DATE: July 2, 2024

TO: Clean Water Services Advisory Commission Members
and Interested Parties

FROM: Elizabeth Edwards, Chief of Staff

SUBJECT: **INFORMATION FOR JULY 10, 2024, CWAC MEETING**

A Clean Water Services Advisory Commission (CWAC) meeting is scheduled for **Wednesday, July 10, 2024, at Fernhill at 1399 SW Fern Hill Road, Forest Grove, Oregon, 97116.** Clean Water Services staff will lead a tour of the Fernhill Natural Treatment System, which will include a lengthy walk on uneven surfaces along with traversing stairs and inclines. Participants should dress for the weather; closed-toed shoes are recommended.

We will not be offering a virtual connection for this meeting.

Dinner will be served for CWAC members at 5:30 p.m. at the Fernhill picnic shelter. Please notify Katie Ragsdale **(ragsdalek@cleanwaterservices.org; 503.681.5116)** by Wednesday, July 3, **if you are unable to attend** so food is not ordered for you.

The CWAC meeting packet will be emailed to Commission members and posted to the CWAC section of the Clean Water Services' website.

Enclosures in this packet include:

- July 10, 2024, agenda and Fernhill brochures (no PowerPoints)
- Map to July 10 meeting location
- June 12, 2024, meeting summary

Clean Water Services Advisory Commission

July 10, 2024
AGENDA

5:30 p.m. **Dinner served for CWAC members at Fernhill picnic shelter**

1399 SW Fern Hill Road, Forest Grove

6:30 p.m. **Welcome and Introductions**

6:35 p.m. **Review and Accept Summary of June 12, 2024, Meeting**

6:45 p.m. **Singapore International Water Week 2024 and Laos Partnership Update**

Clean Water Services kicked off a partnership with a water utility in Laos on November 23, 2021, as part of the U.S. Water Partnership's U.S. Association of Southeast Asian Nations (ASEAN) Water Smart Engagement Program. The partnership allows the utilities to share ideas, improve water security, and increase the flow of goods, services, and technologies. Last month, after CWS staff attended the annual International Water Week in Singapore, they traveled to Laos to present a Natural Treatment System final concept design to support improved water quality for the capital city, Vientiane. This was the third visit to Laos for CWS staff and concludes this round of funding for the US Water Partnership. Staff will share updates from this recent visit to Singapore and Laos.

- Jared Kinnear, Reuse Manager

Requested Action: Informational

7:05 p.m. **Tour of Fernhill Natural Treatment System**

Staff will provide an overview of CWS' Fernhill Natural Treatment System (NTS) and connect June's CWAC discussion about reuse water with its benefits to Fernhill's NTS. Fernhill is part of more than 700 acres in Forest Grove owned by Clean Water Services for water resources management. Fernhill utilizes natural treatment systems, or wetlands, to improve water quality by removing nutrients, cooling, and naturalizing the water after conventional treatment. Fernhill is designated an Important Bird Area and is home to beavers, frogs, coyotes, and other wildlife.

- Jared Kinnear, Reuse Manager
- Bob Baumgartner, Regulatory Affairs Director

Requested Action: Informational

7:45 p.m. **Invitation for public comment**

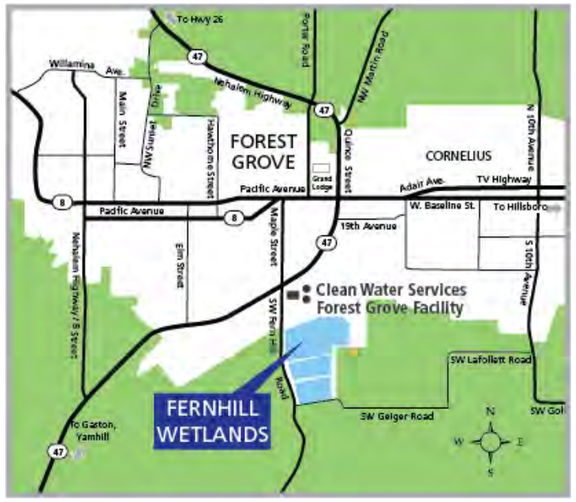
7:50 p.m. **Announcements**

7:55 p.m. **Adjourn**

Next meeting: **August meeting is cancelled; September 19th BBQ & Paddle**


CITY OF FOREST GROVE
Poplar Ln
47
RIPL BUILDING
Poplar Ln
Picnic shelter to ripl:
0.9 Miles (3 min drive)
ripl (former TTM Building)
1585 Poplar Street, Forest Grove
SW Fern Hill Rd
FOREST GROVE WATER RESOURCE RECOVERY FACILITY
Taylor Way
WATER GARDEN
NUTRIENT FILTER
0.7 MILES
DABBLERS MARSH
RESEARCH WETLANDS
0.40 MILES
VISITOR STATION
VOLUNTEER STATION
Meeting Spot:
Picnic shelter at
Fernhill Wetlands
1399 SW Fern Hill Rd,
Forest Grove
FERNHILL LAKE
0.25 MILES
0.25 MILES

VISITING



OPEN DAWN TO DUSK
1399 SW Fern Hill Road
Forest Grove, OR 97116

The parking lot, trails, picnic shelter, and restroom (with a drinking fountain and potable water tap) are open to the public from dawn to dusk. The picnic shelter is available on a first-come, first-served basis. Reservations are not accepted. Picnic shelter and tables are ADA-accessible.

The main loop around Fernhill Lake is 1.1 miles. Trails are paved only near the parking lot, restroom and shelter. Please leave bikes in the racks, and be mindful not to disturb bird-watchers and photographers.

Even the best behaved dogs may be a threat to the birds and wildlife that nest, rest and feed at Fernhill. Please leave your pets at home.

fernhillnts.org | 503.681.3600

FERNHILL TIMELINE

2006
Clean Water Services acquires 187 acres, including Fernhill Wetlands

2008
First Fernhill Master Plan developed by Clean Water Services

2009
Portland Audubon designates Fernhill as an Important Bird Area

2012
Several acres of asphalt are converted to wetlands for testing natural treatment systems

The Water Garden is built, providing respite to people and habitat for waterfowl, also plays a role in the natural treatment systems

First Birds & Brew event is hosted by the Fernhill Wetlands Council

2014
Construction of the South Wetlands converts 90 acres of sewage lagoons into natural treatment systems

2015
South Wetlands created, including more than three billion seeds and 750,000 native plants

2016
Volunteer Stewards Program launches

2017
Nutrient Filter built, allowing cleaned water to travel through the wetlands year round

Paseos Verdes Watershed Health Walks established in partnership with Bienestar

For the 15th year in a row, the Forest Grove treatment facility earns a Platinum Peak Performance Award from the National Association of Clean Water Agencies

2018
Parking lot improvements complete

2019
Research projects launch (floating wetlands, Denitrification wetlands)

2020
Visitor and volunteer buildings constructed, trails extended along Fernhill lake

WHAT'S NEXT?
Visitor amenities, research projects, education opportunities and more!

Clean Water Services

FERNHILL
Clean water, naturally

FOREST GROVE OREGON
A place where businesses and families thrive

FERNHILL
Clean water, naturally

"Together we are creating a legacy for our communities and region."
- Diane Taniguchi-Dennis, CEO, Clean Water Services

WHAT IS FERNHILL?

Fernhill is part of more than 700 acres in Forest Grove owned by Clean Water Services for water resources management. Fernhill utilizes natural treatment systems, or wetlands, to improve water quality by removing nutrients, cooling, and naturalizing the water after initial treatment at the Forest Grove facility. In the summer, five million gallons of water are cleaned each day at Forest Grove and then Fernhill before flowing to the Tualatin River.

In 2014, 90 acres of old sewage lagoons were transformed into treatment wetlands by draining the ponds, then drying and excavating more than 200,000 cubic yards of soil into precise contours and depths. Using 15 control structures and 2,400 feet of piping, the water was managed to encourage the growth and establishment of more than one million native wetland plants and four billion seeds, planted both for water quality and for habitat. Birds and wildlife have taken to the 180 logs and snags that were anchored into place, and human visitors are enjoying the 1.1 mile loop around Fernhill Lake, trail improvements, outdoor meeting areas and wildlife watching.

DESIGN AND PLANNING

For the past several years, Clean Water Services staff and consultants have worked extensively on the design and construction of the natural treatment wetlands at Fernhill. The Natural Treatment System (NTS) has been designed with precise depths, slopes and channels in order to guide water through wetland plants and soil to further cleanse, cool and naturalize water before it's returned to the Tualatin River.

OPTIMIZING PROJECT COSTS

Wastewater treatment during the summer at Forest Grove is not possible without modifications to the treatment facility. Instead of investing in concrete and steel infrastructure at Clean Water Services' Rock Creek Facility to treat these flows, the NTS at Fernhill was developed to provide an "ecosystem process" that adds capacity to conventional treatment systems. The NTS acts as a bridge from conventional wastewater treatment to river discharge. The project meets all federal and state permit requirements. Offset project costs for treating the water naturally is roughly $13 million.

TREATMENT

CONVENTIONAL WASTEWATER TREATMENT

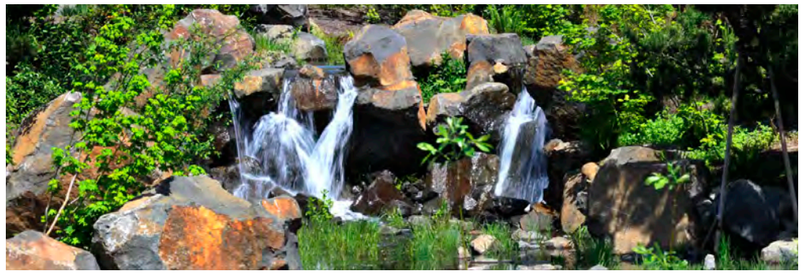
On an average summer day, five million gallons of used water from homes and businesses in Forest Grove, Cornelius, Gaston and parts of Hillsboro are treated at the Forest Grove Wastewater Treatment Facility. The conventional treatment process takes about 24 hours.

NATURAL TREATMENT STYSTEM

The Natural Treatment System (NTS) creates an ecological bridge between the treatment facility and the river, where water is cleansed further, cooled and naturalized before its return to the river.

THE WATER GARDEN

For a natural treatment system to function, oxygen must mix into the water. At Fernhill, freshly aerated water tumbles to Fernhill Lake through a water garden of artfully placed boulders, pine trees and graceful arched bridges.



Hoichi Kurisu, an international landscape architect acclaimed for creating healing gardens, designed the water features, arched bridges and garden areas for beauty and solace. To achieve the desired impact, he selected 1,500 tons of boulders from a local quarry to complement 30-year-old contorted pines that he had grown. These were precisely positioned. Two bridges, constructed of Douglas fir, complete the effect.

"In our busy, stressful lives, a restorative garden offers glimpses of a butterfly, a tree, a waterfall as a way to reconnect to our nature."

- Hoichi Kurisu, Landscape Architect

PLANTS AND WILDLIFE

Fernhill is a great place to see the connections between water, plants, birds and wildlife. The diversity of native plants at Fernhill provides long-lasting benefits for aquatic invertebrates, pollinators, amphibians and reptiles, waterbirds, songbirds and raptors, and mammals.

BIRDS

Fernhill is an important stopover area for wintering waterfowl and migrating birds traveling the Pacific Flyway. Designated as an Important Bird Area by the Portland Audubon Fernhill is widely known as a premier bird-watching and photography destination in Oregon. Depending on the season, visitors may see a variety of waterfowl species, flocks of migrating songbirds, herons and egrets, bald eagles nesting in the trees, or shorebirds foraging on the mudflats.

NATURAL TREATMENT SYSTEMS & HABITAT

One of the benefits of transforming Fernhill from sewage ponds into natural treatment systems is increased habitat for birds and wildlife. The addition of native wetland plants, logs and snags has the added advantage of providing critical habitat for a variety of bird species, from secretive marsh birds such as Sora and Virginia Rail, to wetland and riparian songbirds including Common Yellowthroat, Marsh Wren, and Red-winged Blackbird, as well as a variety of wintering waterfowl. The greater Fernhill site also supports a variety of raptors, including Bald Eagle, Peregrine Falcon, and the occasional Northern Harrier.

In the spring of 2015, CWS began working with the Portland Audubon to understand how the birds are responding to the creation of the NTS at Fernhill. Utilizing a unique cadre of expert birders, Audubon has been coordinating a community science effort to collect data on bird diversity and abundance within the NTS portion of the Fernhill site. Surveyors record the birds they see or hear and record data in an eBird Hotspot created for this effort. Surveys will continue in 2018-19. A final report is expected in December of 2019.

AN OASIS IN THE MOST UNLIKELY PLACE

FERNHILL
Clean water, naturally

By Diane Taniguchi-Dennis, Clean Water Services August 7, 2015

In providing clean water to more than half million customers in Oregon's Tualatin River Watershed, Clean Water Services, a water resources management utility, takes an approach that extends well beyond the silos of wastewater, stormwater, and permit requirements to consider the overall needs of the watershed. Their water solutions not only serve people, but the non-human constituents that comprise critical components of the region's ecology. In the process, they not only improve water quality, but connect people to the ecosystems that surround and support them, and provide new opportunities to enjoy nature. An example is Fernhill, a 700-acre property owned by Clean Water Services for the management of water resources. Located near the confluence of Gales Creek and the Tualatin River, Fernhill combines a state-of-the-art wastewater treatment facility with a mosaic of riparian wetlands, and a network of public walking trails and spaces. The wetlands, which naturally cool and provide an additional treatment to the water once it is disinfected, add habitat, ecological function, and recreational opportunities. Despite the fact that it is wastewater treatment site, Fernhill Wetlands is beloved by birdwatchers, hikers, and nature lovers. Fernhill Wetlands is an oasis–not only for migratory birds traveling the Pacific Flyway, but for people seeking to immerse themselves in nature and escape the noise and stress of urban life. Biohabitats worked with Clean Water Services to convert three former sewage lagoons into riparian wetlands, and we're delighted to share this guest blog post by Clean Water Services Deputy General Manager, Diane Taniguchi-Dennis.

The first word uttered by many visitors on tour to Fernhill for the first time is often a heartfelt "Wow!" This reaction is usually followed by a puzzled look when we explain that what they see before them is a natural wastewater treatment system at work. They are puzzled because what they see before them is a lovely, expansive wetland that does not look like a 'treatment' system.

The used water from our cities is first treated by a state-of-the-art treatment facility and the cleaned water is disinfected prior to entering into Fernhill Wetlands. Most people understand the purpose of a concrete and steel treatment facility. What they do not always realize is that the treated, sterilized water is actually warm, and has nutrients remaining, and that fish in the Tualatin River require cooler water to survive and flourish.

Fernhill is an "ecological bridge" because it lets nature interact with the treated water before it is released back to the Tualatin River. The wetlands naturally cool the water and cycle the nutrients and other constituents. Fernhill water interacts with the complex organisms in the soil and aquatic plants that are powered by the sun.

Nature is also making Fernhill its own space. At full operation, Fernhill will release this naturalized water, along with seeds from native plant species, to the river. Fernhill transforms traditional wastewater treatment into becoming a new, vibrant heartbeat that seeds the river basin with the native plants as it pulses with naturalized water.

Everything on the Earth cycles between the land, air, water, and through all life–plants, bugs, bunnies, bees, and ultimately within ourselves. Fernhill Wetlands put the urban water cycle into human context through direct experience to create the understanding that what we put down the drain in our urban area matters to people and to nature. The investments we make as a community in our public infrastructure matter.

And it's not just about healthy water. It's about healthy and mindful living.

As we leave our cars in the Fernhill parking lot and begin to walk on the path toward the water garden, our sense of hearing is drawn away from the sounds of a busy city to the peaceful song of birds.

With the crunch of gravel in every step we take, and with each exhale, the stress of the day begins to release itself. Our sense of space and feelings of crowdedness expands at Fernhill in a view framed by a sky blue horizon, mountains, wetlands, and trees. Our attention is distracted from urban life by watching the elegant stillness of blue herons in repose patiently hunting for a fish, or by the bald eagle swooping from great heights to catch its prey invisible to our eyes, or the coordinated lift of hundreds of honking geese from Fernhill Lake, or the dancing flight of a busy dragonfly.

Fernhill is significant because it quietly speaks to the hearts of people who visit and are delighted to find a space for solace and renewal with nature close to home. Fernhill is a significant outdoor learning space for the children who visit–whether it is to conduct science experiments, create their growing personal list of birds to find and watch, or see the comedic antics of a sandpiper chirping, skipping, and pretending to have a broken wing all the while leading them away from her nest. Fernhill Wetlands is a place of wonder for children, and that wonder comes in many forms, from finding the croaking frog hidden in the wetland, to watching the family of ducks with tiny ducklings swimming all in a row, to discovering fascinating rocks and jingling them their tiny pockets as they walk toward a bridge and anticipate throwing them into the sparkling water.

My peers who visit Fernhill often leave with a renewed sense of purpose for their work in the water industry and the environment. The heart connection they make with nature often inspires them to look for opportunities to create a Fernhill of their own. Fernhill not only makes environmental sense, it is more cost effective than expanding the concrete and steel plant to treat nutrients and temperature, and it creates a space that the public can actively utilize for recreation, to exercise and to reduce stress as they connect with nature.

If you were to ask someone if they thought they'd feel renewed, relaxed, and inspired after visiting a wastewater treatment and water reuse facility, what do you think they would say? If you bring them to Fernhill Wetlands, they may very well say, "Wow."

Please visit fernhillnts.org for more information.

Clean Water Services Advisory Commission Meeting Summary

Date: June 12, 2024

Location: CWS Administration Building Complex and on Webex (link to recording)

CWAC MEMBERS PRESENT

- Alex Phan (District 1/Fai), Commission chair
- Andy Haugen (District 4/Willey)
- Ashley Farrell (Business 1)
- Elaine Stewart (Environment 1)
- Glenn Fee (Environment 2)
- Marc Farrar (/Developer 1) (remote)
- Matt Wellner (Builder/Developer 2), Commission vice chair
- Nisha George (At-Large District/Harrington)
- Stu Peterson (Business 2)
- Terance Song (District 3/Rogers)
- Diane Taniguchi-Dennis (Clean Water Services Chief Executive Officer/nonvoting)

CWAC MEMBERS ABSENT

- Alan Jesse (Agriculture 2)
- George Marsh (Agriculture 1)
- Ramesh Krishnamurthy (District 2/Treece)
- Sherilyn Lombos (Cities/nonvoting)

MEMBERS OF THE PUBLIC

- Dale Feik, Chair of Washington County Citizen Action Network

CWS STAFF

- Joe Gall, Chief Utility Relations Officer
- Elizabeth Edwards, Chief of Staff
- Tracy Rainey, Government Relations Manager
- Jared Kinnear, Reuse Manager
- Scott Mansell, Principal Engineer - Research
- Logan Olds, Chief Utility Operations Officer
- Jack Liang, Chief Business Operations Officer
- Stephanie Morrison, Administrative Program Manager
- Shannon Huggins, Public Involvement Coordinator
- Katie Ragsdale, Executive Assistant
- Jody Newcomer, Technical Editor & Communications Specialist
- Anh Le, Management Analyst
- Brandi Sahfeld, Administrative Assistant
- Jess Owen, Graphic Designer
- Josh Bernier, Senior Information Technology Technician

1. CALL TO ORDER

The meeting was called to order at 6:32 p.m.

2. WELCOME AND INTRODUCTIONS ..... 00:00 on recording

3. REVIEW OF MEETING SUMMARY ..... 04:52 on recording

- The summary from the April 10, 2024, meeting was accepted.

4. SCOGGINS DAM UPDATE ..... 05:10 on recording

Tracy Rainey, Government Relations Manager

Staff will provide an update on the Scoggins Safety of Dams project, including the anticipated timeline and identifying key issues still in progress.

Questions and Comments

- There was concern about the amount of aggregate we'd need. Is the new design expected to be more rock? Is the fill going to be earthen berms or aggregate? 23:00
- The aggregate market is tight in this area. How much will this affect the aggregate market? 23:50
- What's a shear key? What's the material? 24:58
- Is there a big pipe coming out for drinking water? 25:30
- Is anyone's private property being affected by this? 26:06
- Who's the chief engineer? 27:03
- Are they going to revegetate the borrow areas? 27:20
- Is the public aware of the CWS cost share? 31:57

Questions for CWAC 32:45

- What do CWAC members think about the 2020 repayment analysis (specifically, the cost share for CWS)?
- Should CWS pursue opportunities to reduce its portion of the cost share through Reclamation or our federal delegation?
    - Note: we would strive to ensure that a reduction in our portion does not result in an increase for another local partner.

- Have you had conversations with (the Department of Fish and Wildlife) and listed fish species in the river and the value of that water? 37:48
- Is there a precedent where they've taken a similar approach for a cost share? 39:33
- If you pursue opportunities to reduce the share owed to the Bureau of Reclamation, that's what would push costs to our partners. Is the tactic to ask the federal delegation to increase the federal share of the project? 40:48

- It is startling to see CWS is pulling 25% of the water and the analysis shows it's responsible for 50%. Irrigation uses are 50% of the water and 25% of the cost. If there are remedies available for irrigation relief for those costs, let's push back. ... 42:24
- What are the politics? It sounds like you'll be thrust in a position of being not very popular. 43:22
- Are the other partners expecting to raise rates to cover their costs? 44:39
- Would irrigation be taking the biggest hit in relation to its clientele? 45:50
- How are you planning to educate people about the cost share and rising price? 47:02
- This is not a condition precedent, right? It's not going to stop the project if we can't agree. 49:17
- Fish and Wildlife Services and federal agencies do have responsibility for recovery of listed species. I think there should also be an opportunity for leverage to federalize some of that. 49:42
- What is the lifetime of this fix? 50:27

➢ Motion: Matt Wellner moved for bullet number 2 on slide 14. Elaine Stewart seconds. The motion passes.

5. PUBLIC COMMENT ..... 55:05 on recording

Dale Feik spoke about a presentation by the Bureau of Reclamation and maps showing where water would go if the dam breaks, water temperature, and compliance with water temperature.

6. ANNOUNCEMENTS, QUESTIONS, COMMENTS ..... 57:35 on recording

- Art Larrance, a former member of CWAC, died in late May. Larrance was a leader in the brewing industry and instrumental in advancing the conversation about reuse by using it to make beer.
- The next meeting is July 10 at Fernhill. There will not be a meeting in August. In September, CWAC will meet for a cookout and paddle with the Board of Directors.

7. REUSE & TOUR OF THOMAS DAIRY ..... 59:25 on recording

Jared Kinnear, Reuse Manager
Scott Mansell, Principal Engineer - Research

Staff will provide an overview of CWS' Reuse program and research projects and will lead a tour of a reuse pilot project by walking a short distance to CWS' Thomas Dairy property, adjacent to the Durham treatment facility and Cook Park.

- Water quiz: How well do you know water?..... 59:45

Questions and Comments

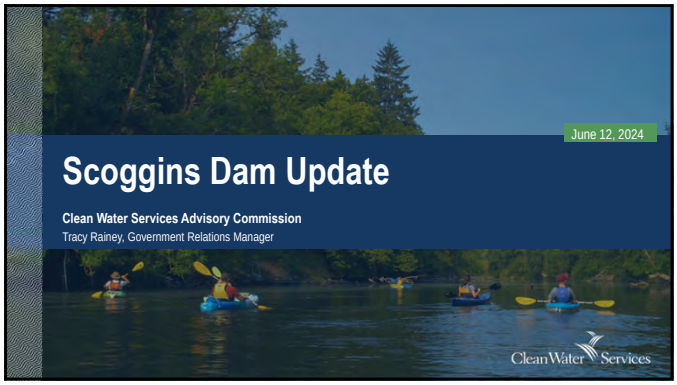
- Is there a value in the restoration work, such as mitigation credits? 1:36:00

Questions for CWAC 1:36:39

- Based on what we've shared, do you think reuse is an acceptable water quality approach for CWS?
- If you have any concerns about reuse, is there confidence that CWS is employing good science?
- How do you feel about reuse as an environmental restoration tool?
- Do you support having broader reuse rules to allow for innovative and more flexible allowances in the future? ?
-

8. TOUR OF THOMAS DAIRY

- Recording stopped at 8:10p stopped for tour.

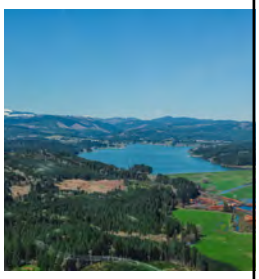


Presentation Overview:

- Overview of Tualatin Project (Scoggins Dam/Hagg Lake)
- History of joint project
- Safety of Dams project update
- Policy and advocacy update

Project Authorization & Project Purposes

- 1966: Project initially authorized by Congress
- Authorized as the "Tualatin Project"
  - Project includes Scoggins Dam, Henry Hagg Lake, Patton Valley Pumping Plant, Spring Hill Pumping Plant, booster pumping plants, and piped lateral distribution systems
- Authorized project purposes
  - Irrigation, municipal and industrial, water quality protection, flood control, recreation, and conservation of fish and wildlife resources
- Local repayment partners (reimbursable)
  - Tualatin Valley Irrigation District
  - Cities of Beaverton, Hillsboro, and Forest Grove
  - Clean Water Services



Stored Water Uses

- Allocation of stored water (53,600 acre-feet)
  - Drinking water to over 400,000 individuals
    - Cities of Hillsboro, Forest Grove, Beaverton
    - Approximately 25% of the stored water (~13,500 acre-feet)
  - Irrigated agriculture for ~17,500 acres
    - Tualatin Valley Irrigation District
    - Approximately 50% of stored water (~27,000 acre-feet)
  - Water quality releases
    - Clean Water Services (Clean Water Act permit compliance, including thermal management)
    - Approximately 25% of the stored water (~12,500 acre-feet)
- Additional benefits
  - Flood control for upper basin (50-year storm event)
  - Supports more than 280,000 jobs

Expansion History

2001-2008

Additional water supply studies and feasibility work

- **2001-2004:** Water supply feasibility study
- **2004:** Congressional authorization for Tualatin Basin Water Supply Project

2008-2012

Bureau of Reclamation
Seismic evaluation, draft Environmental Impact Statement (EIS) for expanded storage options

- **2008:** Evaluate seismic risks
- **2009:** Draft EIS for additional water supply options
- **2012:** Complete corrective action study
  - Scoggins identified as among the most seismically threatened dams
  - Shifted project into Safety of Dams program

2013-2020

Joint Project authorization, feasibility

- **2015:** Tualatin Joint Project partnership – congressional authorization
  - Seismic + expanding storage
- **2020:** Joint Project feasibility design
  - Options
    - Seismic only
    - Raise dam
    - Downstream dam

2021: CWS Decides to Forgo Additional Storage

- Public safety, protecting region's primary water supply
- Cost
  - $750 million for dam safety only (85% federal/15% local)
  - Over $1 billion for expanded storage options (CWS cost share = amount beyond dam safety modifications)
- Infrastructure Investment & Jobs Act (2021)
  - Accelerated timeline for dam safety projects
- Thermal modeling
  - Additional stored water alone – not enough for thermal compliance
  - Focus on reuse, shading, optimizing operations, etc.

Project Status

- Project is now a federal project
  - CWS and other repayment partners are "cooperating agencies"
  - Shift in public engagement (Bureau of Reclamation leads)
- Cost update
  - 2024: Updated project cost ($900 million for SOD project)
- Construction timeline
  - 2024: Environmental Impact Statement
  - 2027-28: Final project design estimated to be complete
  - 2029: Start construction
  - 2035: Construction estimated to be complete

usbr.gov/pn/programs/sod/scoggins

Project Status (cont.)

- EIS progress: 2022-2024
  - Environmental compliance completed
  - Environmental studies conducted onsite. Design is developing options for increasing the berm stability and stronger spillway
  - Borrow-area site selection and haul road development – these activities will be visible and potentially disruptive
  - Project "Notice of Intent" published in Federal Register Public scoping meetings
- Updates to economic benefit and repayment analysis (2024)

Economic Repayment Analysis

- Determining allocation of 15% local share among local repayment partners ("reimbursable costs")
- Last analysis completed in 2020 (5-year shelf life)
- 15% of ~$770 million (2020 project cost estimate)
- Reimbursable costs based on net economic benefits (not quantity of water)

SOD Cost allocation by user ($M)

	Reimbursable purpose									Total
	Irrigation*			M&I**			WQC**			
	Hagg Lake releases		Repmt.	Hagg Lake releases		Repmt.	Hagg Lake releases		Repmt.	repayment
User	AF/year	% by user	by user	AF/year	% by user	by user	AF/year	% by user	by user	by user
TVID	17,332	100.0%	$24.9	912	6.3%	$2.1	0	0.0%	$0.0	**$27.0**
JWC	0	0.0%	$0.0	13,027	90.3%	$30.5	0	0.0%	$0.0	**$30.5**
LOC	0	0.0%	$0.0	485	3.4%	$1.1	0	0.0%	$0.0	**$1.1**
CWS	0	0.0%	$0.0	0	0.0%	$0.0	12,230	100.0%	$53.6	**$53.6**
Total	17,332	100.0%	$24.9	14,424	100.0%	$33.8	12,230	100.0%	$53.6	**$112.2**

Repayment Analysis Update Process

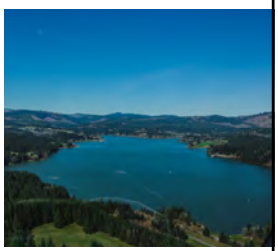
- Meeting with new economist
  - Fall 2023, winter 2024
- Separating fish and wildlife benefits from water quality benefits
  - Fish and wildlife are a separate authorized purpose of project (non-reimbursable)
  - 2020 benefits analysis includes the following on fish and wildlife value:
    - "It is assumed that the quantifiable economic benefits associated with the fish and wildlife purpose are captured in the WQC and recreation benefits analyses sections of this study."
- CWS interested in capturing value of benefit of flow augmentation for fish
  - Potential for federal government credit to CWS?

Advocacy Update

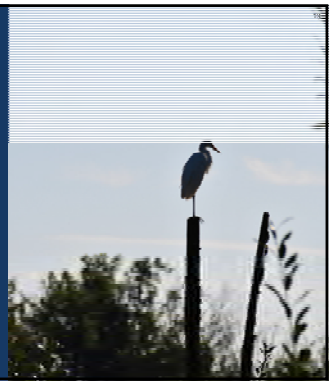
- Scoggins is top priority on CWS federal legislative agenda
  - Continued funding for Safety of Dams program
  - Continuing to stress importance of Scoggins as priority for region/federal delegation
  - Repayment analysis
- Coordination with local repayment partners
- Federal delegation check-ins (~ every 6 months)
  - Monitoring timeline, budget, and public outreach
- Clean Water Services' Board of Directors adopted a resolution to proclaim May 31, 2024, as Scoggins Dam Safety Awareness Day

Questions for CWAC

- What do CWAC members think about the 2020 repayment analysis (specifically, the cost share for CWS)?
- Should CWS pursue opportunities to reduce its portion of the cost share through Reclamation or our federal delegation?
  - *Note: we would strive to ensure that a reduction in our portion does not result in an increase for another local partner.*



Questions?



June 12, 2024

Reuse & Tour of Thomas Dairy

Clean Water Services Advisory Commission

Jared Kinnear, Reuse Manager & Scott Mansell, Principal Engineer - Research & Innovation

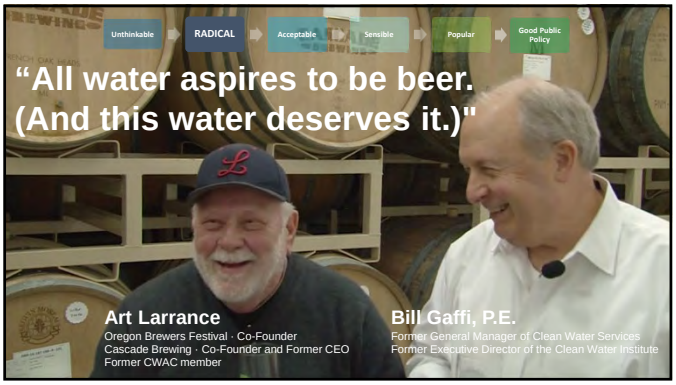
Clean Water Services

Outline

- History of reuse water at Clean Water Services
- Why reuse now?
- Innovative approaches to water quality strategy
- Research on Thomas Dairy
- Soil microbial species profiles
- Continuous soil moisture and groundwater level
- PFAS in soil and groundwater
- Tracer study
- Takeaways and next steps

Unthinkable → RADICAL → Acceptable → Sensible → Popular → Good Public Policy

"All water aspires to be beer. (And this water deserves it.)"



Art Larrance
Oregon Brewers Festival · Co-Founder
Cascade Brewing · Co-Founder and Former CEO
Former CWAC member

Bill Gaffi, P.E.
Former General Manager of Clean Water Services
Former Executive Director of the Clean Water Institute

How Water Reuse Began at CWS (The Why)

- 1991: Regulatory strategy, TMDL phosphorus
  - 1 MGD peak
  - Stable program for past 30 years
- 2013-2019: Pure Water Brew moves from an idea to approved for commercial use (One Water)
- 2020s: Regulatory strategy – thermal management
  - Expand program to 15 MGD
  - Environmental restoration
  - Partnership-driven
  - Diverse water management

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30-Year History of Reuse Water Distribution

- *Class A for customers*
- *Class C for RC/HB/FG 2007-2012*
- *Class A for RC/HB/FG 2014-2015*

Year	MG	Paid	RC/HB/FG
1994	44.70	$3,576.00	0
1995	32.04	$2,563.20	0
1996	28.80	$2,304.00	0
1997	54.77	$4,381.60	0
1998	57.80	$4,624.00	0
1999	71.40	$5,712.00	0
2000	54.22	$4,337.60	0
2001	69.49	$5,559.20	0
2002	86.57	$6,925.60	0
2003	98.55	$7,884.00	0
2004	85.53	$6,842.40	0
2005	76.34	$6,107.20	0
2006	76.10	$6,088.00	0
2007	96.40	$7,712.00	5.58
2008	49.35	$3,948.00	152.42
2009	67.80	$5,424.00	13.43
2010	31.70	$2,536.00	2.28
2011	52.17	$4,173.60	4.25
2012	66.46	$5,316.80	2.60
2013	86.24	$6,899.20	0
2014	73.27	$11,243.73	13.75
2015	90.03	$24,820.15	117.60
2016	60.64	$25,356.92	0
2017	69.40	$36,967.82	0
2018	74.10	$58,843.93	0
2019	56.20	$39,897.66	0
2020	47.72	$46,738.08	0
2021	75.23	$92,350.81	0
2022	68.75	$96,426.31	0
2023	81.66	$110,483.73	0

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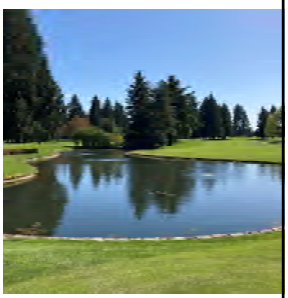
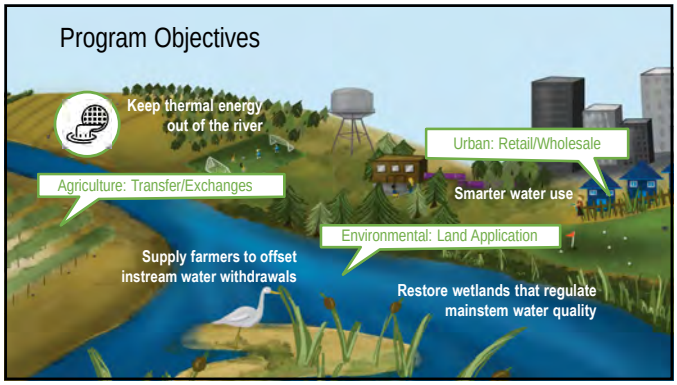
CWS Reuse Facts

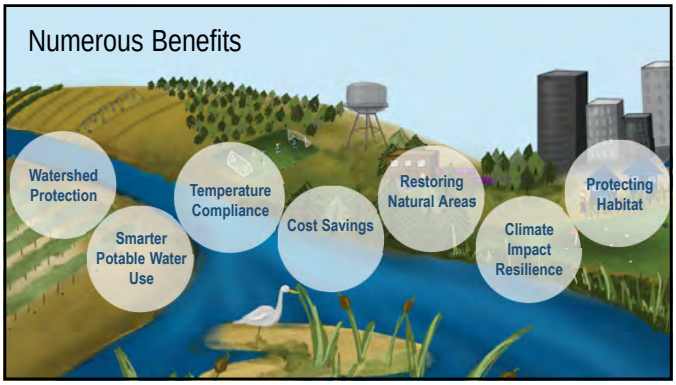
- 2023: Distributed ~82 million gallons of Class A reuse off-site (peak of 1 MGD)
  - ~12 million gallons onsite
- ~200 acres total area
- CWS largest urban producer in Oregon
- Durham Water Resource Recovery Facility producing reuse water since 1993
- Customers: golf courses, schools, wetlands, meadow, athletic field, CWS (onsite irrigation)
- Rock Creek produced reuse water 2014-2015 and 2024 ➡



Program Objectives



Numerous Benefits



Benefits of Reuse for Wetland Restoration

- Increase diversity of wetland plant communities
- Habitat connectivity
- Increase wildlife diversity
- Carbon sequestration
- Economic activity
- Educational opportunities
- Partnerships
- Innovation
- Demand for reuse water

Hurdles to Reuse for Wetland Restoration

- Regulations
  - DEQ – Reuse IMD (internal management directive)
  - Oregon Department of State Lands and US Army Corps of Engineers - Waters of the State
- Agronomic rates
- Unknown impact on soil, groundwater, microbes
- Wetland hydrology restoration tool?

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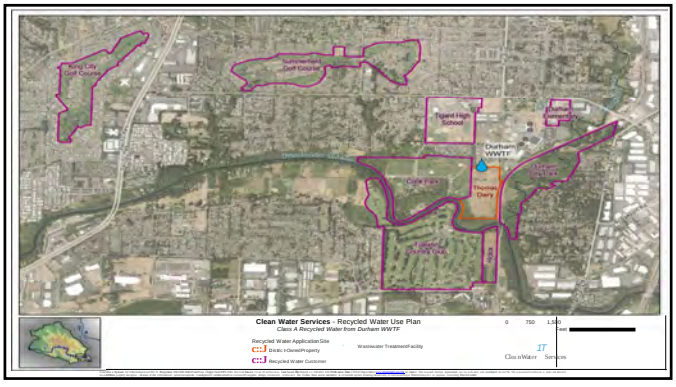
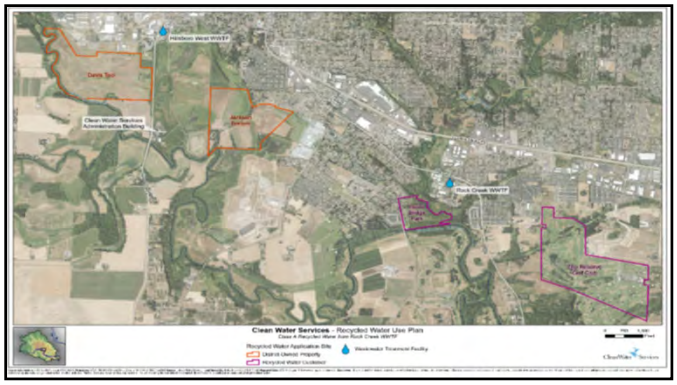
Thomas Dairy

- Goal: Restore area to native vegetation
- Planted in 2008
- Monitoring, research began in 2020
- Reuse irrigation began in 2021
- Major study site
  - Internal and external





Thomas Dairy Wetland Restoration – Reuse Pilot

- Restoring destroyed wetlands
- Irrigation with reuse to replace lost hydrology
  - Not an approved beneficial use in Oregon
- Agreement with DEQ to conduct extensive study to establish a beneficial use
  - Demonstrate benefits and evaluate potential impacts
  - Create consistent, transparent process
  - Narrow focus for future projects
  - Develop data to craft future permits

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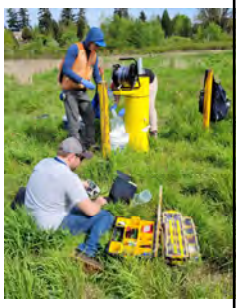
Active Research Parameters at Thomas Dairy

- 2020-present: Wetland vegetation monitoring
- 2020-present: Drone flights
- **2020-present: Soil moisture probes**
- 2020: Avian surveys
- **2022-present: PFAS**
- 2022-present: Carbon sequestration, greenhouse gas fluxes
- 2022: Soil macro/micronutrients
- **2023-present: Groundwater monitoring wells**
- 2023: Soil, water biome RNA/DNA
- 2024-?: Tracer studies



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Thomas Dairy Wells and Soil Monitoring Sites

Legend

- 2023 Soil and Well Sample Locations
- 2022 Soil Sample Locations
- Reuse Irrigation lines

NRCS Soil Type

- Cove Clay
- McBee Silty Clay Loam
- Wapato Silty Clay Loam

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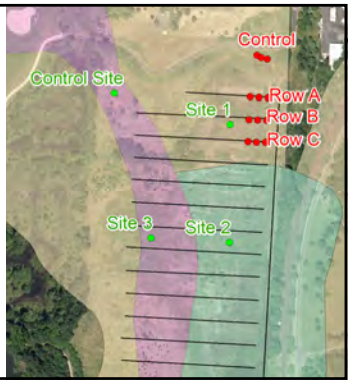

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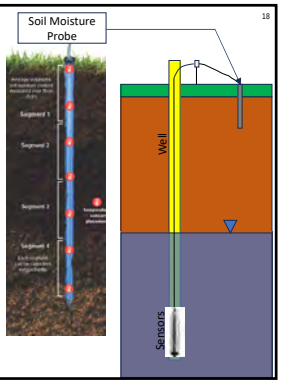
Continuous Data Collected

- GroPoint soil probe
  - Surface to 1.2 meters
  - Soil moisture every 6 inches
  - Soil temperature every 4 inches
  - x2 at each site starting June 2024
- Groundwater well sensors
  - Water level
  - Conductivity
  - Temperature



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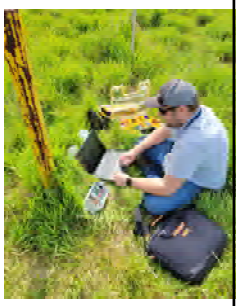
Continuous Sensing Findings Thus Far

- Irrigation doesn't increase soil moisture below 24 inches at most sites
  - One anomaly site in Wapato soils
  - Additional sensors being installed to verify
- Soil moisture and groundwater respond quickly to rainfall, but no response from irrigation
  - Small change in how fast it dries out over summer
- Groundwater levels higher than Tualatin River and Fanno Creek
  - Strong groundwater slope from north to south
- Irrigation has remarkable cooling effect on soil temperature



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PFAS Study at Thomas Dairy

- Regular soil and groundwater sampling
- Soils from surface, 1-foot and 2-foot depths
- One location in each soil type
- One control site with no irrigation and upstream of others
- Part of larger PFAS study (as previously presented)
  - Fanno Creek
  - Tualatin River
  - Durham effluent
- Sampled before, during, and after irrigation each season
  - Began monthly sampling in March 2024

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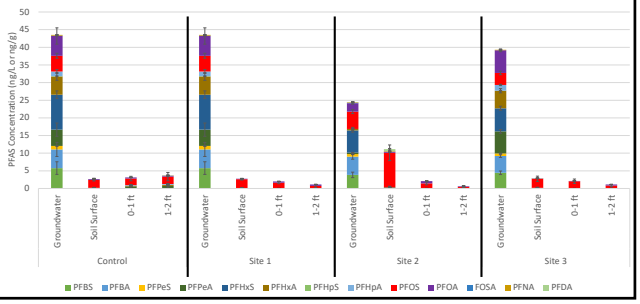
Thomas Dairy Soil and Groundwater Data



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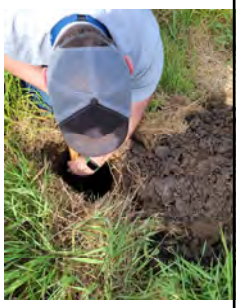
PFAS Findings at Thomas Dairy

- PFOS pretty much the only one seen in soil
  - Similar to worldwide background concentrations
  - Decreases with depth
  - No increase or decrease with time
- Several PFAS consistently observed in groundwater
  - Control site as high or higher than irrigated sites
  - No increase or decrease with time
  - 'Signature' looks like urban creeks
  - Unclear if these levels are unusual or not
- Plan to add vegetation sampling this season



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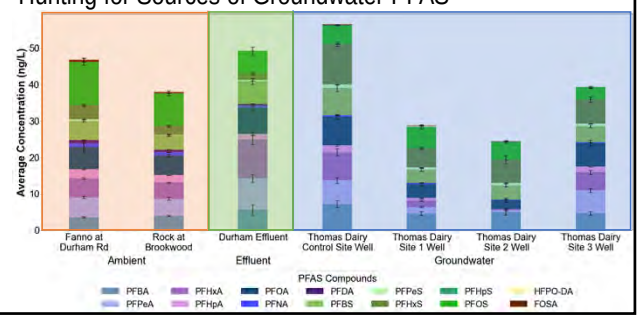
Hunting for Sources of Groundwater PFAS



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Ongoing Studies

- Tracer compounds study
  - Sucralose, acesulfame, caffeine, boron, carbamazepine
  - Specific to wastewater or stormwater
  - Don't transform too quickly or slowly
  - Mobile in soil
  - Three rounds of samples collected thus far
    - Data analysis ongoing
- Study with Jennifer Field, Oregon State University
  - 'Fingerprinting' different PFAS sources
  - Uses more than 2,000 compounds
- 'Background' PFAS study
  - Sample wells and soils in urban, rural areas

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What's Next?

- Reuse master plan underway
  - Anticipated completion: December 2025
- Business case considerations for how we charge for Reuse in the future

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Questions for CWAC

- Based on what we've shared, do you think reuse is an acceptable water quality approach for CWS?
- If you have any concerns about reuse, is there confidence that CWS is employing good science?
- How do you feel about reuse as an environmental restoration tool?
- Do you support having broader reuse rules to allow for innovative and more flexible allowances in the future?

Tour of Thomas Dairy