federal, state, governmental or quasi-governmental body with regulatory jurisdiction arising from the Project or the actions or omissions of Grantee, or its officers, employees, contractors, or agents.
- (d) Notwithstanding the foregoing, neither Recipient nor any attorney engaged by Recipient may defend any Non-Tort Claim in the name of the State of Oregon, nor purport to act as legal representative for the State of Oregon, without first receiving from the Oregon Attorney General in a form and manner determined appropriate by the Oregon Attorney General, authority to act as legal counsel for the State of Oregon, nor may Grantee settle any Non-Tort Claim on behalf of the State of Oregon without the approval of the Oregon Attorney General. If the State of Oregon assumes its own defense, Recipient will be liable for the attorney fees of the State of Oregon, including but not limited to any fees charged by the Oregon Department of Justice. The provisions of this section are not to be construed as a waiver by the State of Oregon, or Agency of any immunity, defense or limitation on damages provided for under Chapter 30 of the Oregon Revised Statutes or under the laws of the United States or other laws of the State of Oregon.

Section 7.08 Time is of the Essence. Grantee agrees that time is of the essence under this Agreement.

Section 7.09 Survival. All provisions of this Agreement set forth in the following sections and all provisions of this Agreement that by their terms are intended to survive shall survive the expiration or termination of this Agreement: Section 3.03, Mis-expended and Unexpended Grant Moneys; Section 6.04, Remedies Upon Default; Section 7, MISCELLANEOUS; and Exhibit A sections 3. (Final Report), 6. (Records and Inspection), 7. (Operations and Maintenance of the Project) and 8. (Publicity).

Section 7.10 Counterparts. This Agreement may be executed in several counterparts, all of which when taken together shall constitute one agreement binding on all Parties, notwithstanding that all Parties are not signatories to the same counterpart. Each copy of this Agreement so executed shall constitute an original.

Section 7.11 Severability. If any term or provision of this Agreement is declared by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining terms and provisions shall

EXHIBIT C

not be affected, and the rights and obligations of the Parties shall be construed and enforced as if this Agreement did not contain the particular term or provision held to be invalid.

Section 7.12 Relationship of Parties. The Parties agree and acknowledge that their relationship is that of independent contracting parties, and neither Party hereto shall be deemed an agent, partner, joint venturer or related entity of the other by reason of this Agreement.

Section 7.13 Headings. The section headings in this Agreement are included for convenience only, they do not give full notice of the terms of any portion of this Agreement and are not relevant to the interpretation of any provision of this Agreement.

Section 7.14 No Third Party Beneficiaries. Grantor and Grantee are the only parties to this Agreement and are the only parties entitled to enforce its terms. Nothing in this Agreement gives, is intended to give, or shall be construed to give or provide any benefit or right, whether directly, indirectly or otherwise, to third persons.

Section 7.15 Duplicate Payment. Grantee shall not receive duplicate payments from another entity for expenses invoiced to the Grantor.

Section 7.16 False Claims Act. Grantee will refer to the Grantor any credible evidence that a principal, employee, agent, contractor or other person has submitted a false claim under the False Claims Act (31 USC 3729-3733; ORS 180.750-180.785) or has committed a criminal or civil violation of laws pertaining to fraud, conflict of interest, bribery, gratuity or similar misconduct involving funds provided under this Grant Agreement.

Section 7.17 Cooperation. The Grantor and Grantee acknowledge that as the Project progresses, aspects of the Project captured in the Exhibits may need to be adjusted and refined through the amendment process, and that the ultimate success of this Project requires the cooperation of both Parties. Grantor and Grantee both agree to use good faith efforts and their best professional judgment to resolve any issues that may arise during the course of the Project.

Section 7.18 Dispute Resolution. The Grantor and Grantee shall attempt in good faith to resolve any dispute arising out of this Agreement. In addition, the Grantor and Grantee may agree to utilize a jointly selected mediator or arbitrator (for non-binding arbitration) to resolve the dispute short of litigation.

EXHIBIT C

THE PARTIES, by execution of this Agreement, hereby acknowledge that their signing representatives have read this Agreement, understand it, have full power and authority to bind their respective Party and agree to be bound by the terms and conditions of this Agreement.

GRANTEE

City of Tualatin, by and through its Governing Body

By 
Name: Sherilyn Lombos
Title: City Manager

Date 2/17/2026

By _____
Name:
Title:

Date _____

APPROVED AS TO LEGAL SUFFICIENCY
(If required in local process)

By _____
Grantee's Legal Counsel

Date _____

Grantee Contact:

City of Tualatin
Attn: Nic Westendorf
10699 SW Herman Road
Tualatin, OR 97062
Phone: (503) 691-3673
Email: nwestendorf@tualatin.gov

GRANTOR



STATE OF OREGON, by and through its
Water Resources Department

By _____
Name: Lisa Snyder
Title: Administrative Services Administrator

Date 03/03/2026

APPROVED AS TO LEGAL SUFFICIENCY

(For funding over \$250,000)

By: Zoey Kohn via email
Assistant Attorney General

Date 12/8/2025

Grantor Contact:

Oregon Water Resources Department
Attn: Louisa Mariki
725 Summer St NE, Suite A
Salem, OR 97301-1266
(503) 979-9160
OWRD.Grants@water.oregon.gov

EXHIBIT A

CONDITIONS OF AGREEMENT

The following conditions apply to the implementation of this Agreement:

1. **Permits and Regulatory Approvals.** Prior to disbursement of any Grant moneys for any activities requiring a permit or regulatory approval, the Grantee must obtain all permits and regulatory approvals from local, state, or federal agencies or governing bodies necessary to perform its obligations under this Agreement and provide a copy to the Grantor. Satisfaction of the condition related to permits and regulatory approvals precedent to disbursements is set forth in Section 2.05(e).
2. **Semi-Annual Progress Reports.** Between the Effective Date and the Expiration Date, the Grantee shall provide the Grantor with a progress report two times per calendar year (due January 31 and July 31). The Grantee will use the forms provided by the Grantor, which will include information regarding the expenditure of the Grant moneys, compliance with the terms of this Agreement, progress toward completion of the Project as documented in the Exhibits, and a narrative on the activities completed as part of the Project.
3. **Final Report.** No later than July 15, 2027, the Grantee shall file with the Grantor a signed Final Report. The Final Report must be completed on a form provided by the Grantor that will require a summary of the Project as completed.
4. **Release of Reports.** All reports that the Grantor determines to be final and complete will be made available to the public.
5. **Project Inspection.** During implementation of the Project and any time prior to Grantor approval of the Final Report, the Grantee shall permit the Grantor to inspect, at any reasonable time, the property, both real and personal, all work done, labor performed and materials furnished in connection with the activities financed with Grant moneys.
6. **Records and Inspection.** Grantee shall keep proper books of account and records on all activities associated with the Grant including, but not limited to, books of account and records on expenditure of the Grant moneys and on the activities financed with the Grant moneys. Grantee will maintain these books of account and records in accordance with generally accepted accounting principles and shall retain the books of account and records until the latest of (i) six years after the Expiration Date; or (ii) the date that all disputes, if any, arising under this Agreement have been resolved. Grantee will permit Grantor, the Secretary of State of the State of Oregon, or their duly authorized representatives to inspect and to review and make excerpts, transcripts and copies of its books of account and records with respect to the receipt and disbursement of funds received from Grantor, including, without limitation, its records regarding receipts, disbursements, contracts, investment of Grant moneys, if any, and any other matters related to the use of Grant moneys or Project work. Access to these books of account and records is not limited to the required retention period. The authorized representatives shall have access to these books of account and records at any reasonable time for as long as the records are maintained.
7. **Operation and Maintenance of the Project.** Until ten (10) years after the Expiration Date, Grantee shall monitor, evaluate, operate, and maintain the Project, or cause the Project to be operated and maintained, in good repair and operating condition so as to preserve the long-term

public benefit of the Project, including making all necessary and proper repairs, replacements, additions and improvements to the Project.

8. **Publicity.** Grantee shall make every effort to acknowledge and publicize the State or Oregon's (Oregon Water Resource Department) participation and assistance with the project. Upon completion of the Project, Grantee shall post a permanent sign at the Project site or other location approved by Grantor, acknowledging the participation of the State of Oregon (Oregon Water Resources Department) in the Project. Grantee shall maintain the sign throughout the life of the project. Signage content must be approved by Grantor to be eligible for reimbursement as an eligible Project cost.
9. **Cultural Material.** If any cultural material is discovered during Project activities, all work should cease immediately (ORS 97.745 and ORS 97.750) until a professional archaeologist can assess the discovery, and Grantee shall immediately notify the Oregon State Police, the Water Resources Department, the Legislative Commission on Indian Services, the appropriate Tribe(s), and the State's Historic Preservation Office (SHPO). Additionally, in the case of cultural material discovery, Grantee shall prepare a report of the Project outlining the results of the archaeological monitoring and submit its report to SHPO for inclusion in SHPO's resource library and GIS database.
10. **Taxes and Assessments; Utilities.** Grantee shall pay, or cause to be paid, all taxes, utility charges and governmental charges of any kind whatsoever that may at any time be lawfully assessed or levied against or with respect to the Project. If any governmental charges may lawfully be paid in installments over a period of years, the Grantee may pay, or cause to be paid, those charges in installments. The Grantee may contest, or permit to be contested, in good faith the validity or application of any tax, utility charge or governmental charge in any reasonable manner, so long as the contest does not subject any portion of the Project to loss or forfeiture.
11. **Certification of Compliance with Laws.** Grantee hereby certifies that it has complied, and agrees that it shall comply, with all applicable federal, state, and local laws, regulations, executive orders and ordinances related to expenditure of the Grant moneys and the activities financed with the Grant moneys. Without limiting the generality of the foregoing, Grantee expressly agrees to comply with (a) Title VI of the Civil Rights Act of 1964, (b) Section V of the Rehabilitation Act of 1973, (c) the Americans with Disabilities Act of 1990 and ORS 659A.142, (d) all regulations and administrative rules established pursuant to the foregoing laws, and (e) all other applicable requirements of federal and state civil rights and rehabilitation statutes, rules and regulations.
12. **Work Products and Intellectual Property.** Any work products developed using Grant moneys will remain in the public domain and cannot be used for proprietary purposes.
13. **Engineering Reviews.** If requested by the Grantor, the Grantee shall provide any engineering or other Project documentation for the review and approval by the Grantor prior to Project implementation.

EXHIBIT C

EXHIBIT B
The Grant Budget

The Grant Budget is as follows:

Budget Categories	Approved Budget
Staff Salary/Benefits	\$0
Contractual/Consulting	\$1,750,000
Supplies	\$0
Materials	\$0
Travel	\$0
Equipment	\$0
Other:	\$0
Subtotal of Grant Funds	\$,1750,000
Match Funding – Expenditures from sources other than those managed by the Grantor	\$0
Grand Total	\$,1750,000

EXHIBIT C
Project Description

The Grantee shall install seismic valving infrastructure at six of the City's water reservoirs. The grant will be used for design work, asset/infrastructure costs, and construction costs to help ensure that potable water will remain in the City's water distribution system in the event of a large-scale earthquake, that can damage pipes and cause loss in pressure and drainage of water from the system. Grant funds shall only be used for the costs of contracted work necessary to accomplish the following tasks in relation to the Tualatin Water Reservoir Seismic Valve installation as detailed as follows:

Project Tasks

Task 1. *Project Scoping*

- Task Description – *This task includes:*
 - Collaborate with a design firm (selected from the City's Qualified Pool List) to scope the seismic valve project based on available budget, operational needs, and desired outcomes.
 - Determine the configuration of the seismic valve system, including:
 - Manufacturer and model selection
 - Valve style and connection to the reservoir
 - Backup power requirements
 - Use of localized or regional seismic alert systems
 - Integration with the City's SCADA system
 - Conduct site visits with the design firm to assess existing conditions and inform system design.

Task 2. *Project Design*

- Task Description – *This task includes:*
 - Develop engineered plans for seismic valve setups at each reservoir, based on configuration decisions completed during Task 1 (scoping phase), following a design 30% – 60% – 90% design trajectory with incremental adjustments made throughout the process based on City feedback and other discoveries.
 - Design the configuration for seismic valve integration with the City's SCADA system to control the valve operation in the event of a seismic event.
 - Determine and set up a regional alert system (e.g., ShakeAlert) if the City elects to use one. Incorporate the setup and configuration planning into the design process.

Task 3. *Asset/Equipment Purchase and Installation*

- Task Description – *This task includes:*
 - Purchase equipment and materials required for seismic valve installation after finalizing specifications.
 - Prepare and issue a request for bids to install seismic valves and associated infrastructure, following the State of Oregon's public contracting requirements.
 - Select a contractor through the full solicitation process and develop a construction schedule.

EXHIBIT C

- Implement installation site by site to optimize efficiency and mobilization. Construction will be scheduled during low-demand months (winter to early spring) to minimize operational risks associated with reservoir shutdowns or flow disruptions.

Task 4. *Startup and Commissioning*

- Task Description – *This task includes:*
 - Initiate system startup following installation of seismic valves and actuator equipment. This involves testing equipment, integration with the City's SCADA system, and configuration with the Shake Alert regional detection system, if selected.

EXHIBIT C

EXHIBIT D

PERMITS AND REGULATORY APPROVALS

Section 2.05(e) of this Agreement outlines requirements for disbursement of Grant moneys related to permits and regulatory approvals. Exhibit A Conditions of Agreement may contain additional conditions with respect to permitting, licensing, and regulatory approvals and the disbursement of Grant moneys.

Before the disbursement of Grant moneys for activities requiring a permit or regulatory approval, or for activities dependent on portions of the Project for which a permit or regulatory approval has yet to be issued, the Grantee must submit to the Grantor copies of all required permits or regulatory approvals or submit written evidence acceptable to the Grantor that permits or regulatory approvals are not required.

Grantor may disburse Grant moneys for Project tasks that do not require a permit or regulatory approval. To be considered for release, the Project task(s) for which no permits or regulatory approvals are required shall not be dependent on the portion of the Project for which a permit, license or regulatory approval has yet to be issued.

The following list of permits and regulatory approvals is not exhaustive. Grantee understands and agrees that it is Grantee's responsibility to determine which permits and regulatory approvals are required for the Project.

The following lists the Project activities that require permits or regulatory approvals and the associated permit(s)/regulatory approvals(s). By its signature on this Agreement, the Grantee certifies to Grantor that the following is a complete and accurate list of the Project components requiring permits or licenses and the associated required permits or licenses.

Project Task Requiring Permit/Regulatory Approval	Permit/Regulatory Approval Name and Entity Issuing
Task 3. Asset/Equipment Purchase and Installation	Electrical Permits – Washington County


Grantee Signature

2/17/2026
Date