

The
**Meadowlands
Biofilter**

Appendices ONLY

Final Presentation by the Add Hoc

----- Common Area Land Use Committee -----

of the Lacamas Shores HOA

July 2018

Appendices - Excerpts

- ▶ 1988 Agreed Order of Remand Map
- ▶ 1993 national magazine article “Wetlands for Stormwater Treatment”
- ▶ Environmental Technology Consultant’s Maps
- ▶ City of Camas - Timeline

City of Camas Documents

- ▶ 2/6/2018 Letter from City Attorney
- ▶ Camas Municipal Code - Critical Area Exemptions
- ▶ Camas Shoreline Master Plan
- ▶ Camas SMP Restoration Plan

Appendices - Excerpts (con't)

- ▶ Camas Stormwater Design Standards Manual
- ▶ LS HOA Interim Trail, Open Space, Wetland and Storm Drainage Maintenance Manual

County and City

- ▶ “Managing Stormwater” Manual - by the Stormwater Partners of SW Washington created for HOAs

Washington

- ▶ DOE - Stormwater Management Manual for Western Washington
- ▶ DOE - 2013 Update on Wetland Buffers
- ▶ WDFW - Lacamas Lake

Appendices - Excerpts (con't)

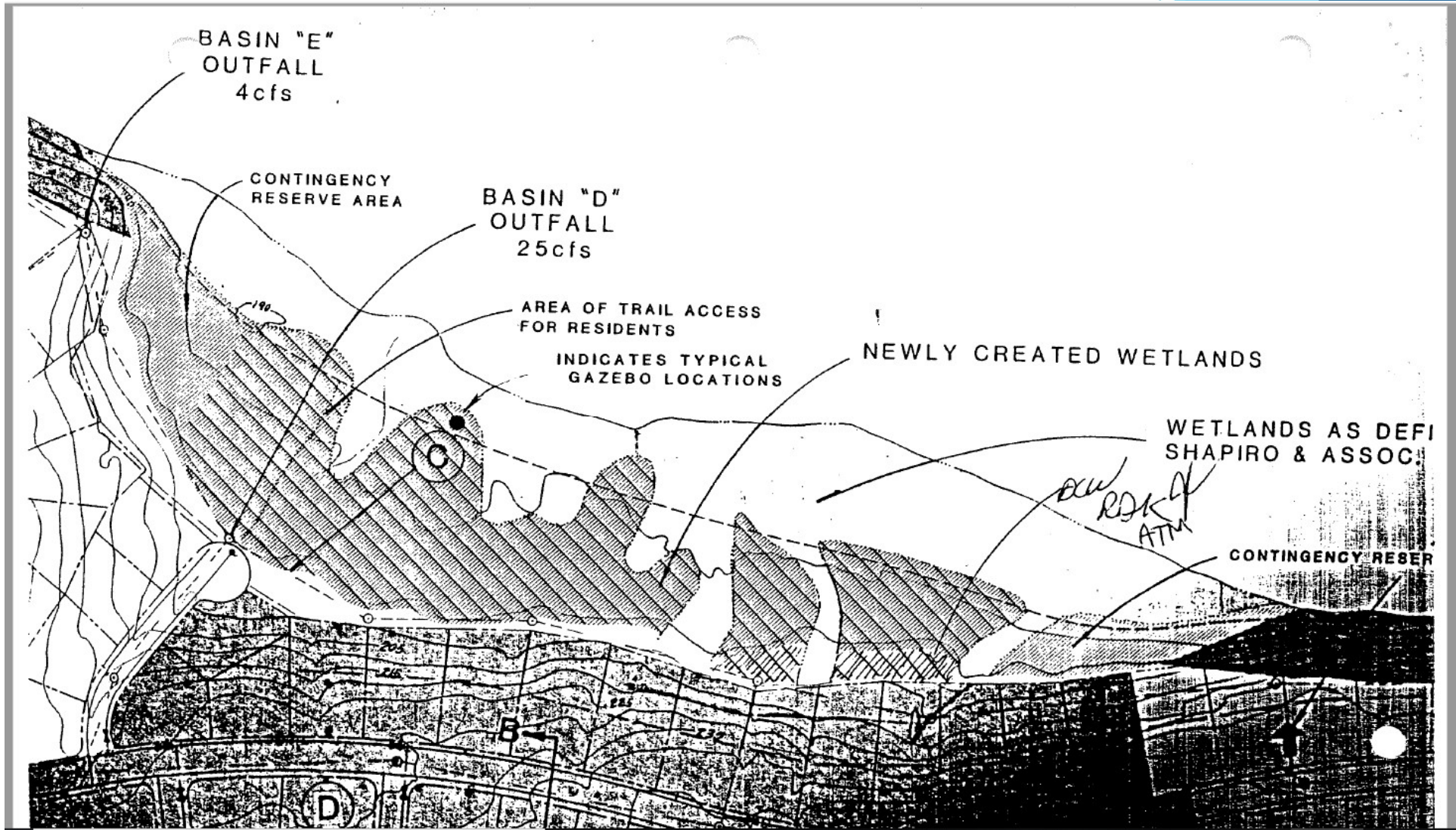
Federal

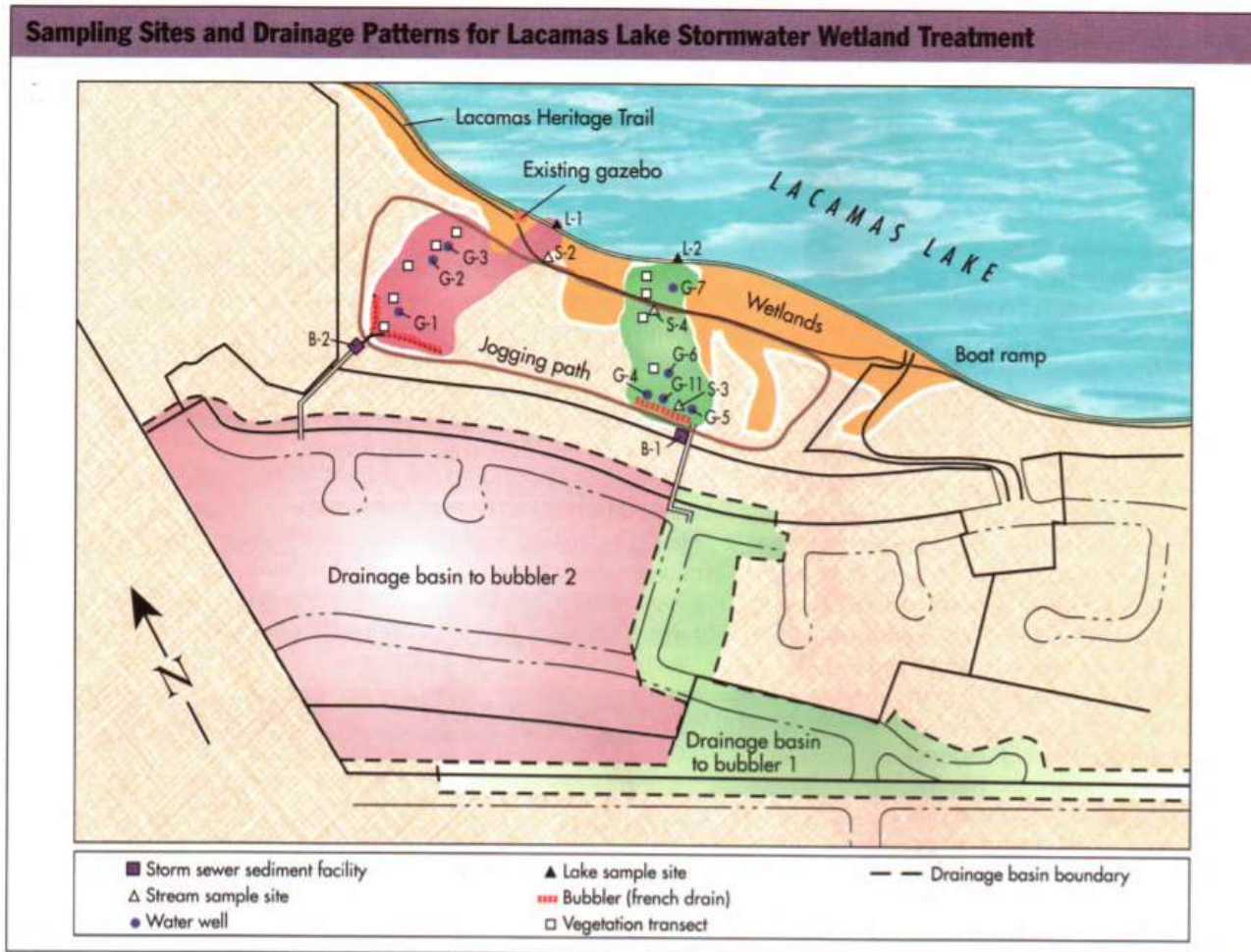
- ▶ EPA - Stormwater Wetpond and Wetland Management Guidebook
- ▶ Clean Water Act
 - ▶ Exemption
 - ▶ Criminal provisions

Other

- ▶ Lacamas Shores Articles of Incorporation
- ▶ Other Documents Referenced in Presentation
- ▶ List of Other Relevant Documents
- ▶ “Shoring up a key wetland in Camas”
- ▶ Aerial Before and After View
- ▶ Original Map

1988 Agreed Order of Remand Map





“Wetlands for Stormwater Treatment”, July 1993

Water Environment & Technology magazine article by Mark F. Bautista and N. Stan Geiger

Wetlands For Stormwater Treatment

Developers of a residential site on Lacamas used a wetland system to treat stormwater in the watershed.

A four-year water quality monitoring program has shown that this system is an effective biofilter that reduces nutrient and sediment loading to the lake. Many issues must be addressed during the design and implementation of a wetland system, including permitting, water quality standards, treatment performance, cost, maintenance, and expected treatment life.

An innovative wetland design filters stormwater and reduces phosphorus loading to adjacent lake

Mark F. Bautista
N. Stan Geiger

The Lacamas Lake watershed, which includes the adjoining Round Lake, is located just north of Camas, Wash., 19 km (12 mi) west of Vancouver, Wash. The availability of sanitary sewers for the Lacamas Shores development eliminated the potential for contamination of the lake by septic tank systems. However, there was still an increased volume of

runoff and concomitant pollution during storm events were not available to receive runoff, so runoff would be lake.

As part of the permitting process, a drainage plan was drafted to indicate how stormwater runoff would be collected and discharged from the site. The Washington Department of Ecology required that the quality and quantity of stormwater runoff from the development could not exceed predevelopment conditions.

Therefore, runoff discharged to the lake had to be treated and detained in an on-site facility before discharge.

Therefore, runoff discharged to the lake had to be treated and detained in an on-site facility before discharge.

DOE required runoff from Lacamas Shores “not exceed predevelopment conditions”



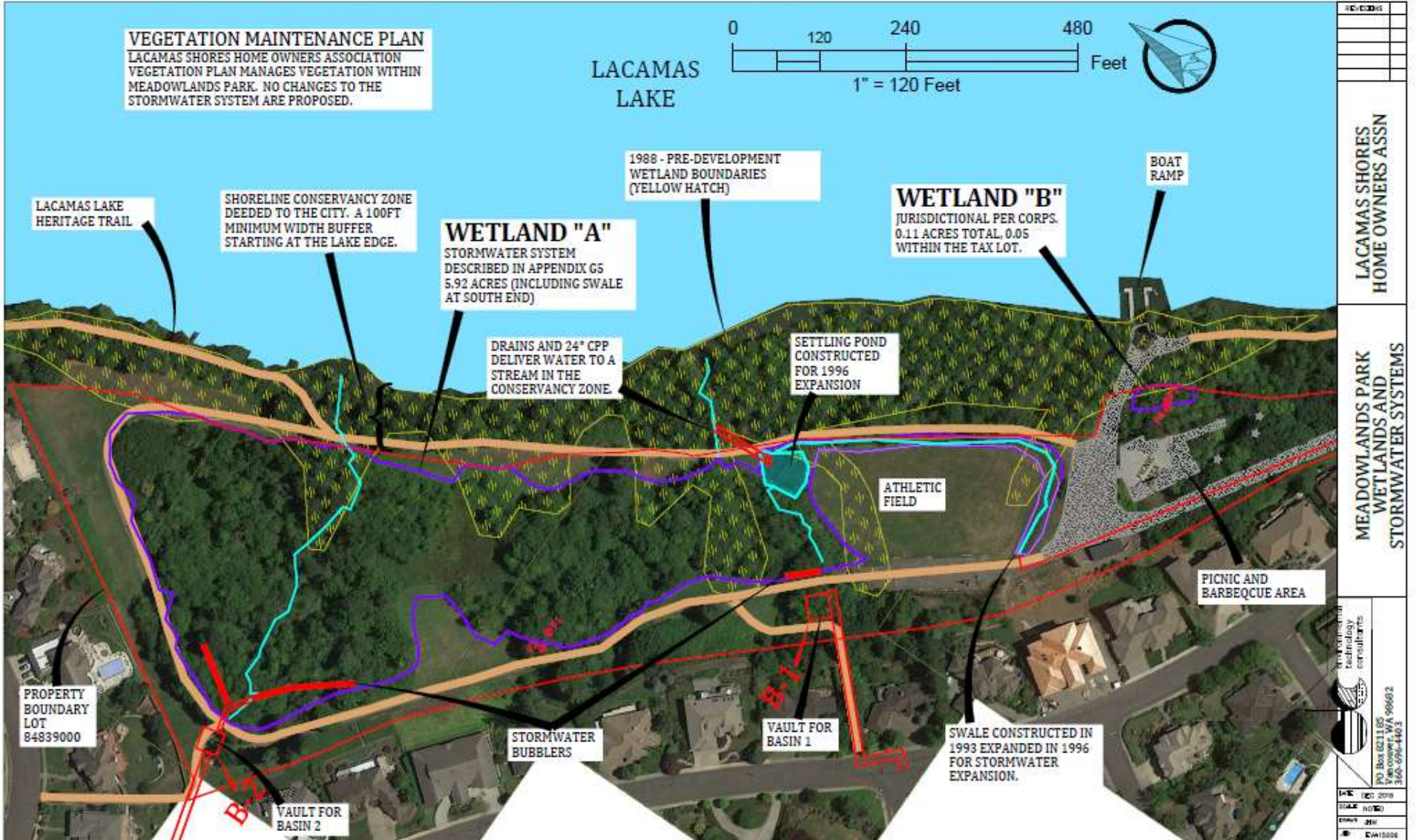
Article provides 1993 baseline standards

Phosphorus Loading Rates and Annual Phosphorus Load

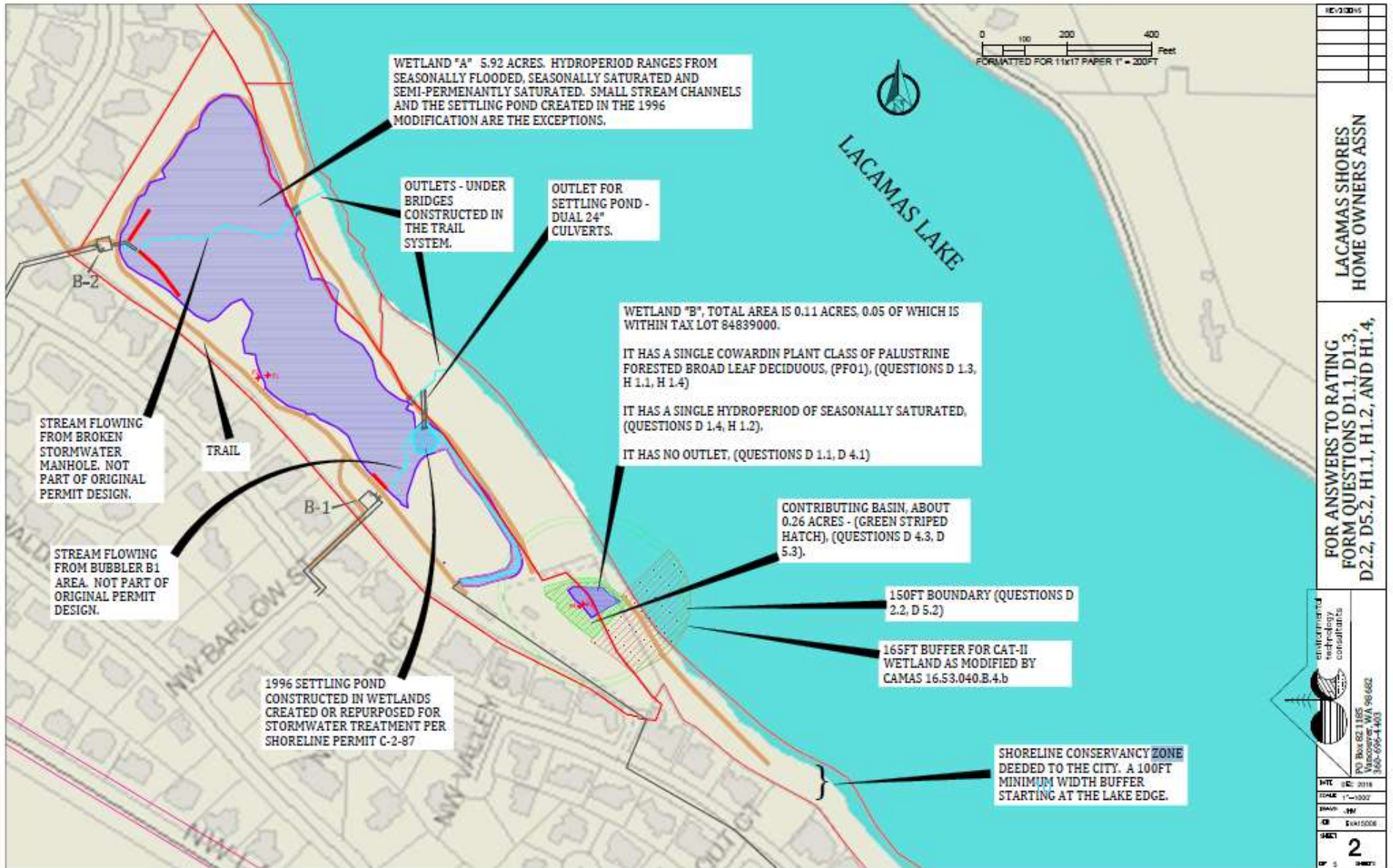
Station	Drainage basin areas, ha ^a	1990 Loading rate, kg ^b /ha-yr	1990 Phosphorus load, kg	1991 Loading rate, kg/ha-yr	1991 Phosphorus load, kg	1992 Loading rate, kg/ha-yr	1992 Phosphorus load, kg
Bubbler, wetland 1 (S4)	4.1	0.702	2.9	0.724	3.0	0.690	2.8
Bubbler, wetland 2 (S2)	8.8	0.872	7.7	0.543	4.5	0.716	6.3
Dwyer Creek (C1)	324	1.002	325	1.373	445	1.359	440
Unnamed Creek (C2)	46.5	1.099	51	0.868	40	0.914	43
Unnamed Creek (C3)	66.8	1.292	86	1.131	76	1.222	82

^ahectares x 2.471 = acres.
^bkilograms x 2.205 = pounds.

Consultant ETC's Map - S1



Consultant ETC's Map S2



City of Camas - Timeline

- ▶ 03/13/2014 - City says need a Wetland Delineation Report
- ▶ 02/22/2017 - Wetland Study Submitted to the City
- ▶ 03/06/2017 - City requires the Pre-Application Process
- ▶ 08/10/2017 - Submitted Pre-Application Documents and Proposal
- ▶ 08/24/2017 - City requires a Substantial Development Permit
 - ▶ Multiple reports required, possibly costing \$20,000

City of Camas - Timeline cont.

- ▶ 02/2018 - After pushback, City requires a Conditional Use Permit
 - ▶ Reports to cost approximately \$5000
 - ▶ BUT, City sent a letter to the DOE to confirm their own position (leading question)
- ▶ 2/22/2018 - DOE sent email response, “unlikely to approve” a CUP
- ▶ 03/12/2018 - LS HOA requests US ACE for a jurisdictional determination.
- ▶ 04/27/2018 - Meeting with the US ACE



City of Camas - Timeline cont.

Now - For the LS HOA to perform maintenance:

- ▶ The City of Camas requires a Substantial Development Permit, unless
- ▶ The DOE decides that no permit is needed or
- ▶ The DOE accepts a Conditional Use Permit, or
- ▶ The US ACE makes a determination that provides specific direction to one or all of the parties.



February 6, 2018

Page 2

In simple terms, the City believes that, from a storm water perspective, the facility should:

1. Be capable of accepting the storm water coming into it from its intake;
2. Effectively treat the storm water; and
3. Provide for appropriate outfalls of treated storm water.

To reach these goals, a Shoreline Conditional Use Permit must be obtained. The City can assist in the process of having submittal materials reviewed by its own staff of consultants prior to being presented to the Shoreline Management Committee and the state for final approval. Further, the City has requested the Department of Ecology to submit correspondence relating to its review of this issue, which we believe will be helpful in constructing a resolution to these issues. It is understood that the Department of Ecology correspondence should be available within the next few weeks. We will of course forward it upon receipt.

Thank you again for your consideration. If you have any questions, please let me know.

Very truly yours,

KNAPP, O'DELL & MacPHERSON PLLC



Shawn R. MacPherson
City Attorney

SRM/gg

City wants
repairs
completed,
but with a
permit



City of Camas Municipal Code

▶ - Exemptions to Critical Area regulations

[The CMC 16.53.010](#) C2b states that – Property is exempt from the City’s critical area reporting requirements if they are

“Artificial. Wetlands created from nonwetland sites including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, **stormwater facilities**, farm ponds, and landscape amenities; provided, that wetlands created as mitigation shall not be exempted;” [emphasis mine].



City of Camas Municipal Code

▶ - Another exemptions to Critical Area regulations

[The CMC 16.53.010](#) B3b states that – Property is exempt from the City’s critical areas reporting if all reasonable economic use of the property is denied:

“The standards of this chapter shall not be used to deny all reasonable economic use of private property. The following criteria must be met to verify that all reasonable economic use of the property has been denied:

- i. The application of this chapter would deny all reasonable economic use of the property,
- ii. No other reasonable economic use of the property has less impact on the wetland and buffer area,
- iii. Any wetland or buffer alteration is the minimum necessary to allow for reasonable economic use of the property, and
- iv. The inability of the applicant to derive reasonable economic use of the property is not the result of actions by the applicant after the date of adoption of the ordinance codified in this chapter;”



City of Camas Shoreline Master Plan

3.4 Conservation

3.4.1 Goal

The goal of conservation is to protect shoreline resources, vegetation, important shoreline features, shoreline ecological functions and the processes that sustain them to the maximum extent practicable.

3.4.2 Policies

6. Encourage the retention of existing vegetation along shorelines and where removal is unavoidable for physical or visual access to the shoreline, limit alteration such that habitat connectivity is maintained, degraded areas are restored, and the health of remaining vegetation is not compromised.

E

48. **Ecological Functions or Shoreline Functions** - the work performed or role played by the physical, chemical, and biological processes that contribute to the maintenance of the aquatic and terrestrial environments which constitute the shoreline's natural ecosystem (*WAC 173-26-200 (2)(c)*).



Camas Shoreline Master Plan

▶ Consist with Policies & Spirit

Camas Shoreline Master Program

CHAPTER 3 SHORELINE MASTER PROGRAM GOALS AND POLICIES

This chapter describes overall Program goals and policies. The general regulations in Chapter 5 and the specific use regulations in Chapter 6 are the means by which these goals and policies are implemented.

3.1 General Shoreline Goals

The general goals of this Program are to:

- Use the full potential of shorelines in accordance with the opportunities presented by their relationship to the surrounding area, their natural resource values, and their unique aesthetic qualities offered by water, topography, and **views**; and
- Develop a physical environment that is both ordered and diversified and which integrates water and shoreline uses while achieving a net gain of ecological function.



Camas Shoreline Master Plan

▶ Consist with Policies & Spirit

Camas Shoreline Master Program

3.7 Public Access and Recreation

3.7.1 Goal

The goal of public access and recreation is to increase the ability of the general public to enjoy the water's edge, travel on the waters of the state, and to **view** the water and the shoreline from adjacent locations.

3.7.2 Policies

1. Provide, protect, and enhance a public access system that is both physical and visual; utilizes both private and public lands; increases the amount and diversity of public access to the State's shorelines and adjacent areas; and is consistent with the shoreline character and functions, private rights, and public safety.
2. Increase and diversify recreational opportunities by promoting the continued public acquisition of appropriate shoreline areas for public use, and develop recreation facilities so that they are distributed throughout the community to foster convenient access.
3. Locate public access and recreational facilities in a manner that encourages variety, accessibility, and connectivity in a manner that will preserve the natural characteristics and functions of the shoreline. Public access includes both active and passive recreational activities (e.g. trails, picnic areas, **viewpoints**)



Camas Shoreline Master Plan

▶ Includes Restoration

3.8 Restoration

3.8.1 Goal

The goal of restoration is to re-establish, rehabilitate and/or otherwise improve impaired shoreline ecological functions and/or processes through voluntary and incentive-based public and private programs and actions that are consistent with the SMP Restoration Plan and other approved restoration plans.



Camas SMP Shoreline Restoration Plan

CLARK COUNTY COALITION SMP UPDATE

BATTLE GROUND | CAMAS | CLARK COUNTY | LA CENTER
RIDGEFIELD | VANCOUVER | WASHOUGAL | YACDLT

Final Shoreline Restoration Plan

Prepared by:
ESA Adolffson

Prepared For:
Clark County Coalition

June 2011



Restoration, on the other hand, involves more than simply following and enforcing existing rules or maintaining existing conditions. It requires taking active steps to improve and enhance the existing condition of resources and replace natural functions of resources that have been lost. *Restoration* measures are intended to supplement shoreline *protection* or *preservation* efforts such that environmental conditions improve over time.



City of Camas - Regulations

Camas Stormwater Design Standards Manual

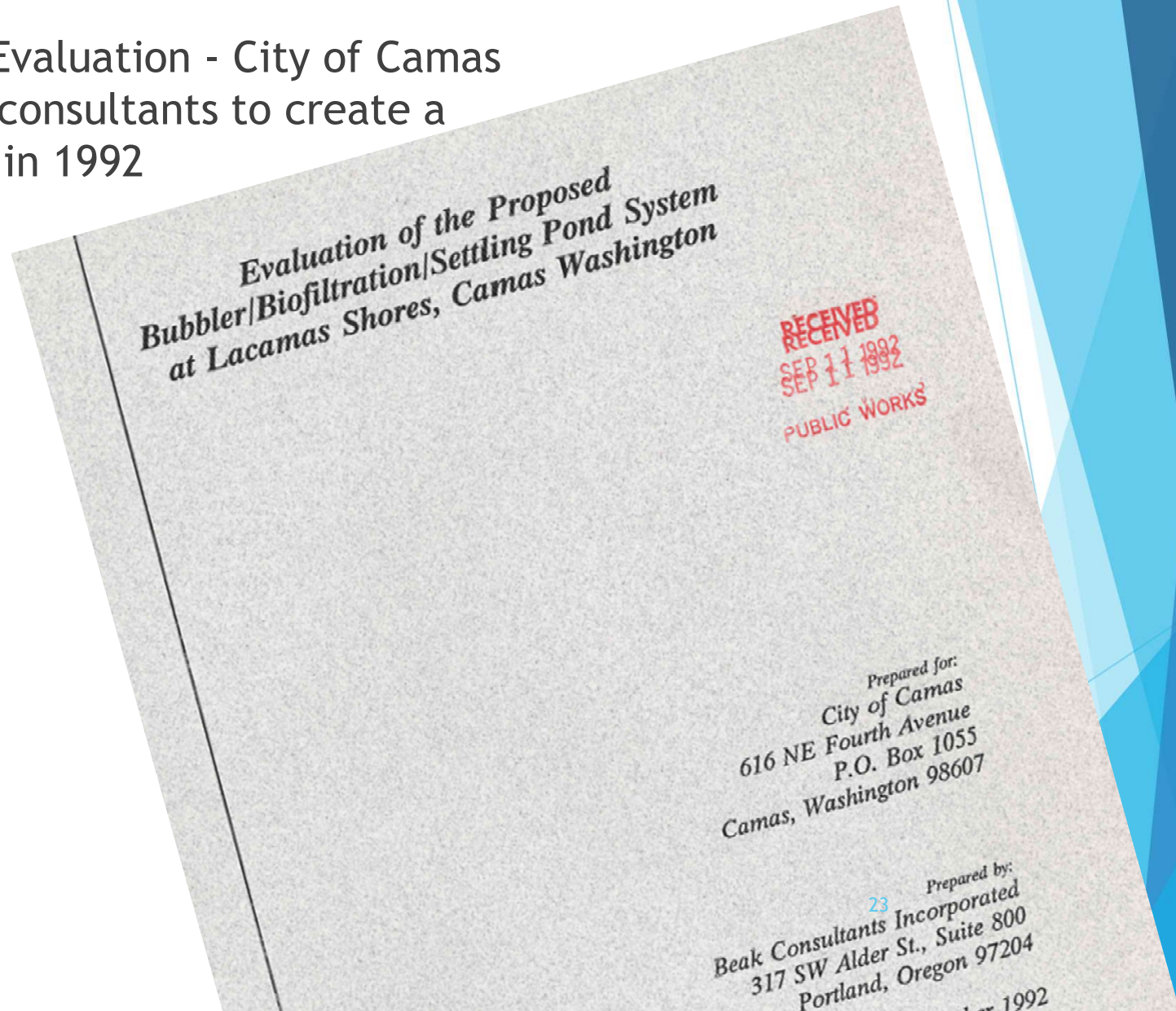
Resolution #1193

Delete any reference to Ecology's 2005 Stormwater Management Manual for Western Washington.
Please refer to the most current Ecology manual:
2012 as Amended in 2014 Stormwater Management Manual for Western Washington
(Most current manual language adopted November 22, 2016)



City Standards

- ▶ 1992 Evaluation - City of Camas hired consultants to create a Study in 1992



▶ 1992 City's Evaluation

3.0 PLANT MATERIALS

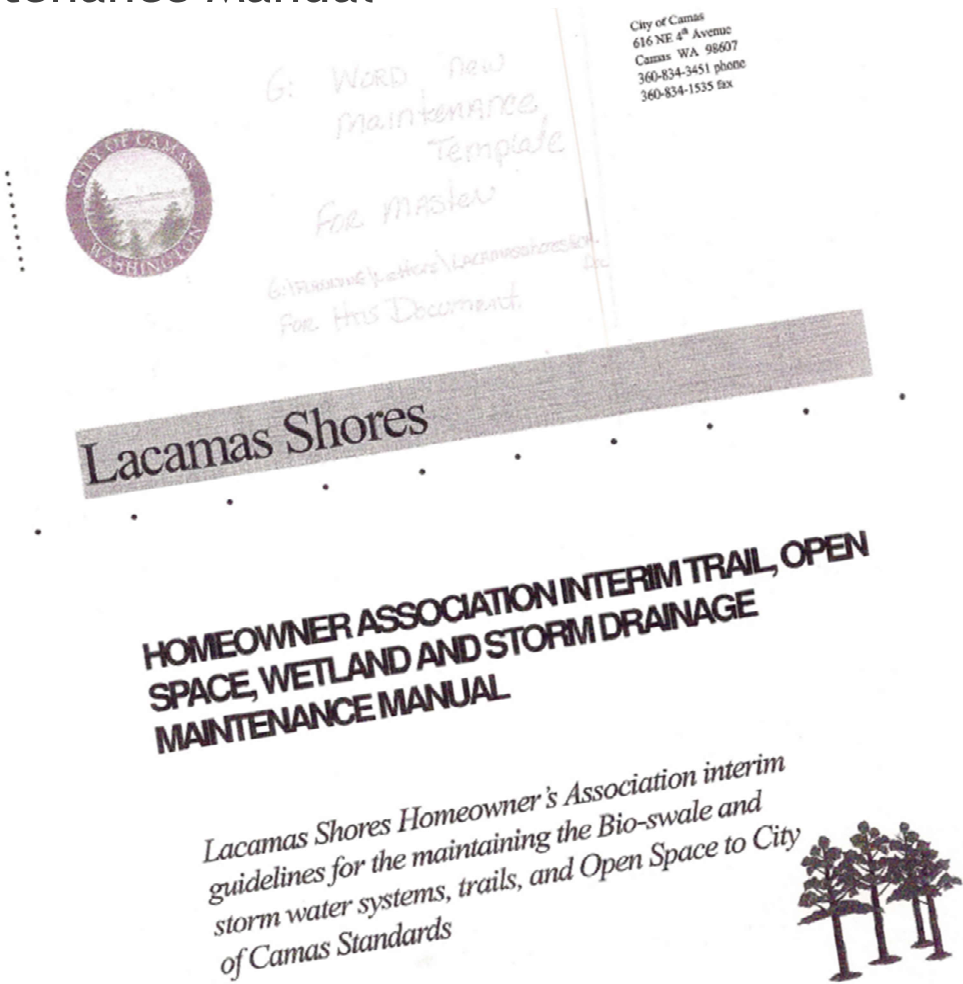
The primary function of the vegetation in the biofiltration system is to physically reduce stream velocity and increase residence time. A secondary, yet extremely important function of vegetation residing in the biofiltration system is to provide wildlife function and value. A site-specific planting plan for the proposed system was not provided with the extensive Preliminary List of Wetland Adjacent Upland Plants with Wildlife Value.

Table 4 lists several common grasses and their ratings for erosion protection. Tall fescue is rated as a superior ground cover. Bautista (1992) suggests that the "bioswale as proposed would in time develop into a wetland." Recent studies (EPA 1992) have shown that 96% of the vegetation in constructed wetlands in Oregon were the result of native vegetation. Thus, we suggest that planting be confined to ground cover in the biofilter system.



City Standards

- ▶ The City created the “Lacamas Shores HOA Interim Trail, Open Space, Wetland, and Storm Drainage Maintenance Manual”



Lacamas Shores HOA Interim Trail, Open Space, Wetland, and Storm Drainage Maintenance Manual

Maintenance is of primary importance if storm water systems are to continue to function as originally designed. The following specific guidelines apply to the Lacamas Shores detention ponds, biofiltration swale and level spreader outlet :

1. Remove any debris in bio swale and conveyance swale as well as any that may be floating in the wet pond.
2. If there are any low areas in the berm, build back up, seed and cover with plastic or erosion net.
3. Replace any rocks that have washed out of outfalls.
4. Ensure inlet and outlet pipes are free of any debris or sediment build up.
5. Water levels permitting, remove dead plants from wet pond.
6. Generally reseed any area that is lacking or sparse in vegetation.
7. If swales are mowed, don't leave the grass clippings in the swale.
8. Make sure outlet grates are free of debris.
9. Make sure maintain 4 feet of gravel around the level spreader outlet. Keep the drain rock free of mud, leaves and other debris.



LS HOA Interim Trail, Open Space, Wetland, and Storm Drainage Maintenance Manual

Sediment

Maintenance of sediment traps and attention to sediment accumulation within the pond is extremely important. Sediment deposition should be continually monitored in the basin. Owners and maintenance authorities should be aware that significant concentrations of heavy metals (e.g., lead, zinc, and cadmium) as well as some organics such as pesticides, may be expected to accumulate at the bottom of these treatment facilities. Testing of sediment, especially near points of inflow, should be conducted regularly to determine the leaching potential and level of accumulation of hazardous material before disposal. For disposal procedures, refer to Volume IV disposal requirement for catch basin and pond sediments. ⁴

Vegetation

If a shallow marsh is established, then periodic removal of dead vegetation will be necessary. Since decomposing vegetation can release pollutants captured in the wet pond, especially nutrients, it may be necessary to harvest dead vegetation annually prior to the wet season. Otherwise the decaying vegetation can export pollutants out of the pond and also can cause nuisance conditions to occur. ³

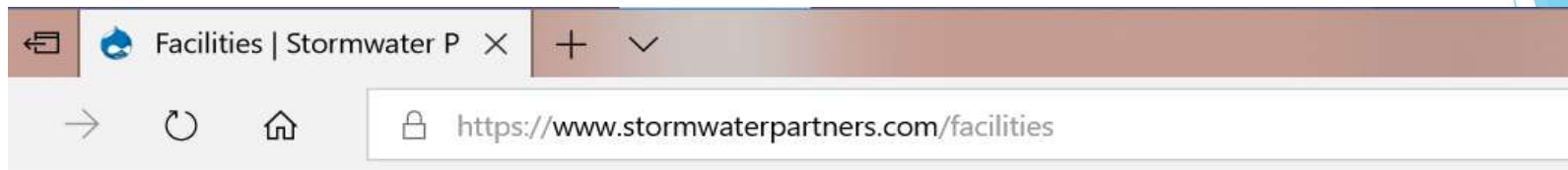


City of Camas - Standards

- ▶ Manual by the Stormwater Partners of SW Washington created for HOAs called “Managing Stormwater”
- ▶ Includes Clark County, Cities of Camas, Vancouver, Washougal, Battleground, etc.
 - ▶ Website dedicated to it: www.stormwaterpartners.com



“Managing Stormwater” Manual



Stormwater facilities

Rainwater becomes stormwater when it falls on a hard surface that drains to the storm sewer. As stormwater flows off roofs, streets, and parking lots it picks up pollutants such as sediment, pet waste, motor oil, fertilizers, yard debris and litter, which are carried to nearby streams.

Stormwater facilities and LID (low impact development) play an important role in removing pollution and controlling the flow of stormwater runoff.

Local governments AND private property owners are responsible for managing stormwater runoff. If you have stormwater facilities or LID in your development you need to find out how to inspect and maintain them. Staying on top of maintenance saves time and money while protecting the health of our streams.

MANAGING PRIVATE STORMWATER FACILITIES

Who is responsible?

In western Washington, public agencies or private property owners are responsible for maintaining stormwater facilities. All facilities, whether public or private, must meet the same state and local maintenance requirements for proper control and treatment of stormwater runoff.

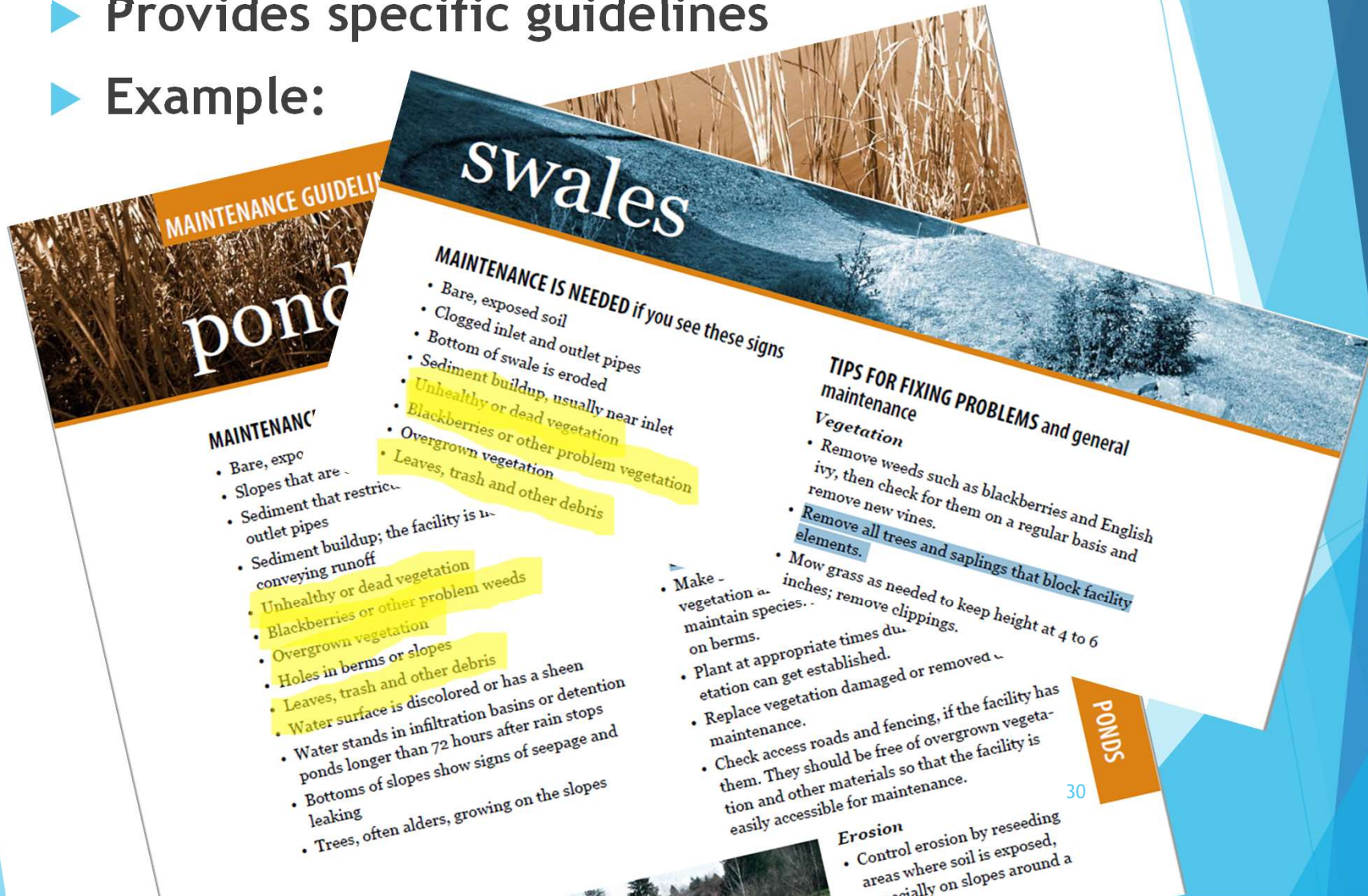


This detention pond is an example of a stormwater facility.



“Managing Stormwater” Manual

- ▶ Provides specific guidelines
- ▶ Example:



Department of Ecology Standards

- ▶ DOE Stormwater Management Manual
(page 10-26 and on)

<https://fortress.wa.gov/ecy/publications/documents/1210030.pdf> (page 740 in the PDF>

Stormwater Management Manual for Western Washington

Volume V Runoff Treatment BMPs

Prepared by:
Washington State Department of Ecology
Water Quality Program

August 2012
Publication No. 12-10-030



BMP T10.30: Stormwater Treatment Wetlands

Purpose and Definition

In land development situations, wetlands are usually constructed for two main reasons: to replace or mitigate impacts when natural wetlands are filled or impacted by development (mitigation wetlands), and to treat stormwater runoff (stormwater treatment wetlands). Stormwater treatment wetlands are shallow man-made ponds that are designed to treat stormwater through the biological processes associated with emergent aquatic plants (see the stormwater wetland details in [Figure 10.3.7](#) and [Figure 10.3.8](#)).

Wetlands created to mitigate disturbance impacts, such as filling, may not also be used as stormwater treatment facilities. This is because of the different, incompatible functions of the two kinds of wetlands. Mitigation wetlands are intended to function as full replacement habitat for fish and wildlife, providing the same functions and harboring the same species diversity and biotic richness as the wetlands they replace. Stormwater treatment wetlands are used to capture and transform pollutants, just as wetponds are, and over time pollutants will concentrate in the sediment. This is not a healthy environment for aquatic life. Stormwater treatment wetlands are used to capture pollutants in a managed environment so that they will not reach natural wetlands and other ecologically important habitats. In addition, vegetation must occasionally be harvested and sediment dredged in stormwater treatment wetlands, further interfering with use for wildlife habitat.

In general, stormwater wetlands perform well to remove sediment, metals, and pollutants that bind to humic or organic acids. Phosphorus removal in stormwater wetlands is highly variable.

▶ DOE Stormwater Management Manual



▶ DOE Stormwater Management Manual

Planting Requirements

The wetland cell shall be planted with emergent wetland plants following the recommendations given in [Table 10.3.1](#) or the recommendations of a wetland specialist. Note: Cattails (*Typha latifolia*) are not recommended. They tend to escape to natural wetlands and crowd out other species. In addition, the shoots die back each fall and will result in oxygen depletion in the wetpool unless they are removed.

**Table 10.3.1
Emergent Wetland Plant Species Recommended for Wetponds**

Species	Common Name	Notes	Maximum Depth
INUNDATION TO 1-FOOT			
			to 2 feet
<i>Agrostis exarata</i> ⁽¹⁾	Spike bent grass	Prairie to coast	
<i>Carex stipata</i>	Sawbeak sedge	Wet ground	to 2 feet
<i>Eleocharis palustris</i>	Spike rush	Margins of ponds, wet meadows	to 2 feet
<i>Glyceria occidentalis</i>	Western mannagrass	Marshes, pond margins	
<i>Juncus tenuis</i>	Slender rush	Wet soils, wetland margins	
<i>Oenanthe sarmentosa</i>	Water parsley	Shallow water along stream and pond margins; needs saturated soils all summer	
<i>Scirpus atrocinctus</i> (formerly <i>S. cyperinus</i>)	Woolgrass	Tolerates shallow water; tall clumps	18 inches
<i>Scirpus microcarpus</i>	Small-fruited bulrush	Wet ground to 18 inches depth	
<i>Sagittaria latifolia</i>	Arrowhead		
INUNDATION 1 TO 2 FEET			



Another DOE Publication

[2013 Update on Wetland Buffers by the Dept. of Ecology.](#) States that:

- i. “Buffers may lose their effectiveness to disperse surface flows over time as flows create rills and channels, causing erosion within the buffer.”, p. 28.
- ii. Also notes that “The use of buffers to protect and maintain water quality in wetlands (removing sediments, nutrients, and toxicants) is best accomplished by ensuring sheet flow across a well-vegetated buffer with a flat slope (less than 5%).” p. 15. The two factors indicated were updated to be two of 6 or more key factors, including “soil infiltration, surface roughness (partially caused by vegetation), slope length, and adjacent land use practices”, “soil type, subsurface water regime (e.g. soil saturation, groundwater flow paths) and subsurface biogeochemistry”, and “interactions between groundwater and surface water” and water pathways.

[“Wetlands for Stormwater Treatment”](#) July 1992 article by Mark E. Bautista and N

WDFW says Lacamas Lake suffers from “oxygen depletion”

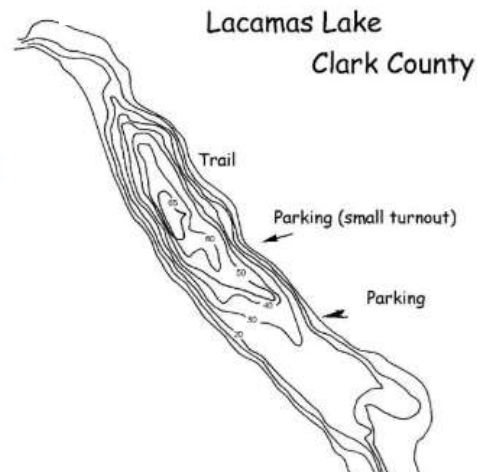


Lacamas Lake

This lake was formed from a pre-historic channel of the Columbia River. The lake suffers from over-enrichment causing oxygen depletion, over abundance of plants and algae.

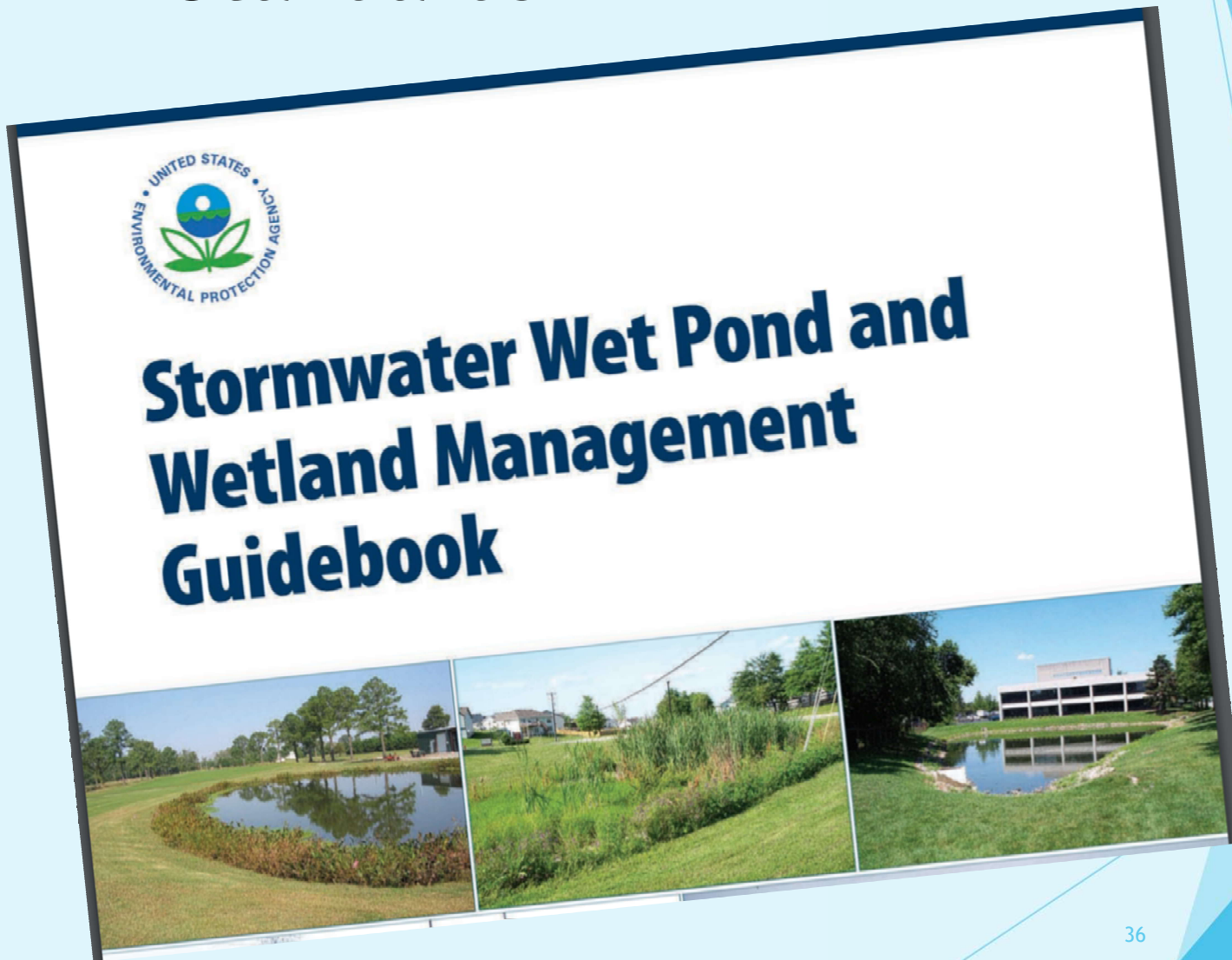
The lake is primarily stocked with Brown and Rainbow Trout; however, there is a good population of Yellow Perch and other warmwater species. The lake is located one mile north of Camas.

Round Lake, located at the southeast end of the lake provides good bank access for trout and warmwater fishing.



1997 Lacamas Lake Survey: The Warmwater Fish Community of a Highly Eutrophic Lowland Lake
Category: Fish/Shellfish Research and Management - Warmwater Surveys
Date Published: August 1999
Number of Pages: 33
Publication Number: FPT 99-03
Author(s): Karl W. Mueller and Mark R. Downen

EPA Standards



EPA Standards

Program managers and responsible parties need to recognize and understand that neglecting routine maintenance and inspection can lead to more serious problems that threaten public safety, impact water quality, and require more expensive corrective actions. Appendix A of this Guidebook provides program managers with specific maintenance activity unit cost and frequency information.

Without proper maintenance, excess pollutants in ponds and wetlands may actually become sources of water quality issues such as poor water color/clarity/odor, low dissolved oxygen leading to plant die off, and prevalence of algal blooms. When these stormwater BMPs are “flushed” during a large rain event, the excess nutrients causing these problems may be transferred to the receiving waterbody.

The proliferation of mosquitoes is usually an early indication that there is a maintenance problem.

Like wet ponds, wetlands can increase adjacent property values.



EPA Standards

Section 2: Inspection and Maintenance of Existing Ponds and Wetlands

Table 2.3: Maintenance Activities and Schedules

Category	Management Practice	Maintenance Activity	Schedule
Wetlands	Shallow wetlands, pond wetlands, "pocket" wetlands	<ul style="list-style-type: none"> – Cleaning and removing debris after major storm events (>2" rainfall) – Harvesting of vegetation when a 50% reduction in the original open water surface area occurs – Repairing embankment and side slopes – Repairing control structure 	Annual or as needed
		<ul style="list-style-type: none"> – Removing accumulated sediment from forebays or sediment storage areas when 60% of the original volume has been lost 	5-year cycle
		<ul style="list-style-type: none"> – Removing accumulated sediment from main cells of pond once 50% of the original volume has been lost 	20-year cycle
		<ul style="list-style-type: none"> – Removing accumulated 	5-year cycle



US Clean Water Act

- ▶ Federal law regulates all “Waters of the US”
- ▶ Disallows the dumping of untreated stormwater directly into any “Waters of the US”
- ▶ Lacamas Lake and the Conservancy Zone wetlands are WUSA
- ▶ Exemption for Stormwater Filtration Systems

Clean Water Act

§230.3 Definitions.

For purposes of this part, the following terms shall have the meanings indicated:

• • •

(2) The following are not “waters of the United States” even where they otherwise meet the terms of paragraphs (o)(1)(iv) through (viii) of this section.

• • •

(vi) Stormwater control features constructed to convey, treat, or store stormwater that are created in dry land.



Clean Water Act

Example of Criminal Provisions

<https://www.epa.gov/enforcement/criminal-provisions-clean-water-act>

Direct Discharge (to waters of United States including wetlands)

Elements:

- A person
 - Negligently or Knowingly
 - Discharges a pollutant from a point source into a water of the United States without a NPDES or 404 Permit or in violation of a permit

Statute: 33 U.S.C. 1319(1) & (2)

Penalty:

- Negligent Violations: 1 year and/or \$2,500 - 25,000 per day;
 - Subsequent convictions 2 years and/or \$50,000 per day.
- Knowing Violations: 3 years and/or \$5,000 - 50,000 per day;
 - Subsequent convictions 6 years and/or \$100,000 per day.



Relevant Regulations: 40 C.F.R. 122

*Note that the Discharge of fill material into a wetland may be permitted under 33 U.S.C. 1344

Lacamas Shores Articles of Incorporation

ARTICLE III Purpose

This Corporation is organized for the following purposes:

1. To provide for maintenance, preservation and architectural control of the residence Lots and Common Areas, including but not limited to private roadways and wetlands as such lots and common areas are designated on the recorded plat or plats of Lacamas Shores Development located within that certain tract of property described on Exhibit "A" attached hereto and by this reference made a part hereof, and to promote the health, safety, protection and welfare of the residents within the above-described property.

2. To be operated as a nonprofit corporation under the Washington Nonprofit Corporation Act (RCW 24.03) and the applicable non-profit qualification provisions under Federal law and regulation.

3. To preserve, protect and improve the quality and character of the Lacamas Shores Development, and to do everything necessary, proper, advisable, and/or convenient for the accomplishment of this purpose.

4. The Corporation may engage in any lawful activity⁴¹ for which corporations may be organized under Washington Law and the

Other Documents Referenced in the Body of the Presentation

- ▶ [Shoreline Hearing Board Case No. SHB 88-33 1988 Agreed Order](#)
- ▶ [City of Camas Permit No. 2-87 \(C-2-87\)](#) and Shoreline Conditional Use Permit, Camas Permit No. 590-14-7806
- ▶ [City of Camas Stormwater Facilities Map - March 2016](#)
- ▶ [Lacamas Shores HOA CC&Rs](#)
- ▶ [November 2014 Tax Assessor's Report on View Coding and Value Changes - and related letter.](#)

List of Other Relevant Documents

- ▶ [1988 Deed of Dedication](#) for the Conservancy Zone. Shows the agreement of the City to allow the LSHOA to encroach on the CZ to perform maintenance necessary for the Biofilter.
- ▶ [July 2017 Draft Description of Proposed Project](#) - by the LS HOA Board
- ▶ [The “Lacamas Shores HOA Meadowlands Park Wetland Delineation & Proposed Vegetation Plan”](#) submitted by ETC to the City of Camas in March 2017.
- ▶ [1993 Revised Permit 2013 Update on Wetland Buffers](#) by the Dept. of Ecology.



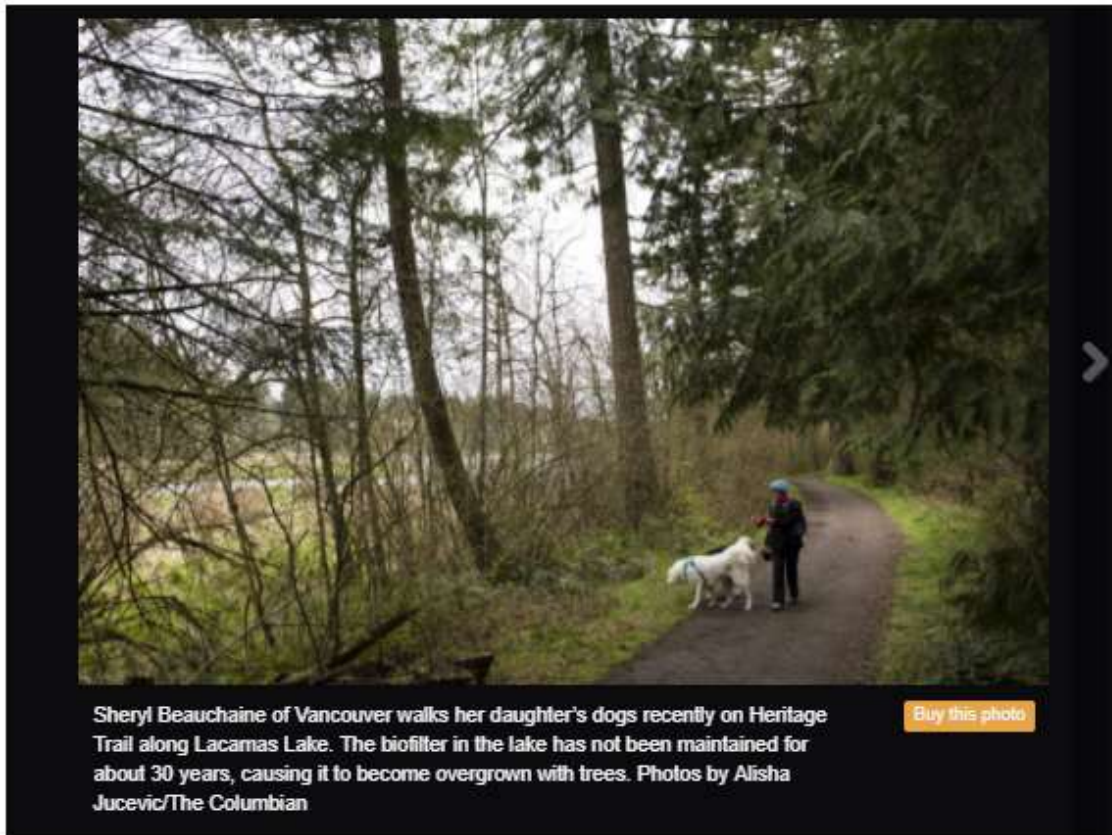
List of Other Relevant Documents - Cont'd

- ▶ [Clark County Stormwater Manual 2015, Book 4 “Stormwater Facility Operation and Maintenance,”](#)
- ▶ [2013 Update on Wetland Buffers by the Dept. of Ecology](#)
 - ▶ “The use of buffers to protect and maintain water quality in wetlands (removing sediments, nutrients, and toxicants) is best accomplished by ensuring sheet flow across a well-vegetated buffer with a flat slope (less than 5%).” p. 15.
 - ▶ “Buffers may lose their effectiveness to disperse surface flows over time as flows create rills and channels, causing erosion within the buffer.”, p. 28.



Shoring up a key wetland in Camas

After decades of neglect, maintenance of Lacamas Shores biofilter long overdue



Buy this photo

By Katy Sword, Columbian staff writer
Published: April 18, 2018, 6:01 AM



In the News



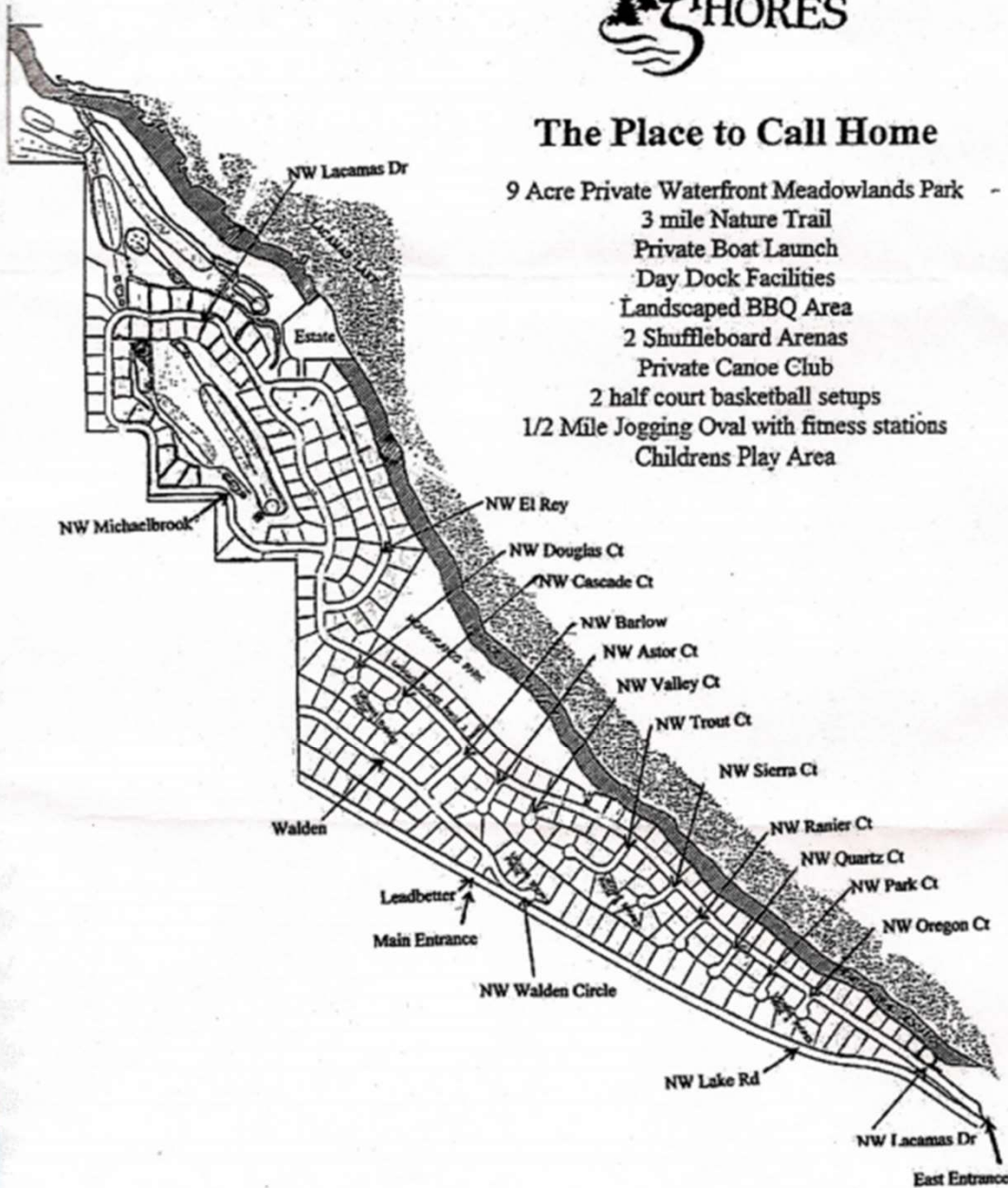
Aerial View - Foliage Before





The Place to Call Home

- 9 Acre Private Waterfront Meadowlands Park
- 3 mile Nature Trail
- Private Boat Launch
- Day Dock Facilities
- Landscaped BBQ Area
- 2 Shuffleboard Arenas
- Private Canoe Club
- 2 half court basketball setups
- 1/2 Mile Jogging Oval with fitness stations
- Childrens Play Area



Original
sales map