Clean Water Services
Clean Water Advisory Commission
Meeting Notes
March 12, 2014

Attendance

The meeting was attended by Commission Vice Chair Mike McKillip (District 3-Rogers) and Commission members Molly Brown (District 2-Malinowski), Alan DeHarpport (Builder/Developer), Lori Hennings (Environmental), Erin Holmes (Environmental), John Jackson (Agriculture), Art Larrance (At-Large-Duyck), Judy Olsen (Agriculture), Stephanie Shanley (Business), Cathy Stanton (District 1-Schouten), Richard Vial (District 4-Terry), and David Waffle (Cities), and Clean Water Services District General Manager Bill Gaffi.

Commission Chair Tony Weller (Builder/Developer) and Commission member John Kuiper (Business) did not attend.

Others attending included Victoria Lowe (interested citizen and member of the League of Oregon Cities Water-Wastewater Policy Advisory Committee) and Clean Water Services staff members Bob Baumgartner (Regulatory Affairs Department Assistant Director), John Dummer (Watershed Management Principal Engineer), Rich Hunter (Senior Water Resource Program Manager), Mark Jockers (Government and Public Affairs Manager), Jerry Linder (General Counsel), Diane Taniguchi-Dennis (District Deputy General Manager), Sheri Wantland (Public Involvement Coordinator), and Ken Williamson (Regulatory Affairs Department Director).

1. Call to Order

Mr. McKillip called the meeting to order at 6:37 PM in the conference room at the Clean Water Services Administration Building.

2. Review of February 12, 2014 Meeting Notes

There were no comments or revisions regarding the February 12 Meeting Notes.

3. Clean Water Services Integrated Municipal Watershed-Based Permit
Part 1: How Point Sources are Regulated and Managed

Mr. Baumgartner provided background information ***(presentation attached)*** on the Federal Clean Water Act (CWA), how the CWA influences regulation of point sources (specific and identifiable, such as the wastewater treatment facilities operated by Clean Water Services), and how Clean Water Services expects to work within the parameters of the CWA over the next 15-20 years and beyond. This is the first in a series of three presentations covering point source regulation and management, nonpoint source (such as storm runoff) regulation and management, and how both are integrated into the watershed-based NPDES (National Pollutant Discharge Elimination System) permit held

by Clean Water Services.

Clean Water Services anticipates regulatory requirements and tries to influence the development of regulations that take into account both economic and environmental sustainability, looking beyond discharge criteria to overall ecological health.

Clean Water Services submitted an application for renewal of its NPDES permit in August, 2008. Approval for that permit and those of several other jurisdictions has been delayed by litigation over the state standard for water temperature. However, the Oregon EQC (Environmental Quality Commission) did grant approval for two important aspects of the renewal application: a mass load increase to accommodate anticipated population growth, which saved an estimated $44 million, and dry-season discharges from the Forest Grove wastewater treatment facility along with use of bubbled loads (limiting total discharges rather than limiting each facility) which will allow development of NTS (natural treatment systems) facilities for further savings of about $13 million.

It was noted that the "Code of Federal Regulations 49" shown in slide #3 is included only as an example—water quality is actually addressed by the "Code of Federal Regulations 33."

Questions/Comments/Discussion:

1. What about pharmaceuticals, which seemed to be an issue a few years ago?
    a. These were considered as "pollutants of emerging concern" but it was found that they were not actually being discharged at levels that were cause for alarm, and other types of pollutants were deemed a higher priority. In addition, a drug take-back program championed by Clean Water Services, League of Oregon Cities, and others is now being operated by law enforcement agencies.

2. How many other watershed-based NPDES permits are there now?
    a. There are such permits in Cincinnati and Philadelphia; would expect to see others as use of integrated planning expands. Clean Water Services is unique in that its service boundaries match up so closely with the Tualatin watershed.

3. Has there been any attempt to adjust temperature standards to acknowledge a stream's natural temperature (for instance, a stream originating in the Cascades may naturally be cooler than one originating in the Coast range)?
    a. The temperature standard as written would have allowed DEQ to establish a stream's natural temperature condition and use that as the standard. That provision was eliminated through litigation. Modeling and analytical work provide a strong argument that some streams will never meet temperature criteria due to natural conditions. The CWA does mention site-specific criteria but that has not been used in Oregon since the 1970s because of the potential for litigation.

4. Fernhill Natural Treatment System Update

Mr. Dummer, Mr. Hunter, and Ms. Wantland shared information about the Fernhill Wetlands area and the progress on the NTS facilities there ***(presentation attached)***, as mentioned earlier by Mr. Baumgartner. Details from this presentation included:

1. The project site is part of about 750 acres owned by Clean Water Services south of Forest Grove.

2. The Fernhill Wetlands NTS project considers the "triple bottom line" of environmental, economic, and social benefits.

3. Fernhill is treasured for its wildlife habitat and viewing opportunities. The project is enhancing those aspects while economically and effectively cooling and further filtering already-treated wastewater. Treatment components are being designed for function and aesthetics (a waterfall which provides re-aeration, for example) to further benefit the community.

4. The Fernhill project with its multiple benefits will cost about $18 million, compared to $31 million to simply enlarge the Rock Creek facility. Wastewater from the Forest Grove treatment plant will no longer have to be pumped to Rock Creek during the dry season.

5. The Fernhill project will primarily address temperature and ammonia requirements under the NPDES permit, but will also address phosphorous and CECs (contaminant of emerging concern) to some extent.

6. The three existing lagoons on the Fernhill site will become the South Treatment Wetlands to be constructed in 2014 The primary water quality function will be water temperature reduction and the environmental emphasis will be on prime habitat.
7. Human activities will be directed to the northern area, where there are or will be a parking lot, picnic shelter, walking paths and bridges, the Water Garden, restrooms, and an education/demonstration center where visitors can see NTS at work The southern area will be kept as undisturbed as possible to accommodate wildlife, especially birds.

8. The north and west areas of the site will become the upper treatment wetlands. A 2-acre section has been completed in the northern part of the project and will be used primarily for nitrogen removal to comply with permit limits for ammonia.

9. A filtering process will be used for nitrogen removal. A pilot project of filter media is underway using round rock from the Willamette River and weathered basalt material from Waldport. With NTS the bacteria growing on the filter media in a "fixed film" may be able to remove other pollutants than conventional

treatment as the water passes over/through the rocks. Staff is also studying the effectiveness of this process in "tidal mode" (fill, let drain, refill). Clean Water Services is taking previous research several steps further and there is great interest from others in the wastewater industry.

10. Plants are an important component of NTS as they take up nutrients from the water. Most NTS facilities use a "monoculture" of cattails and bullrushes but Clean Water Services has had successful trials with a variety of native wetland plants. The goal is to provide 80% cover (shade) in the treatment wetlands. There will be areas of deeper open water and emergent wetlands with water about 12 inches deep Staff have been flooding and draining the emergent wetland area, with good plant response.

11. There will be a public celebration at Fernhill Wetlands on May 1 at noon to highlight the opening of the new entry corridor designed by Hoichi Kurisu. Visitors can also see the filter media setup and other pilot projects.

12. Information and updates, including the "Voices of Fernhill" and "Downstream" videos, are posted at www.fernhillnts.org

Ms. Wantland noted the various public and private partners which have contributed to Fernhill and acknowledged Ms. Lowe for her participation and commitment.

Ms. Wantland also distributed a brochure, "Fernhill—Clean water, naturally," which is available from Clean Water Services.

Questions/Comments/Discussion:

1. Are there restrictions on what can be done in the Barney Mitigation Area?
    a. Permits would be required for work such as grading or fills, but not for the revegetation activities and reedcanary grass control.

2. Will there be a need to introduce frogs to the wetland area?
    a. As long as there is habitat connectivity, they will appear on their own.

3. Ms. Hennings and Ms. Holmes offered to share more recent reports on the economic value of birding.

4. Some developments in Florida specifically allow birders and photographers but restrict joggers and dogs, and have found that wildlife has adapted well and revenue has tripled. Could there be some areas like that at Fernhill?
    a. Staff is meeting with birders soon to explore this. Strollers, bikes, dogs, runners…are all being debated. Want to make the birders and photographers feel welcome and we can do things for others, too—such as a children's play area. Will have to think ahead about managing all types of visitors—researchers, media, others interested in NTS and watershed management, and others. There will probably not be anyone "patrolling"

so there will need to be signage and other ways of directing people.

5. Ms. Hennings will send to staff some research results on pedestrians and flushing distance from birds.

6. Ms. Holmes and Ms. Hennings are willing to share with staff what they have learned about building a community to care for a public natural resource.

7. What level of treatment will the wastewater have before it goes into the NTS wetlands?
    a. It will receive secondary treatment.
8. Rock Creek effluent is so clean it could be used in a municipal swimming pool. The NTS process will yield water that is clean enough to use in the children's interactive area, and with some additional technologies would meet purity standards for the high-tech industry (higher standards than for drinking water) or as a product ingredient.

9. Are the existing lagoons lined and will the new ones be lined?
    a. No, but the clay soils are naturally tight and in fact meet the state regulatory standards for pond liners. A liner would be at odds with NTS. processes.

10. Will the NTS wetlands silt up and have to be dredged/cleaned out, similar to stormwater facilities? Most of the solids thatsettle out will be removed during treatment , but natural debris, erosion, dust, etc. may accumulate.

11. It has been fantastic to see this evolve—it is a model for others that should be marketed all around the country.

12. How will temperature issues be addressed if the NTS water won't really be traveling through the ground because of the clay soil?
    a. The shade and evapo-transpiration from the plants will provide cooling.

5. Announcements

Mr. Jockers announced the next meeting will be April 9, 2014.

Mr. Jockers suggested a future Commission meeting—perhaps in June—could be scheduled at the Fernhill Wetlands, and offered the idea of a September canoe trip on the Tualatin for Commission members.

6. Adjournment

Mr. McKillip adjourned the meeting immediately following the announcements, at approximately 8:20 PM.

(Meeting notes prepared by Sue Baumgartner)

Fernhill Natural Treatment System

Clean Water Advisory Commission

March 12, 2014

Clean Water Services

Outline

- Overview
- Project status
- Environmental
- Economic & Social

Clean Water Services

Tualatin River Watershed

Clean Water Services

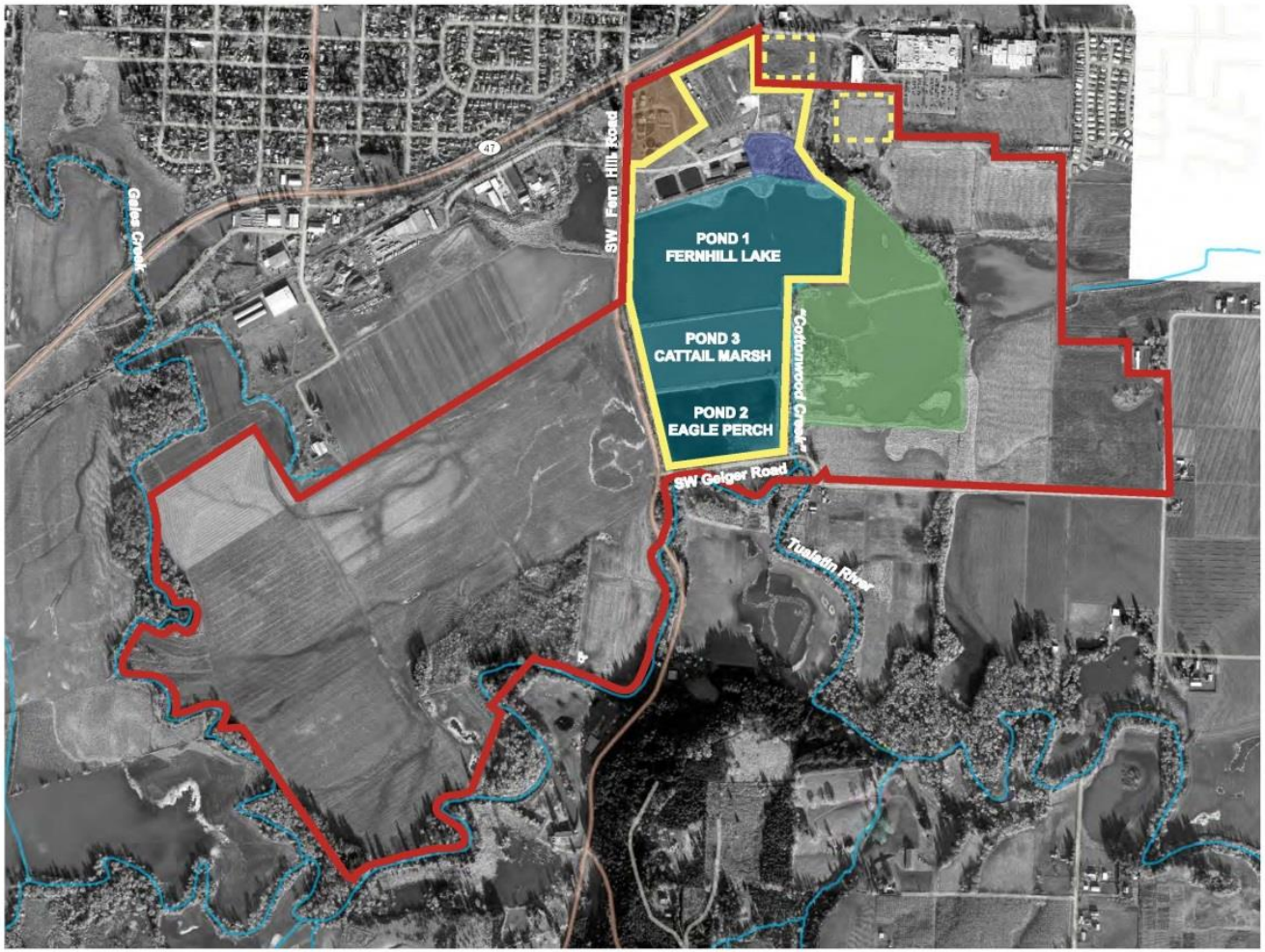


Figure 1-1
Basis of Design
Fernhill Site

South Wetlands
Forest Grove, OR

Legend

- Major Roads
- Streets
- Streams
- Fernhill Site
- Fernhill NTS
- Potential Fernhill NTS
- South Wetlands
- Phase 1A (Existing Lower Treatment Wetland, Restorative Water Garden)
- Barney Mitigation Wetlands
- Forest Grove WWTF

N

0 500 1,000 2,000 Feet

FERNHILL DESIGNTEAM

Biohabitats

Clean Water Services

Triple Bottom Line

Clean Water Services

Innovation

Clean Water Services

Filter Media Pilot Test

Clean Water Services

Treatment Goals

- Year-round WWTP Operation
- North (Upper and West) Treatment Wetlands
  - Primarily Ammonia Removal
- South Treatment Wetlands
  - Primarily Temperature Reduction
- Secondary Treatment Objectives
  - Phosphorus and CECs

Clean Water Services

Completed

2012

- Restroom and picnic shelter – City/ FWC/ State Parks
- Water Garden, walking paths, bridges
- ~ 2 acre treatment wetland

2013

- New parking lot
- Access improvements
- Ongoing planting
- Design and research
- Plant establishment

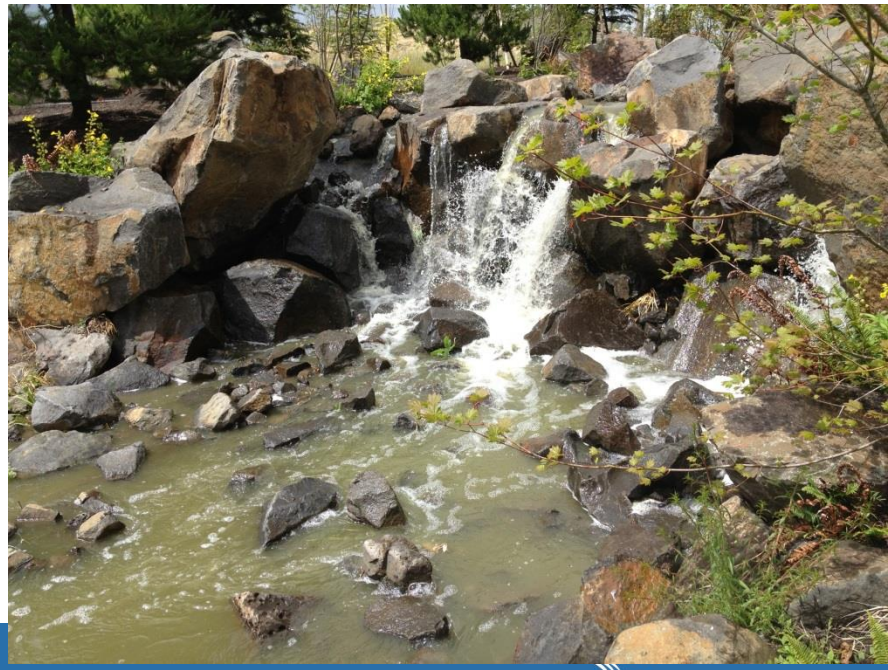

Asphalt


Wetlands

Clean Water Services

2014 Schedule

- **Current Activities**
  - Entry Area/Access Improvements
  - 15% Design – South Wetlands
  - Pilot Study for Upper and West Wetlands
- **Next Steps**
  - Pilot Study
  - May 1 celebration
  - South Wetlands –
    - 30% Design, CM/GC contractor, Construction 2014



Clean Water Services

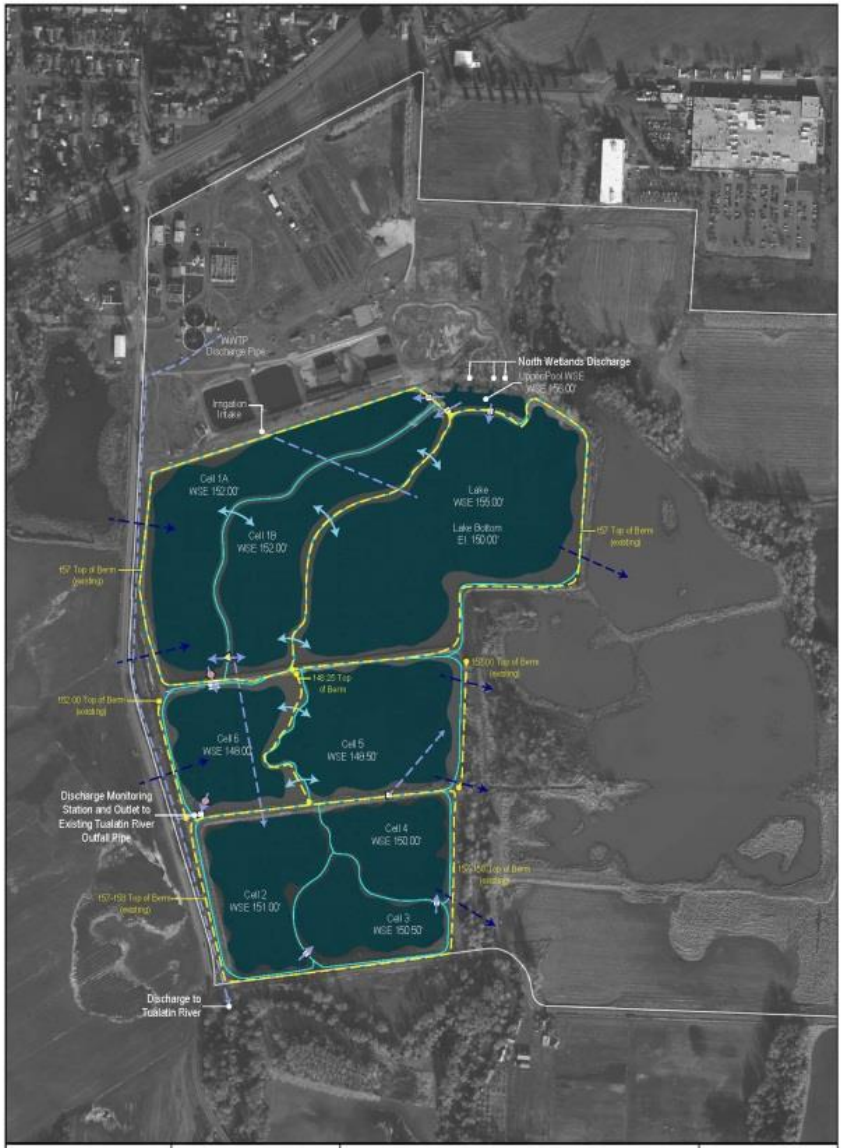


Figure 5-1
Basis of Design
Normal Operating Water Level

Fernhill South Wetlands
Forest Grove, OR

Habitat Zones

	Acres	%
Upland	15	17%
All Wetlands	49	54%
Mudflat	2	2%
Open Water	24	27%
TOTAL	90	100%

Legend

- Water Surface
- Deep Water
- Flood Flow Crossover
- Wetland Cell Boundary
- Berm
- * Depth of Cells 1-6 = 12'
- Control Weir
- Control Structure
- Control Valve
- Cascade
- Flow Path
- Piped Flow
- Flood Condition Flows

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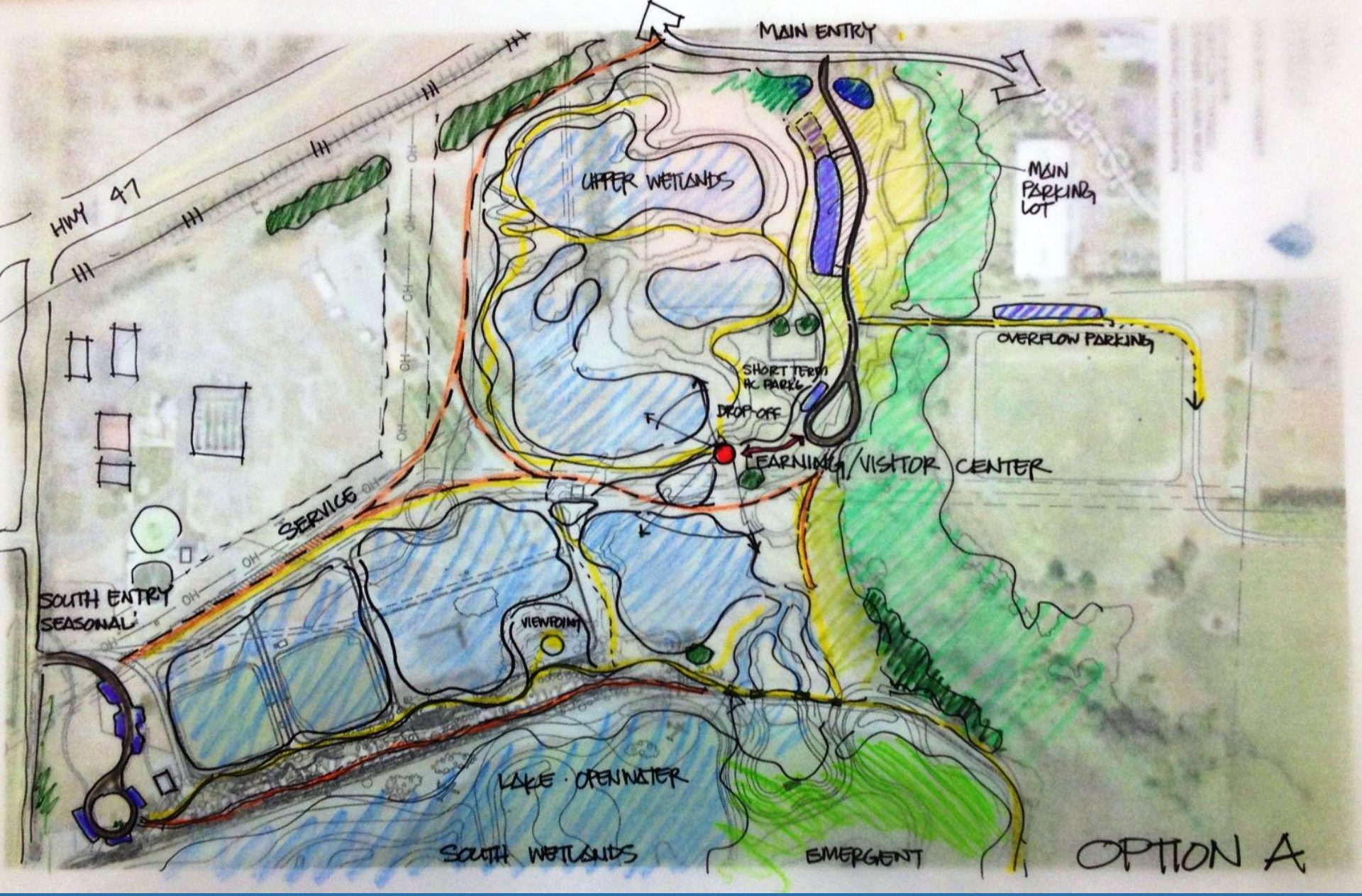
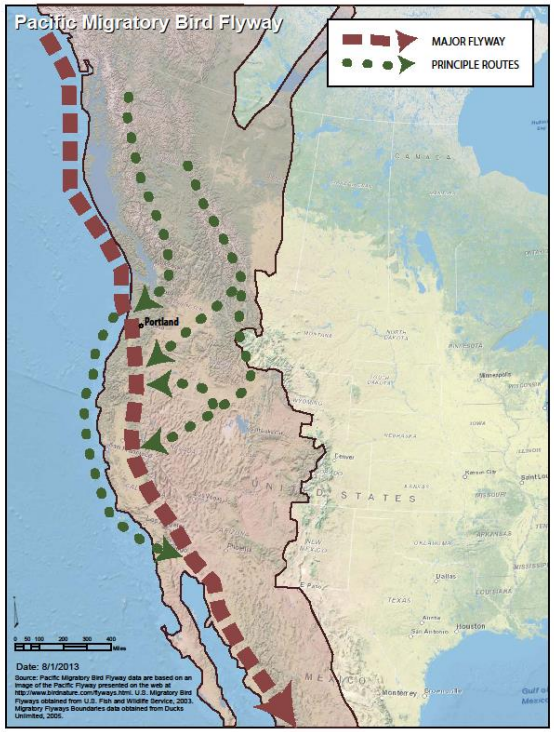
FERNHILL DESIGN TEAM
Biohabitats

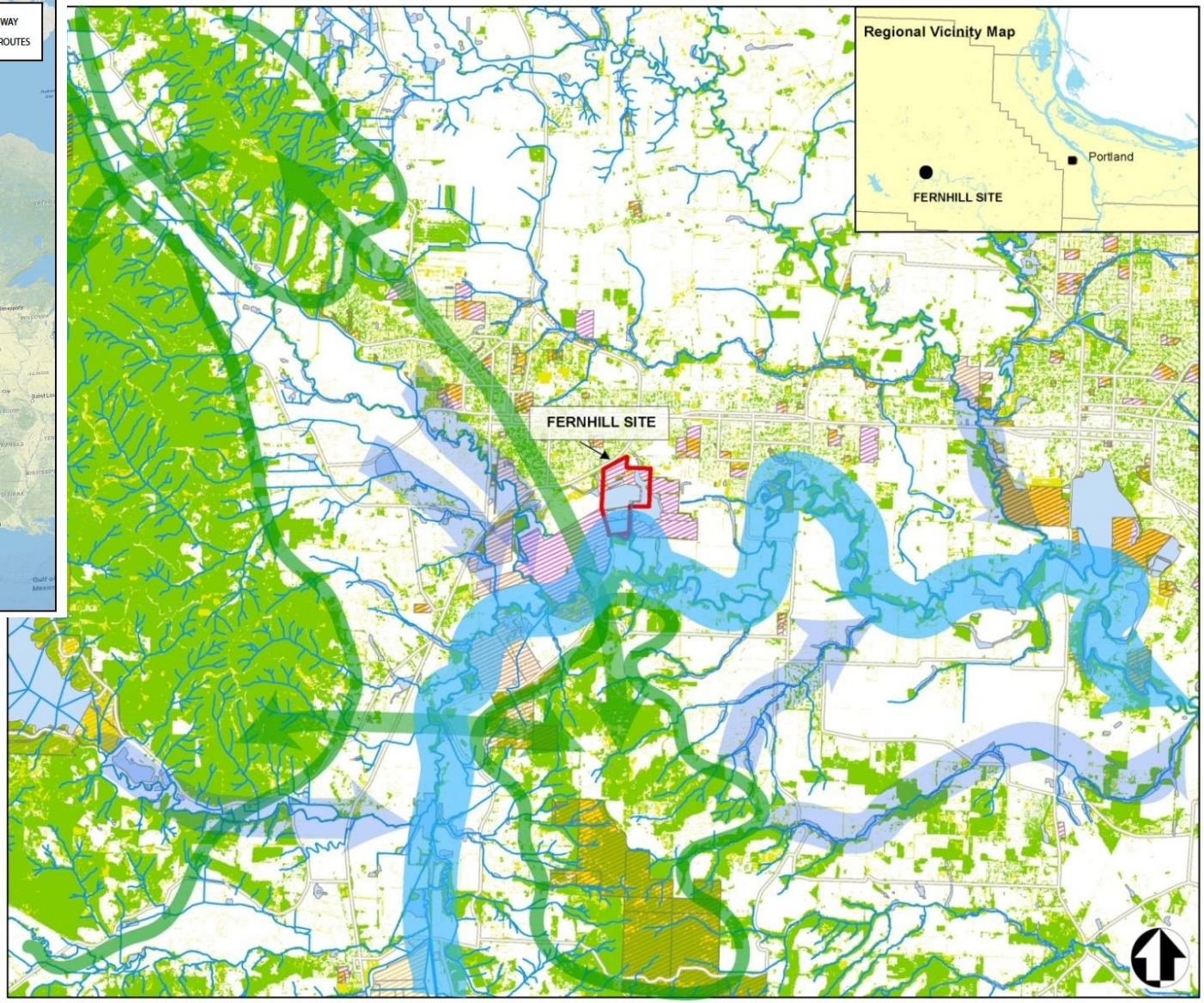
Clean Water Services



Clean Water Services


Environment

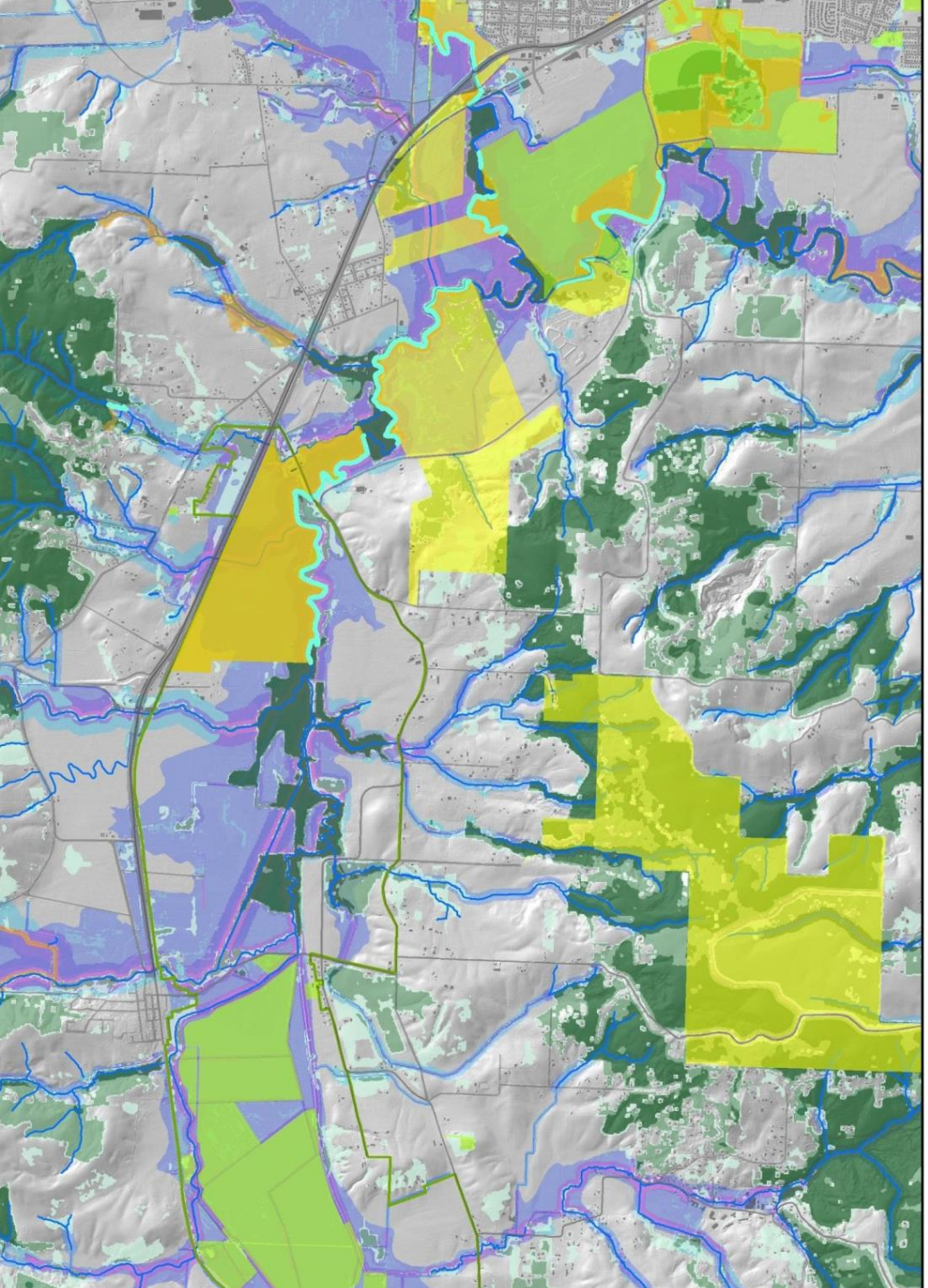




Landscape Context

Clean Water Services

Floodplain Connection



Regional partnerships


Habitat


Shorebirds

Biodiversity

Economic

Multiple economic benefits for ratepayers/partners

- Year round treatment at FG Facility
- $18 M instead of $31 M to expand RC Facility (2010 dollars)
- Help control rates
- Invested $22 M in FG Facility upgrades

Birders/Photographers

Clean Water Services

Ecotourism

Clean Water Services

Education

Clean Water Services

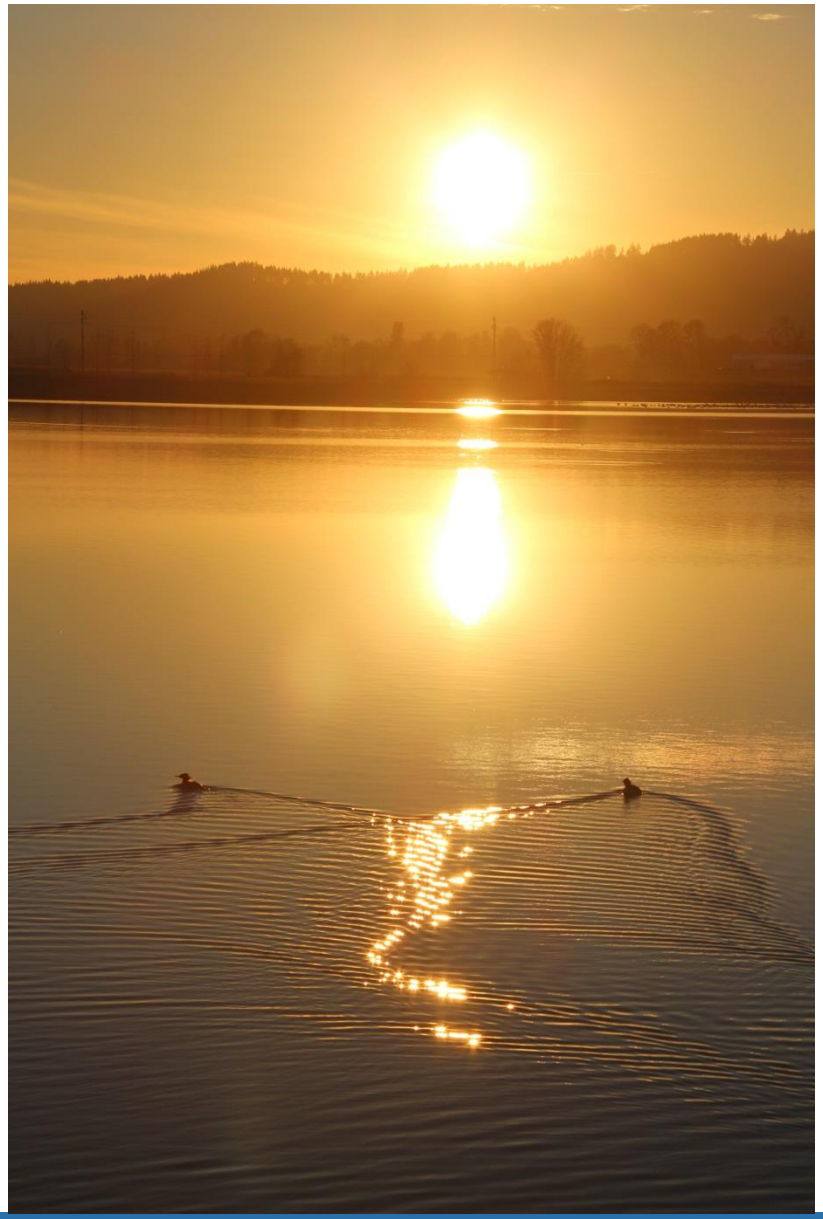
Water Garden

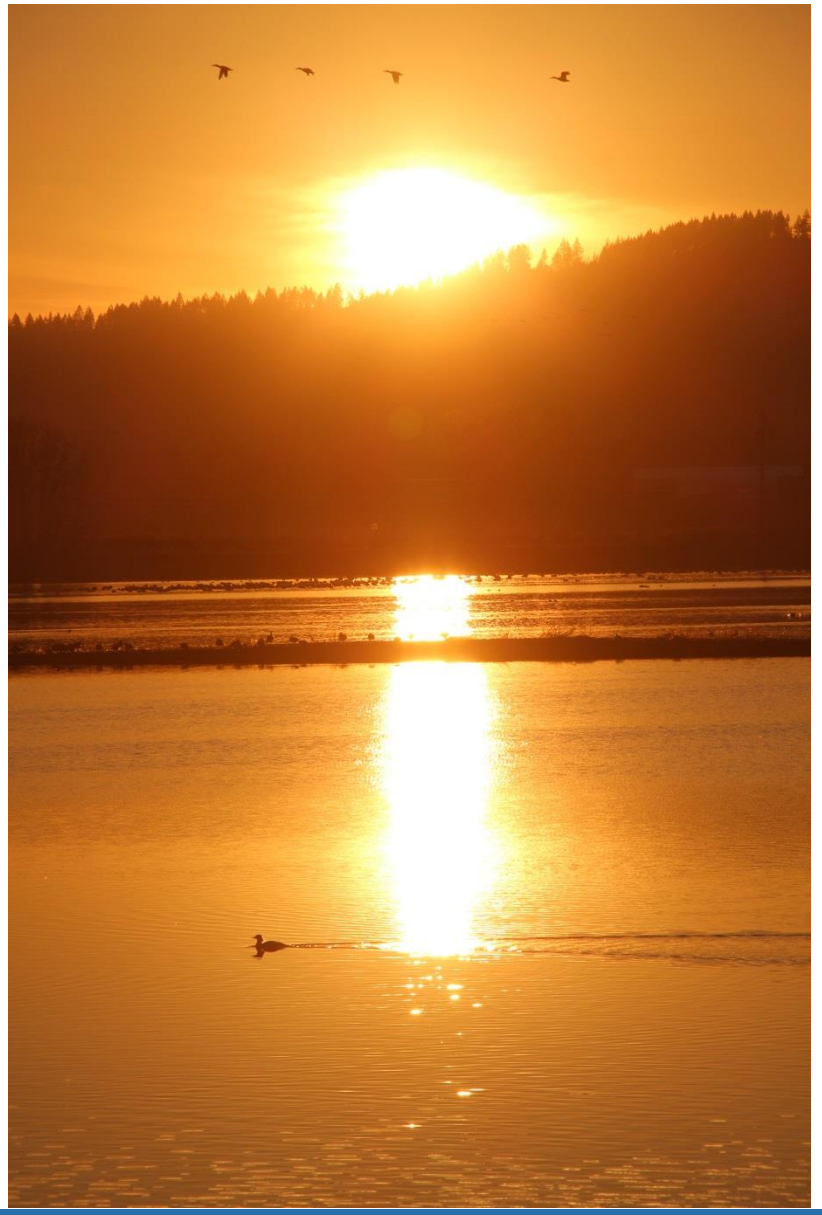
Trails

Media

Partners

- City of Forest Grove
- Fernhill Wetlands Council
- Pacific University
- Public and private K - 12
- FG/Cornelius Chamber of Commerce; WCVA
- Local businesses (Grand Lodge, Maggie's, BJ's)
- Rotary and Kiwanis
- Intertwine, Audubon Society, Metro, etc.
- Citizen Participation Organization 15
- Media





Clean Water Services

Questions?

Clean Water Services

Federal Clean Water Act

By Bob Baumgartner

Assistant Regulatory Affairs Department Director

Clean Water Services

Federal Clean Water Act

1948 - Federal Water Pollution Control Act

1956 - Water Pollution Control Act of 1956

1961 - Federal Water Pollution Control Act Amendments

1965 - Water Quality Act of 1965

1966 - Clean Water Restoration Act

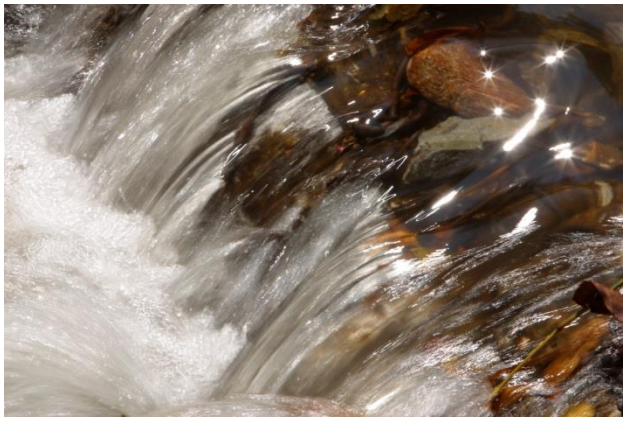
1970 - Water Quality Improvement Act of 1970

1972 - Federal Water Pollution Control Act Amendments

1977 - Clean Act of 1977

1981 - Waste Water Treatment Construction Grants Amendments

1987 - Water Quality Act of 1987
Codified general as 33U.S.C. §§1251-1387



"I hope this has nothing to do with **Water**gate"

Objective: Restore and Maintain the Chemical, Physical, and Biological Integrity of the Nations Water

- Eliminate discharge by 1985
- Fishable, swimmable, propagation of fish and wildlife by 1983
- Prohibit toxics in toxic amounts
- Provide assistance for POTWs
- Encourage area wide treatment
- Provide research, technical guidance
- States should do something about nonpoint sources, please, not interfere with water rights
- State primary responsibility for planning, implementing
- Allow public participation
- To the MEP encourage drastic minimization of paperwork, needless duplication and unnecessary delays

NPDES Program Federal and State Regulations

Key Federal Program

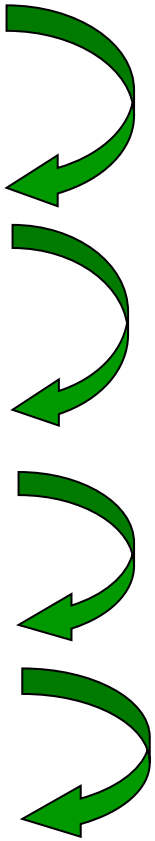
- 303, Planning, Standards
- 402 NPDES
  - Title I - Research and Related Programs
    - Section 101 - Declaration of Goals and Policy
  - Title II - Grants for the Construction of Treatment Works
  - Title III - Standards and Enforcement
    - Section 301 - Effluent Standards
    - Section 302 - Water Quality-Related Effluent Limitations
    - Section 303 - Water Quality Standards and Implementation Plans
    - Section 304 - Information and Guidelines [Effluent]
    - Section 305 - Water Quality Inventory
    - Section 307 - Toxic and Pretreatment Effluent Standards
  - Title IV - Permits and Licenses
    - Section 402 - National Pollutant Discharge Elimination System
    - Section 405 - Disposal of Sewage Sludge
  - Title V - General Provisions
    - Section 510 - State Authority
    - Section 518 - Indian Tribes
- 403 Pretreatment
- 404 Federal permit needed
- 503 Biosolids Management

Key State Programs

- Oregon Revised Statutes
  - ORS 183, 455
  - ORS 468, and 468B
  - ORS 783
- Oregon Administrative Rules
  - 12 Enforcement
  - 14 permits
  - 41 WQ standards
  - 42 TMDLs
  - 43 Mining
  - 45 NPDES
  - 48 Certification, dredging
  - 49 POTW certification
  - 50 Biosolids
  - 51 CAFO
  - 52 Plan Review
  - 53 Grey water
  - 55 Re-use
  - 73 Construction Standards
  - 81 Construction grants
  - 143 Ballast Water

The Hierarchy…

- 1972 FWPCA and its subsequent amendments (i.e. Clean Water Act)
  - Require NPDES Permits
- Code of Federal Regulations (40 CFR 122)/Oregon Administrative Rules (OARs)
  - Define permit requirements
- NPDES Permit
  - Effluent limits, monitoring requirements, reporting requirements, compliance conditions, boiler plate
- Reports/plans to meet permit requirements
  - Examples: Stormwater management plan, biosolids management plan, re-use plan, industrial pretreatment procedures manual, etc.

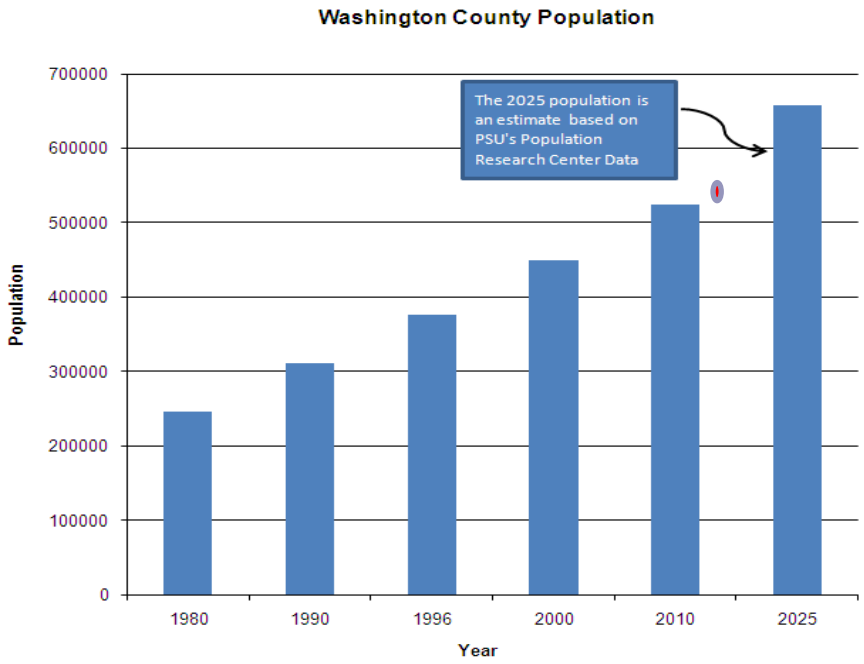


NPDES Basics

- License to discharge for 5 years, must meet water quality standards
- Effluent Limits
  - Technology based
  - Water Quality Based
    - Standards
    - TMDLs - planning
- Monitoring
- Reporting
- Compliance
- Prohibitions
- Notwithstanding language
- Enforcement provisions

Permit Renewal Objectives

- Accommodate Growth
  - People, jobs and industry
- Use of sustainable treatment technologies
  - Year-around discharges from Hillsboro and Forest Grove WWTFs
  - Use of Natural Treatment System
  - EQC approval new discharges
- Improve Ecological Health
  - Update TMDLs
  - Expand trading, watershed permitting
  - Reduce environmental footprint, provide water quality and environmental health
- Maximize investment in existing infrastructure
  - EQC, Mass load increase at the Rock Creek and Durham WWTFs
- Prepare for future 2025 and beyond
  - Integrated planning



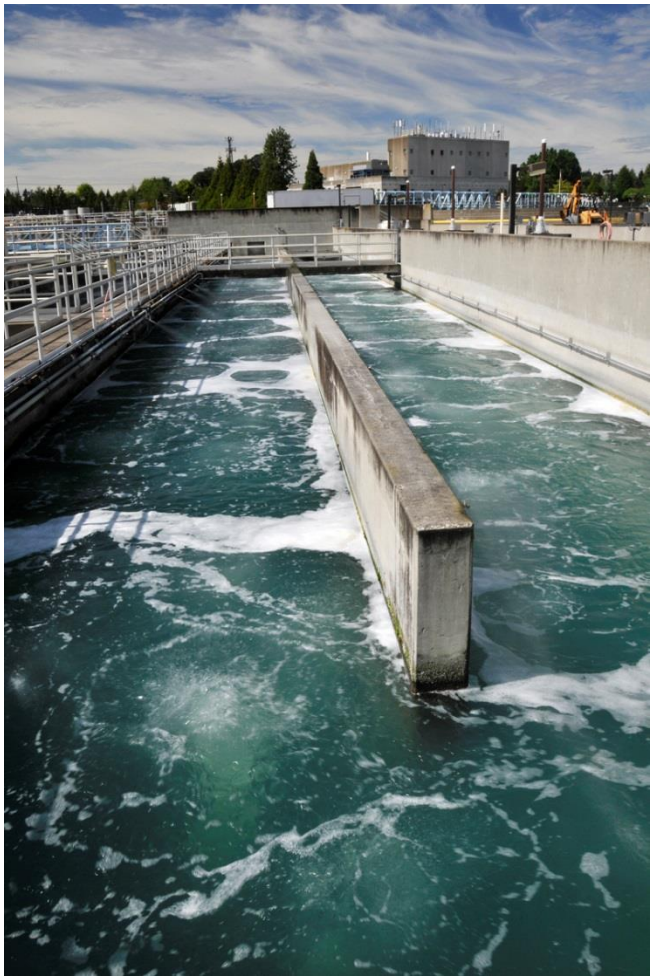
Permit Renewal

- Renewal application submitted to DEQ – 8/2008
  - Growth Issues
    - Mass Load Increase for CBOD/TSS
    - Dry Season Discharges from Forest Grove and Hillsboro WWTPs
    - ***NTS provides additional environmental improvement***
  - Sustainability/green infrastructure
    - ***Use of Constructed wetlands***
    - Reduce time period for phosphorus removal
  - Watershed-based Permit Integration Issues
    - ***Bubbled loads to allow NTS at Forest Grove***
    - Intra-plant trading

- Statewide permits held up due to Temperature litigation, DEQ staffing issues
  - Developing a path forward, updating Temperature Trading plan
  - ***NTS control temperature***
- DEQ willing to advance Permit to public process following updated TMP
- DEQ supportive of Integrated Planning

Current POTW Permitting Issues

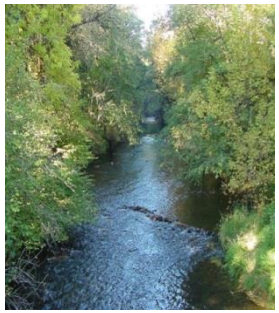
- Temperature (NTS)
- Ammonia
- Toxic
  - Copper (other metals)
  - Human Health – Fish Consumption
    - 2-Bis-Ethyl Phthalate
    - Chlorination byproducts
    - Legacy pesticides
    - Industrial chemicals
- Methyl Mercury
- Nutrients, Algae and Oxygen
- Turbidity



Evolution of Clean Water Act Implementation

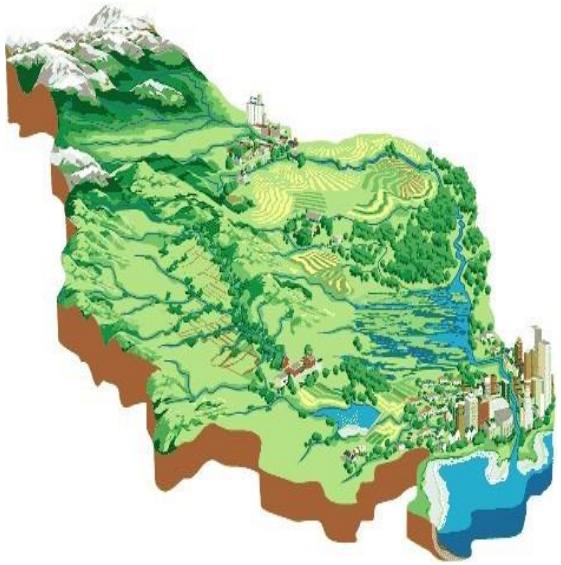
Technology-based

(1970's and 1980's)



Water quality-based

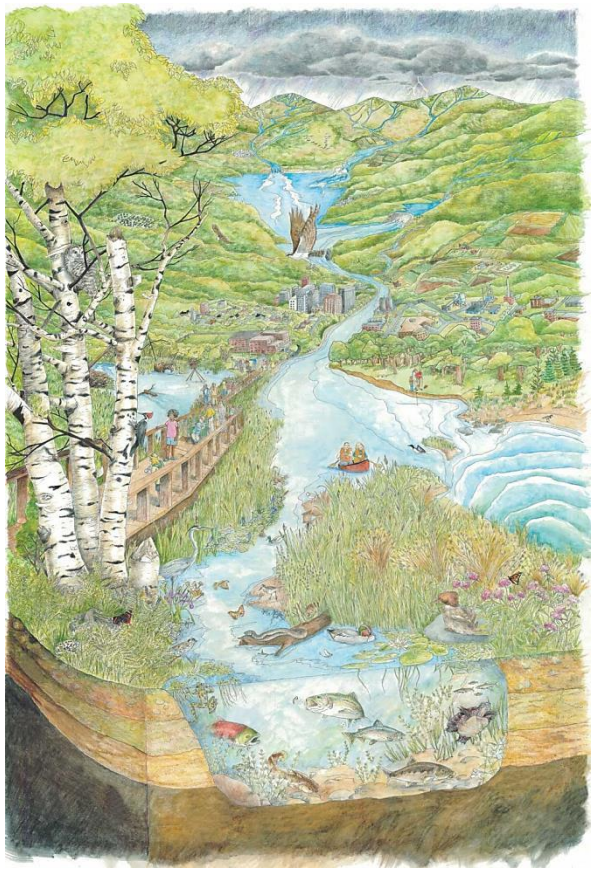
(1980's-2000's)



Watershed-based

Integrated Planning Using a Watershed Approach

- On a ***Watershed Scale***
  - Evaluating the needs
  - Prioritizing the activities
  - Coordinating the actions
  - Incremental Costs / Benefits
- Actions based on
  - Chemical (water quality)
  - Physical (water quantity, & aquatic habitat)
  - Biological (Fish, Wildlife) in a comprehensive manner



Questions?