

# Welcome

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YOU ARE IN THE RIGHT SPOT. WE WILL START AT 9:00 AM.



# Wetlands

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JANUARY 27, 2021



# 2021 Critical Areas and Shoreline Monitoring & Adaptive Management Online Workshops

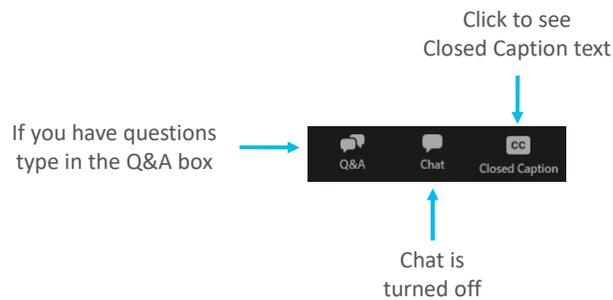
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Welcome to  
**Wetlands**

# 2021 Critical Areas and Shoreline Monitoring & Adaptive Management Online Workshops

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## 2021 Critical Areas and Shoreline Monitoring & Adaptive Management Online Workshops

The screenshot shows a webinar slide with a dark blue background. On the left, the title "How to Successfully Protect Critical Areas and Shorelines: A Step-by-Step Introduction to Monitoring and Adaptive Management" is written in white. Below the title, it says "JANUARY 13, 2021". On the right, there are logos for the Washington Department of Fish and Wildlife, the Washington State Department of Commerce, and the Department of Ecology, State of Washington. To the right of the logos is a video feed showing two participants: a woman named Maria Schmidt and a man named Scott Kupper. An arrow points to the video feed with the text "Click in between to change size".

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## Visit Project Website for More Information

[https://www.ezview.wa.gov/site/alias\\_1992/37576/overview.aspx](https://www.ezview.wa.gov/site/alias_1992/37576/overview.aspx)

The screenshot shows the EZview website page for "Critical Areas Adaptive Management Training Workshops". The page has a navigation bar with "Overview", "Contacts", "Events", "2021 Workshops", and "Library". The main content area is titled "2021 Workshops" and contains the following text:

Do you want to know if your critical areas and shoreline regulations are working as intended? Or how to effectively track special permit conditions and mitigation requirements?

Please join us for an in depth review of best practices, case studies, resources, and tools to enhance monitoring and adaptive management efforts for your critical areas and shorelines.

As a follow-up to our 2018 workshops, this 11-week webinar series features expert guest speakers, opportunities for peer-to-peer learning, information sharing, and individual technical assistance.

Earn AICP continuing education credits for your attendance!

Click on a link below to register. (Most sessions are 90 minutes. A couple sessions may go up to 2 hours.)

- Adaptive Management Workshop 1 – How to Successfully Protect Critical Areas and Shorelines: A Step-by-Step Introduction to Monitoring and Adaptive Management
- Adaptive Management Workshop 2 – Setting the Stage: Successful adaptive management and critical areas monitoring opportunities
- Adaptive Management Workshop 3 – Wetlands
- Adaptive Management Workshop 4 – Geologically Hazardous
- Adaptive Management Workshop 5 – Fish and Wildlife Habitat Conservation Areas
- Adaptive Management Workshop 6 – Frequently Flooded Areas
- Adaptive Management Workshop 7 – Critical Aquifer Recharge Areas (CARAs)
- Adaptive Management Workshop 8 – Shoreline
- Adaptive Management Workshop 9 – Permit Implementation Monitoring Tools
- Adaptive Management Workshop 10 – CAO Performance Indicators
- Adaptive Management Workshop 11 – Adaptive Management Interactive Workshop

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# 2021 Critical Areas and Shoreline Monitoring & Adaptive Management Online Workshops



This project has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement PC-01J2230116-05251 through the Washington Department of Fish and Wildlife.

The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency or the Washington Department of Fish and Wildlife, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

## Workshop Wednesday Series Lineup

Register using Zoom.



**January 13 - 9:00 a.m. - 11:00 a.m.**  
How to Successfully Protect Critical Areas and Shorelines: A Step-by-Step Introduction to Monitoring and Adaptive Management



**February 24 - 9:00 a.m. - 11:00 a.m.**  
Critical Aquifer Recharge Areas (CARAs)



**January 20 - 9:00 a.m. - 11:00 a.m.**  
Setting the Stage: Successful adaptive management and critical areas monitoring program basics



**March 3 - 9:00 a.m. - 11:00 a.m.**  
Shorelines



**January 27 - 9:00 a.m. - 11:00 a.m.**  
Wetlands



**March 10 - 9:00 a.m. - 11:00 a.m.**  
Permit Implementation Monitoring Tools



**February 3 - 9:00 a.m. - 11:00 a.m.**  
Geologically Hazardous Areas



**March 17 - 9:00 a.m. - 11:00 a.m.**  
CAO Performance Indicators



**February 10 - 9:00 a.m. - 11:00 a.m.**  
Fish and Wildlife Habitat Conservation Areas



**March 24 - 9:00 a.m. - 11:00 a.m.**  
Adaptive Management Interactive Workshop



**February 17 - 9:00 a.m. - 11:00 a.m.**  
Frequently Flooded Areas

Note: Workshop names may change but topic will stay the same.

# American Planning Association Education Credit

GO TO: [HTTPS://PLANNING.ORG/EVENTS/EVENTMULTI/9210027/](https://planning.org/events/eventmulti/9210027/)

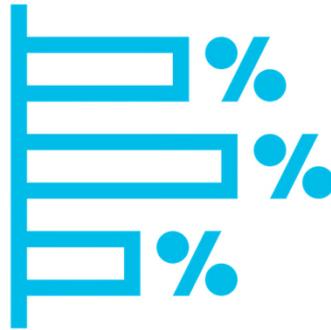
The screenshot shows the American Planning Association (APA) website. At the top, there is a navigation bar with links for 'About APA', 'Join', and 'Log In'. Below this is a search bar with the text 'Enter keyword or phrase' and a 'Search' button. The main navigation menu includes 'Membership', 'Knowledge Center', 'Education and Events', 'AICP', 'Policy and Advocacy', 'Career Center', 'In Your Community', 'Connect with APA', and 'APA Foundation'. The left sidebar lists 'Education and Events' with sub-links for 'Online Education', 'Educational Events', 'National Planning Conference', 'Policy and Advocacy Conference', 'Speaker Directory', 'Burnham Forum', and 'Calendar of Events'. The main content area features the event title '2021 Critical Areas and Shorelines Monitoring and Adaptive Management Online Workshops' and the APA Washington Chapter logo. The event details include the ID #9210027 and dates: Wednesday, February 3, 2021, 9 a.m. and Wednesday, March 24, 2021, 11 a.m. PDT in Olympia, WA, United States. An 'OVERVIEW' section describes a partnership with Washington state departments to develop an 11-week webinar series.

# Land Acknowledgment

Discover which tribal lands you reside on text your zip code to (907) 312-5085.



## Audience Engagement Poll



## Poll



**Question:**



Does your jurisdiction see Ecology as a resource or as a regulator?

## Meet Your Presenters



Rick Mraz is a certified Professional Wetland Scientist who works as the Wetlands Policy Lead for the Department of Ecology. He began his career in wetlands work in Lee County, Florida in 1987. He has worked as a field biologist and environmental planner with local, state and federal agencies in Washington since 2001. Rick has degrees in Geology, Field Biology and Philosophy.

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# Wetland regulation in Washington

Growth Management:  
The Roles of Ecology and the Local  
Government in Wetland protection



## Local, state, and federal regulation

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Local – RCW 36.70A (GMA),  
critical areas ordinances (CAO) &  
RCW 90.58, Shoreline Master  
Programs

State- RCW 90.48, WAC 173-201A  
(Water Pollution Control Act)

Federal – Clean Water Act (CWA)



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## Washington's Growth Management Act (GMA)

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The Washington Legislature enacted the Growth Management Act (GMA) in 1990 to guide planning for growth and development in Washington State.

GMA requires local governments in fast growing and densely populated counties to develop and adopt comprehensive plans.

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## GMA Requirements – RCW 36.70A

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All counties and cities are required to:

- Designate and protect critical areas functions and values
- Wetlands are one of the listed critical areas.



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## RCW 36.70A.172

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**Critical areas—Designation and protection—Best available science to be used.**

Critical Areas Ordinances (CAOs)

Counties and cities shall include the **best available science** in developing policies and development regulations.

A well-documented record should support local governments' decision-making.

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## Agency support for GMA

Counties and cities should (substantively) consider **wetlands protection guidance** provided by the **Department of Ecology\***, including:

- Management recommendations based on the best available science (CAO Guidance)
- Mitigation guidance
- <https://ecology.wa.gov/Water-Shorelines/Wetlands/Regulations/Local-regulations>

\*WAC 365-190-090

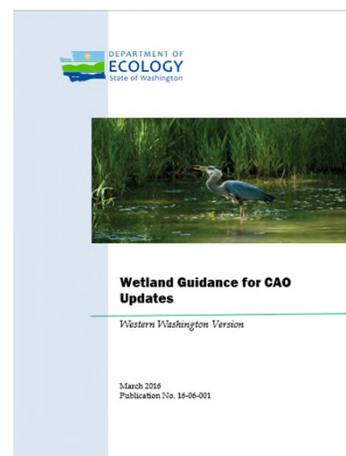
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## Wetland Guidance for CAO Updates

Most current guidance (2016)

Incorporates BAS

Sample ordinance



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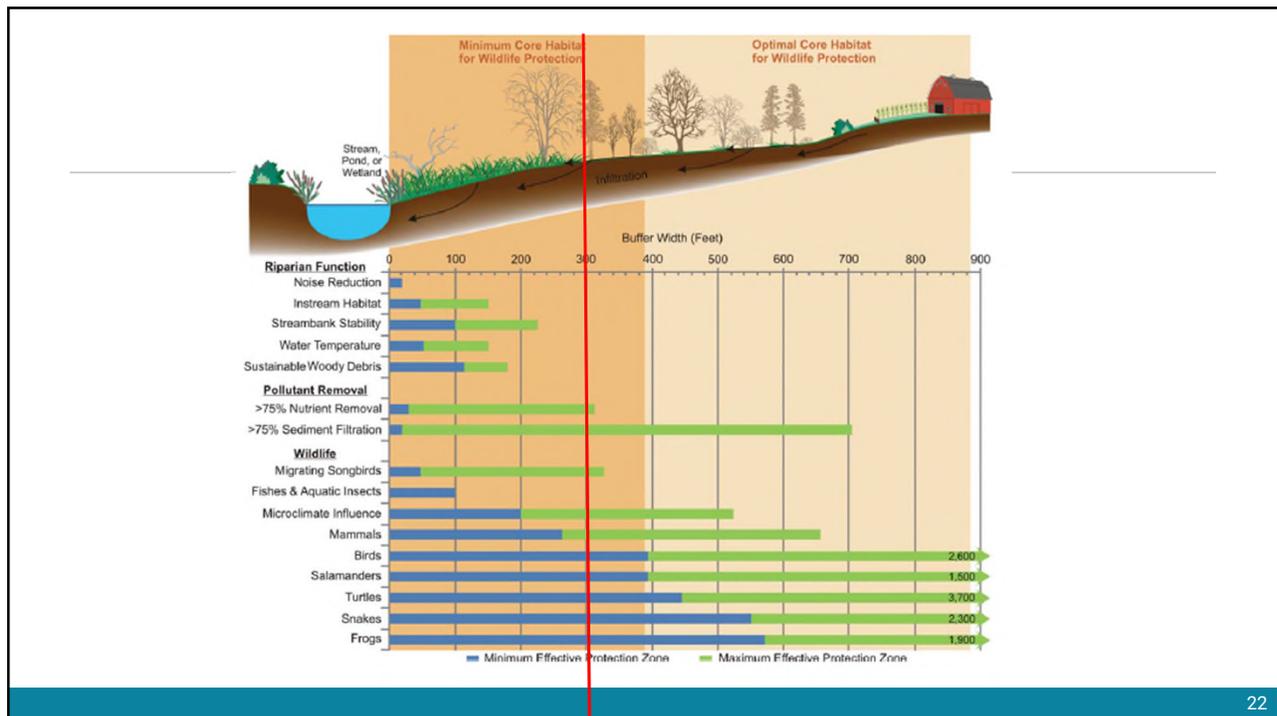
# Buffers 101

Scientific literature is clear that buffers are critical to maintaining wetlands and their functions

Width is only one of several factors that affect buffer effectiveness (adjacent land use, condition of buffer, etc.)

Width depends on what function you're protecting

- Water quality 10-50 feet
- Wildlife habitat 100-1200 feet



## Buffer tables in Ecology’s wetland guidance

Use rating scores and category descriptions from 2014 rating system

Emphasis on habitat function score

Emphasizes the importance of a corridor in protecting habitat function for some wetlands



**Washington State Wetland Rating System**

For Western Washington

2014 Update



October 2014 - Effective January 2015  
Publication no. 14-06-029

## Regulating wetland buffers

Wetland Category	Buffer width (in feet) based on habitat score		
	3-5	6-7	8-9
Category I: Based on total score	75	110	225
Category I: Bogs and Wetlands of High Conservation Value	190		225
Category I: Interdunal	225 (buffer width not based on habitat scores)		
Category I: Forested	75	110	225
Category I: Estuarine and Coastal Lagoons	150 (buffer width not based on habitat scores)		
Category II: Based on score	75	110	225
Category II: Interdunal Wetlands	110 (buffer width not based on habitat scores)		
Category II: Estuarine and Coastal Lagoons	110 (buffer width not based on habitat scores)		
Category III (all)	60	110	225
Category IV (all)	40		

## Risk-based approach

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Ecology's guidance is a moderate-risk approach

Consider the cumulative effects of:

- Exemptions
- Exceptions
- Averaging
- Reduction

The bottom line: *What buffer do you end up with and is it wide enough to protect the function present?*

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## Protecting wetland buffers

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Local governments have a primary role in regulating wetland buffers

State and federal CWA jurisdictions are triggered only when there is a direct wetland impact

Ecology's recommended buffer widths are based on an assumption that the **buffer is well vegetated**.

Where the buffer is not well vegetated, it is necessary to either **increase** the buffer width or require that the standard buffer width be **revegetated**.

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## Protecting wetland buffers

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Impacts to buffers may be considered **indirect impacts** to wetlands

CAOs often contain provisions for buffer averaging or reduction

CAOs should contain mitigation requirements for buffer impacts or indirect impacts

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## Indirect impacts

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### Indirect impacts

- occur outside the footprint of direct impacts.
- result in a reduction of wetland function
- compensatory mitigation is needed to offset these losses.

e.g.:

Buffer encroachment  
Stormwater inputs  
Fragmentation

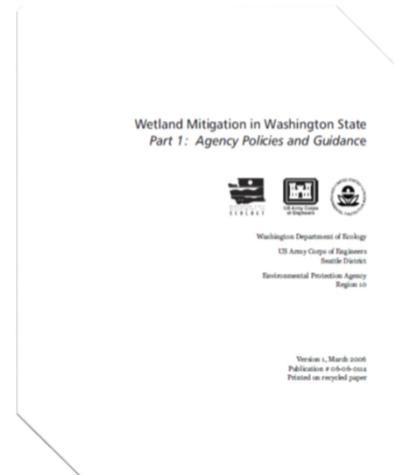
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## Mitigation

Begins with sequencing

Offsets impacts (Ratios, risk factors, temporal loss)

Needs to be monitored for success



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## Mitigation sequencing

Washington State Environmental Policy Act (SEPA) and the federal Clean Water Act require

- a) Avoiding
- b) Minimizing
- c) Rectifying
- d) Reducing
- e) Compensating
- f) Monitoring

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# Mitigation sequencing

## Avoidance and Mitigation Checklist

<https://ecology.wa.gov/Water-Shorelines/Wetlands/Mitigation/Avoidance-and-minimization>

## Wetland Avoidance and Minimization Checklists



These checklists provide examples of how to accomplish avoidance and minimization during site analysis, project design, and construction. They are tools to help applicants prepare more complete project applications, which will facilitate faster review and decisions.

### Project Assessment

Yes/No	Site Analysis
	Is the wetland rated as Category I or II or listed as a wetland with Special Characteristics or that needs Special Protection in the appropriate state rating system:

# When and how to get technical assistance

## Tools & resources

- Contacts by subject & region
- Rating systems
- Delineation resources
- Hiring a qualified wetland professional
- Best available science
- Credit debit method
- Function assessment project
- Wetland program plan

Have a wetland-related question? Find our regional wetland and subject-specific wetland contacts.



Central region contacts +

# Periodic review

Ecology tracks amendments

Provides comments

Technical assistance

County	City	Notes	EMP Updated	Rating System	Small Wetlands Exempted	Buffers Cat. I	Buffers Cat. II	Buffers Cat. III	Buffers Cat. IV	Buffer Comments
Clallam	Sequim	Need to update habitat scores in SGP	Yes		Isolated -1,000 sf or less of mosaic, 8-7,000 for 2,000 sf between 8,156 and 10,000 investigation	200-100	200-85 depending on habitat score	125-40 depending on habitat score	20	Impact reducing measures are required averaging of 25%
Clallam	Forks	Need to review category also systems, habitat scores	No	2004	-1,000 exempt w/ criteria (CIV) (includes 8-7,000 for 2,000 sf 8,156 & IV)	AB 3	AB 3	AB 3	AB 3	Reductions of critical mass of impacts. High intensity has already residential not defined. Low density use. 4 in each moderate & low impact categories. Averaging can reduce area or reduce point width below 75% of standard.
Clallam		Refers to state delineation manual	No	Their own version		"Class I" 200-100	"Class II" 150-75	"Class III" 75-50	"Class IV" 50-25	Based on impact area data. Buffer averaging "buffer" is not net loss of area. No point width -100 acres exception.
Clark	Battle Ground	Need to update habitat scores in SGP	Yes	2004	Isolated 3-8 -2,000 sf & isolated 9' -10,000 sf	Pierce Co. mod aB3	Pierce Co. mod aB3	Pierce Co. mod aB3	Pierce Co. mod aB3	High intensity includes + 4 units per parcel (not acres). Low intensity does not include residential. Moderate intensity includes no more than 1 home per 3 acres. Averaging can reduce pct of have point width +75% of standard. New roads and culverts allowed to cross buffers w/ low criteria. Farmers allowed 20 buffers w/ criteria.
Clark	Camas	Did not update system - criteria	Yes	2014	8-2,500, IV = 4,200 Isolated = 4,500 w/ 20 habitat points +3,000 with criteria	AB 3A	AB 3A	AB 3A	AB 3A	
Clark	La Center	Need to update habitat scores	Yes	2004	4,500 w/ 20 habitat points +3,000 with criteria	AB 3	AB 3	AB 3	AB 3	Based on intensity and habitat score
Clark	Ritzfield	Need to update habitat scores	Yes	2004		AB 3	AB 3	AB 3	AB 3	Mod. Format
Clark	Vancouver	Need to update delineation manual and habitat scores	Yes	2004	no mention	AB 3	AB 3	AB 3	AB 3	Averaging can't be combined with reductions or mass excursions, can't reduce total area, and can't reduce width by +20% or below 20'. Bufferlines possible for minimization of land use impacts. No limit on trail width.

# Questions?

Rick Mraz, PWS  
 Wetland Policy Lead  
 Shorelands and Environmental Assistance Program  
[Rick.mraz@ecy.wa.gov](mailto:Rick.mraz@ecy.wa.gov)

Nate Brown  
 Critical Areas Ordinance Specialist  
 Shorelands and Environmental Assistance Program  
[Nate.Brown@ecy.wa.gov](mailto:Nate.Brown@ecy.wa.gov)



# Poll



## Question:



In the City or County where most of your work occurs, how are wetland reports and mitigation plans reviewed for technical accuracy and code consistency?

# Ecology's wetland compliance program



Improving compliance through monitoring and adaptive management



## The Wetland Mitigation Compliance Team



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## Program goals

Improve the success rate of wetland mitigation projects.

Ensure that wetland mitigation is implemented according to permit conditions.

Work collaboratively with applicants to achieve compliance and success at individual sites

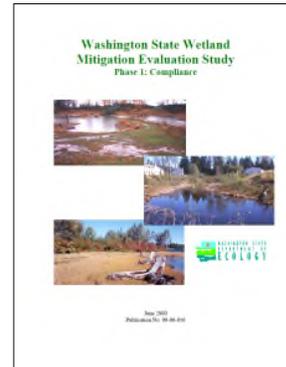
- Identify problems with wetland mitigation sites early.
- Determine corrective actions necessary to ensure successful site development.

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## Early permit monitoring studies

### 1999-2001: Wetland Mitigation Evaluation Studies

- “50% of mitigation projects are successful”
  - Not achieving no net loss policy
- Correlation with agency follow up and compliance
- Need a better file and tracking system



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## Adaptive management strategies

### 2003: Develop new tracking system (Aquatics)

- Improved ability to identify wetland 401/Aos
- limitations identified later

### 2004 -2006: Update mitigation guidance document

#### Part 1: Mitigation Policies and Guidance (**Updated in 2020**)

#### Part 2: Developing Mitigation Plans

- Revised emphasis on methods

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## Development of a compliance program

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2006 – 2008: Wetland Regulatory Effectiveness Program

Initiated with EPA funding

2007 – 2008: The “Mitigation That Works” Initiative

Legislature add \$ supports for ongoing compliance activities

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## Key objective

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Ensure compliance w/ permit conditions related to mitigation requirements

- All wetland mitigation projects where Ecology issued a 401 or Administrative Order (AO) for wetland impacts starting January 1, 2004
- AO for “Isolated wetlands” (RCW 90.48) – no federal oversight so higher priority (but also look at size of impacts)
- Older projects as we have time

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## Monitoring and compliance activities

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### Track mitigation projects over time

#### Conduct site inspections

- As-built
- Mid-monitoring
- End of monitoring
- If problems are identified or technical assistance is needed.

#### Provide recommendations in follow-up letters or emails

#### Review reports (as-built and monitoring reports)

- Track deadlines
- Ensure reports have complete information per Ecology's Order

#### Ensure other mitigation conditions are met

- Protection mechanisms, etc.

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## Projects tracked

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### For Ecology-issued wetland permits issued since 2004:

- tracked approximately 300 projects with traditional mitigation requirements
- ~100 projects using alternative migration such as mitigation bank credits, advance mitigation, or in-lieu fees.

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## What we aren't looking at (gaps)

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Projects with in-water impacts only

Construction sites – where the impact is occurring

- are they following BMPs?
- did the impacts occur within the permitted footprint?

Wetland mitigation sites during or shortly after construction

Restoration projects (limited subset)

Temporary impacts

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## Important tracking tools

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Use *Aquatics* database to identify wetland projects that may have required mitigation

- Project type = Wetlands or In-Water and Wetlands
- Ecology action = Permit type
- Ecology action date = [Timeframe of Interest]

Tracking compliance using SharePoint (transition to *Aquatics* in process)

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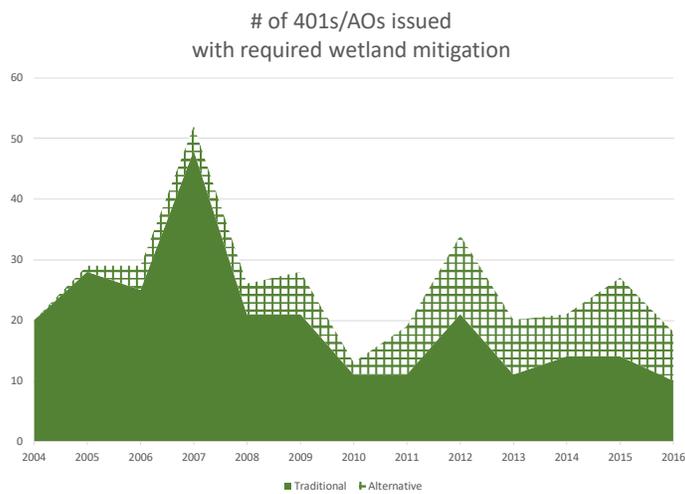
# SharePoint tracking tool

Wetland Mitigation Compliance Tracking

<input type="checkbox"/> Project Status	Active/Inactive	Need to Visit	Project Name	Federal #	Applicant	County	<input type="checkbox"/> AssignedTo	AssignedWetlandSpecialist
Older: Active	Active	No	<a href="#">112th Street E from Waller Rd E to Canyon Rd E</a>	2000-4-00182	Pierce County Public Works and Utilities	Pierce	<input type="checkbox"/> Granger, Teri (ECY)	Meyer, Zachary (ECY)
Mid-monitoring done	Active	Maybe	<a href="#">127th Avenue Business Park</a>	200700078	Hinton Development Corp.	Clark	<input type="checkbox"/> Johnson, Patricia (ECY)	Rothwell, Rebecca (ECY)
Pending	Active	No	<a href="#">179th Street Regional Retail Center</a>	200601103	Killian Pacific LLC (Philip Bretsch)	Clark	<input type="checkbox"/> Mock, Dana (ECY)	Rothwell, Rebecca (ECY)
Closed	Inactive	No	<a href="#">192nd Realignment</a>	200300674	Vancouver City	Clark	<input type="checkbox"/> Johnson, Patricia (ECY)	Rothwell, Rebecca (ECY)

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# Things we're tracking



## Priorities

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- As-built visits
- Review Year 1 report
- Review Year 7 reports /close-out requirements
- Close-out visits
- Mid-term visits
- Overdue reports
- Projects using mitigation bank credits

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## Challenges

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- Transfer of ownership after mitigation site construction (LLCs/HOAs)
- Data entry - backlog
- Different approved mitigation plans - Local vs. state vs. federal
- Beavers!

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## Adaptively managing our program

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Training for regional staff

Update the 2006 Interagency Wetland Mitigation Guidance

Review our permit conditions. Are they still making sense?

Map the mitigation sites.

Evaluate program success.

Expand evaluation of ecological success.

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## Lessons learned

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Early follow-up is important

The program needs to be flexible. Sites are not always going to turn out as planned.

Clearly written conditions that can be enforced.

Mitigation plans need to be complete:

- Well-considered, linked goals
- objectives
- performance standards
- monitoring
- contingency plans to begin



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## Program benefits

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Improved permitting decisions.

Improved staff expertise.

Increased mitigation success.

Feedback loop.

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## Program benefits (continued)

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Voluntary compliance

Improved consistency and predictability

Target improvements

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## Newskah Creek mitigation site



## Questions?

Thank you

**Rick Mraz, PWS**  
Wetlands Policy Lead  
Washington Department of Ecology

(360) 407-6924 - desk

(360) 810-0024 - cell  
rmra461@ecy.wa.gov



## Poll

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### Question:

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Is there a process for updating local critical area maps with new information from wetland delineations submitted during the permit review process?

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## Meet Your Presenters

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Dr. Amy Yahnke is the senior wetland ecologist for the Shorelands and Environmental Assistance Program at the Washington State Department of Ecology. She holds a Certificate in Wetland Science and Management, BS in Environmental Horticulture, MS in Forest Resources, and PhD in Aquatic and Fishery Sciences. She has studied wetland ecology within the contexts of amphibians, invasive plants, and stormwater management. Dr. Yahnke has experience teaching a wide range of environmental topics to audiences of all ages.

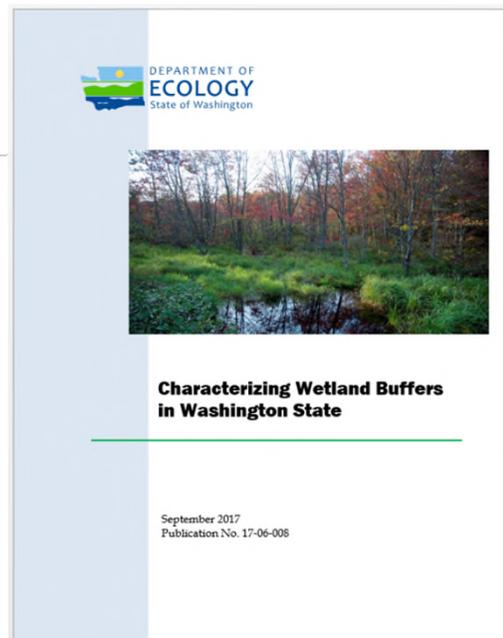
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# Monitoring wetland buffer regulations

Dr. Amy Yahnke, WA Department of Ecology

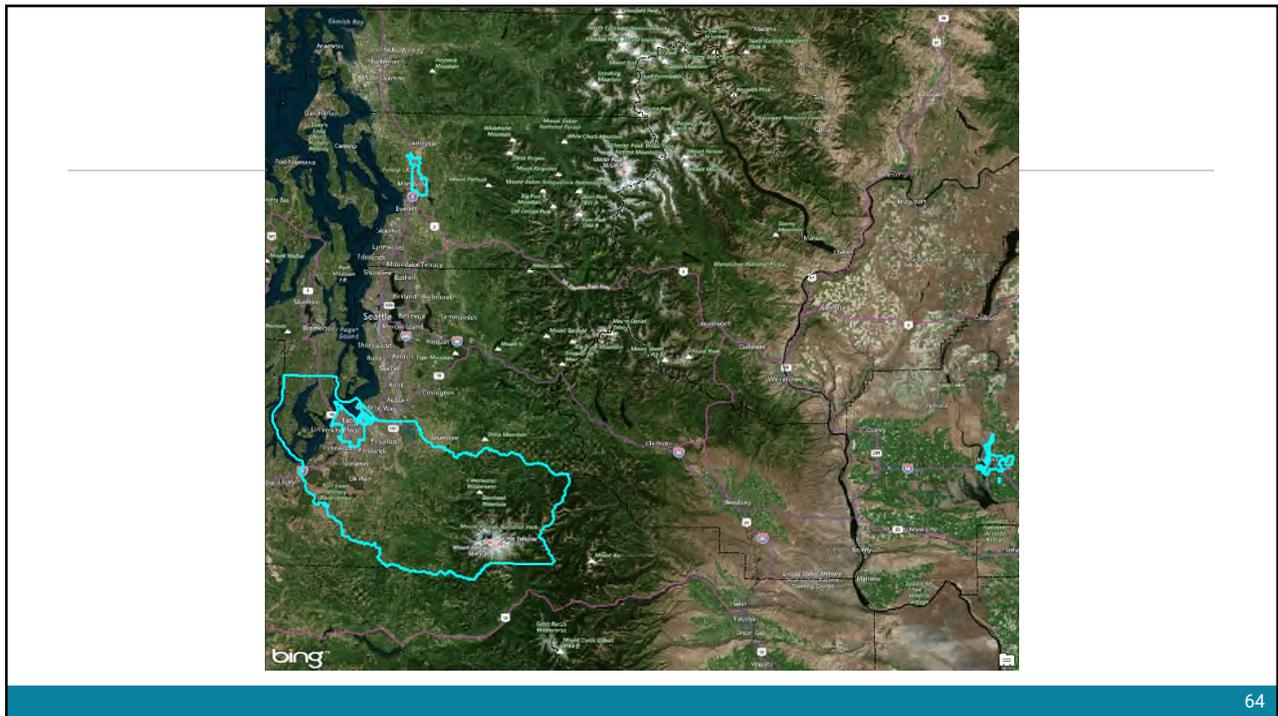
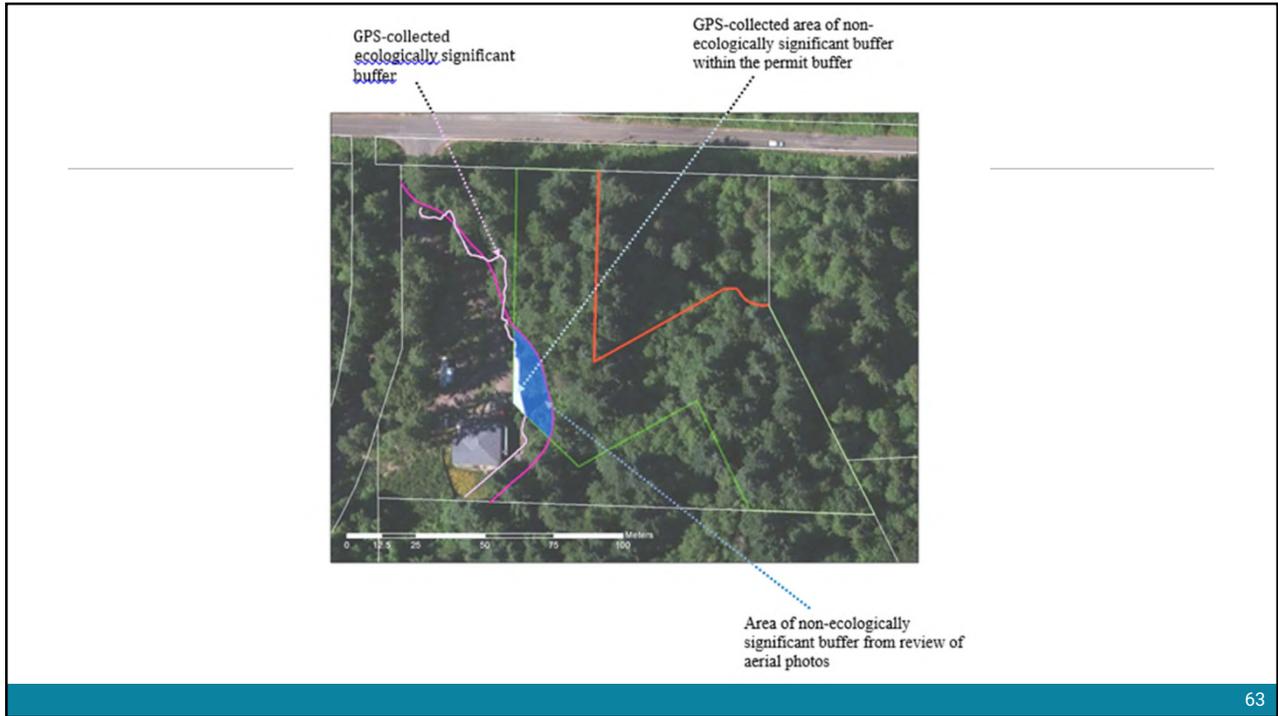
## A method to monitor permits

- Published 2017
- Funded by an EPA grant
- Work completed 2011-2013

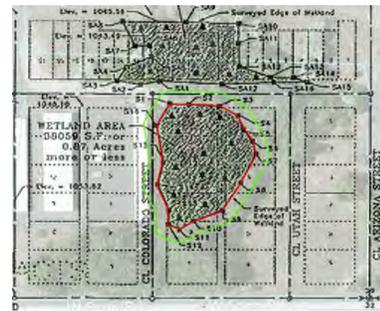




Form for Screening Permits		
<p style="text-align: center;"><b>Worksheet For Reviewing a CAO</b></p> <p>Jurisdiction _____                  Date of CAO _____ (check permit to see when it was v                  Date of Review _____ Reviewed by: _____</p> <p>Buffer widths (if applicable, consider score for habitat points and land                  Category I _____                  Category II _____                  Category III _____                  Category IV _____                  Other _____</p> <p>Reductions for implementing impact-reducing measures _____</p> <p>Allowable discretionary changes to buffer width                  Averaging _____ how much _____                  Reduction if enhancement _____ how much _____                  Increases for special conditions _____ what conditions _____                  Other _____</p> <p>Other requirements for buffer                  Enhancement (planting to create an appropriate plant commu                  native invasive plant species) _____                  Signs _____                  Fencing _____                  Other _____</p>	<p>Jurisdiction _____                  Project Name _____                  File Number (use at file building, engineering, etc) _____                  Date Reviewed _____ Scanned File Number _____</p> <p>Date of Project Approval/Permit _____                  Date Project Completed _____                  Project Type _____                  Project Size _____                  Project Location _____                  Date of Wetland Report _____                  Size of Wetland _____                  Geomorphic Setting _____                  Wetland Rating _____                  Permit Required Buffer Width _____                  Fixed or Variable Buffer _____                  Buffer Averaging _____                  Buffer Reduction and Reason _____                  Buffer Restoration Type _____                  Final Inspection Required _____                  Buffer Monitoring Required _____                  Date of CAO in Effect _____                  Buffer Required by CAO in Effect _____                  Other Relevant Information _____</p>	<p style="text-align: center;"><b>Worksheet For Reviewing a Permit</b></p> <p>Permit # _____                  Date of permit _____ Date of CAO in effect when vested _____                  Date of Review _____ Reviewed by: _____</p> <p>Category of wetland for which permit is required                  Category I _____                  Category II _____                  Category III _____                  Category IV _____                  Other _____</p> <p>Basic buffer width specified in the permit _____ (including adjustment for habitat                  points and impact-reducing measures if properly documented) (N/A if not discussed in                  permit)</p> <p>Allowable discretionary changes to buffer width                  Averaging _____ how much _____                  Reduction if enhancement _____ how much _____                  Increases for special conditions _____ what conditions _____                  Other _____</p> <p>Other requirements for buffer                  Enhancement (planting to create an appropriate plant community, removal of non-                  native invasive plant species) _____                  Signs _____                  Fencing _____                  Other _____</p>



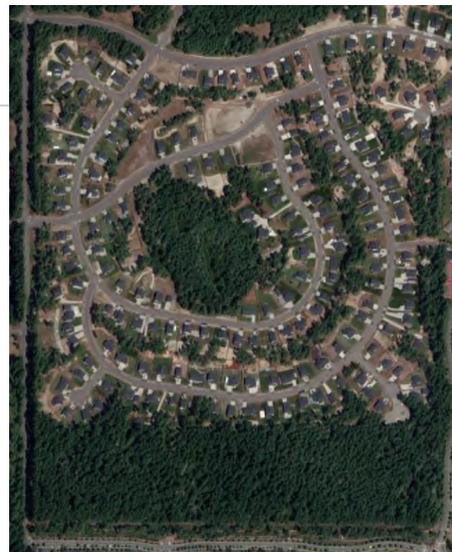
## Permit review and site assessment



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## Criteria for selecting a permit

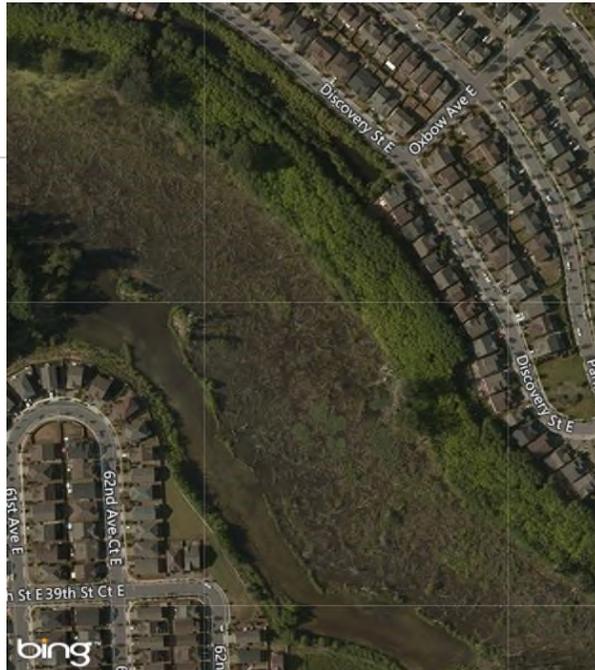
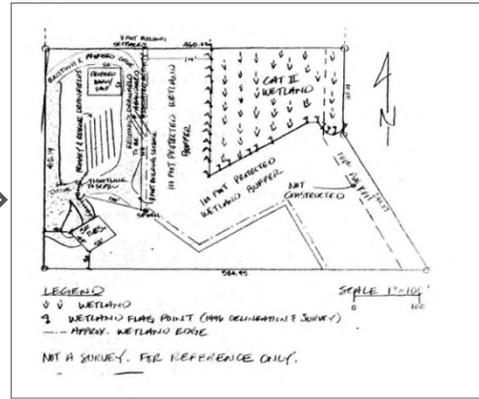
- Project file
- Buffer requirements
- Wetland or adjacent
- Wetland buffer
- Project completed

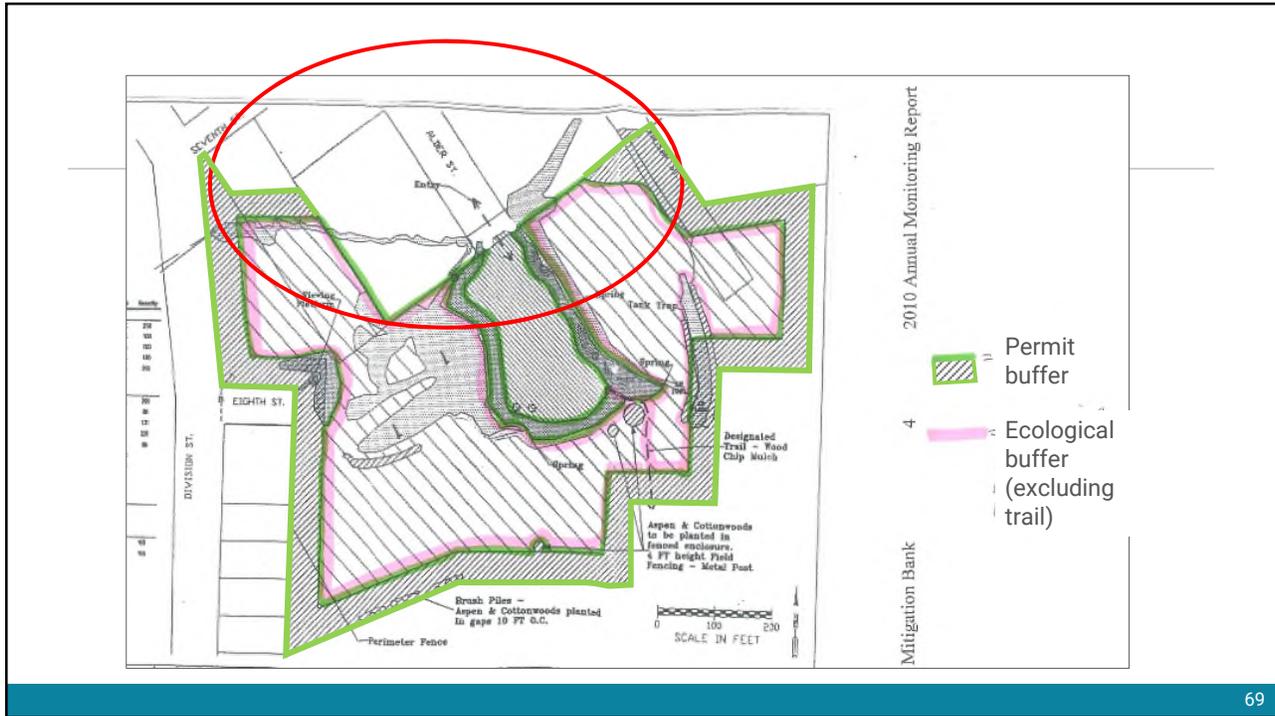


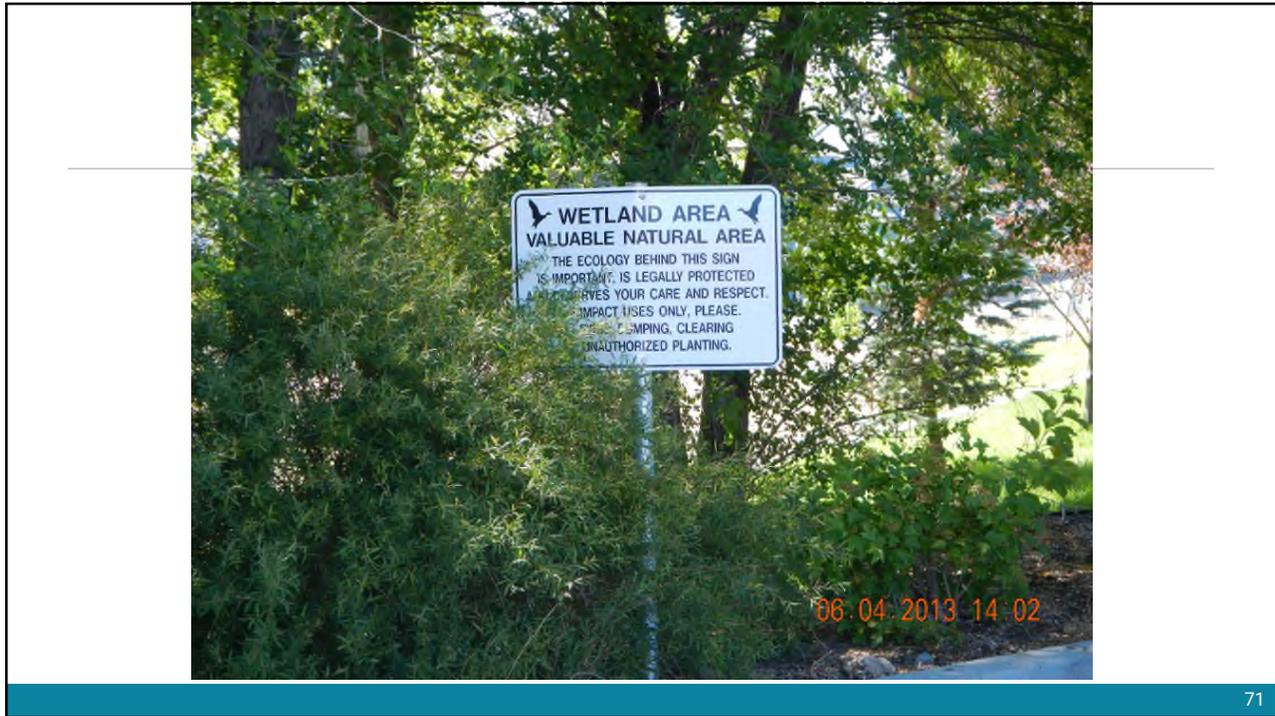
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# Were permits issued consistent with CAO?

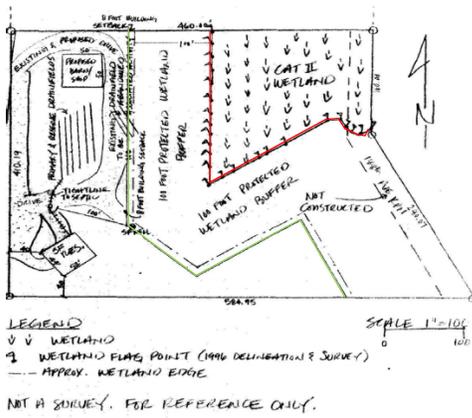
Wetland Category	Buffer width (in feet) based on habitat score			
	3-4	5	6-7	8-9
Category I: Based on total score	75	105	165	225
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Category I: Coastal Lagoons	150		165	225
Category I: Interdunal				225
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Category I: Estuarine	150 (buffer width not based on habitat scores)			
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Category II: Interdunal Wetlands	110		165	225
Category II: Estuarine	110 (buffer width not based on habitat scores)			
Category III (all)	60	105	165	225
Category IV (all)	40			

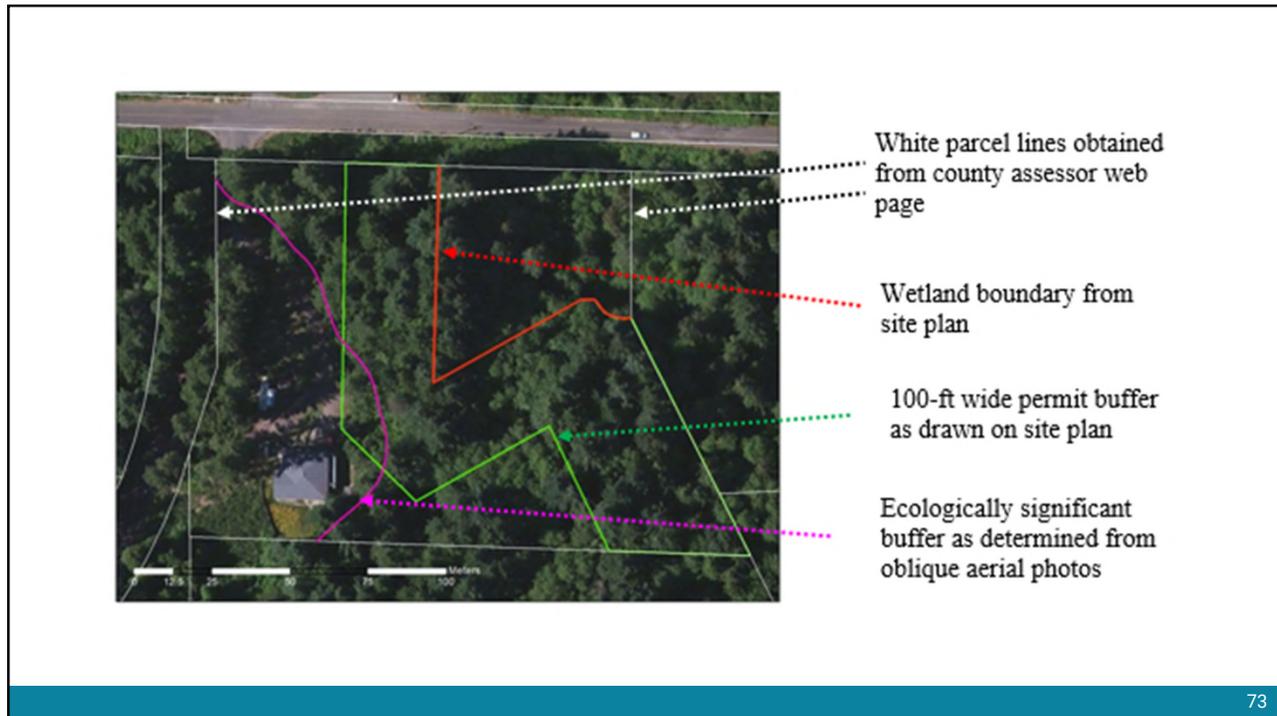






## What is the ecological condition of the buffer?





## Characterizing the buffer

### Ecologically significant buffer:

- Protective land cover
- 5 m wide
- 10 m along wetland
- Not separated from wetland

**Table 2.** List of Ecologically Significant Buffer Land Covers Based on the Anderson Land Cover Class System.

Types of Land Covers that Count as Ecologically Significant Buffers	Non-Ecologically Significant Buffer Land Covers
<ul style="list-style-type: none"> <li>• Open water (surfaces of lakes, bays, ponds, rivers, etc. with &lt;5% plant cover)</li> <li>• Wetlands</li> <li>• Permanent ice or snow (year round snow or ice surfaces with &lt;5% plant cover)</li> <li>• Natural, non-vegetated earth surfaces (natural rock outcrops, sand, gravel, etc. with &lt;5% plant cover)</li> <li>• Natural vegetation (areas with ≥ 5% cover of mostly non-impacted vegetation, including herbaceous, forest, or old fields undergoing succession; excludes lawns, playing fields, agricultural crops of any kind, recent clear-cuts or otherwise impacted forest lands, or recently burned lands)</li> <li>• Trails (foot trails, equestrian trails, single-track bicycle trails, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Built structures (houses, factories, schools, etc.)</li> <li>• Artificial, non-vegetated land surfaces (parking lots, solar farms, feed lots, etc. that support &lt;5% plant cover)</li> <li>• Active mining areas (quarries, strip mines, gravel pits, etc.)</li> <li>• Any active agriculture (orchards, vineyards, row crops, hay or grain fields, sod farms, feedlots, recently clear-cut or otherwise severely impacted forest lands, etc. Includes fallow agricultural fields)</li> <li>• Any recently burned lands</li> <li>• Urban and recreational lawns, sports fields, etc.</li> <li>• Any roadway dangerous to wildlife (railroads, busy streets, highways, etc.)</li> <li>• ATV trails</li> <li>• Stormwater ponds</li> <li>• Utility corridors</li> </ul>

## Characterizing the buffer

### Ecologically significant buffer:

1. Percent of wetland edge adjacent
2. Percent of permit buffer width
3. Percent of permit buffer area

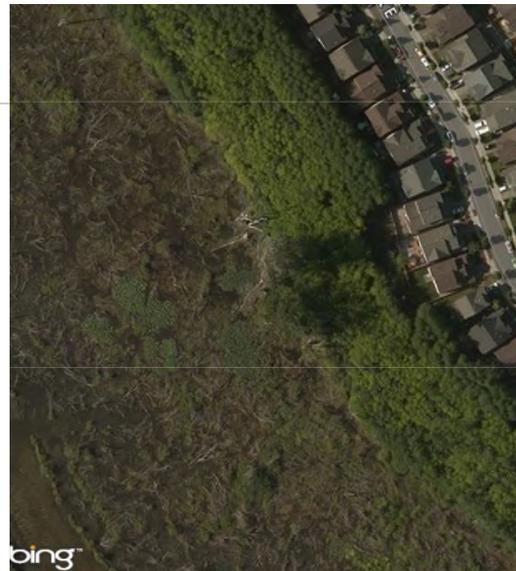


 Permit buffer  
 Ecologically significant buffer

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## Characterizing the buffer

4. Stressors in the buffer



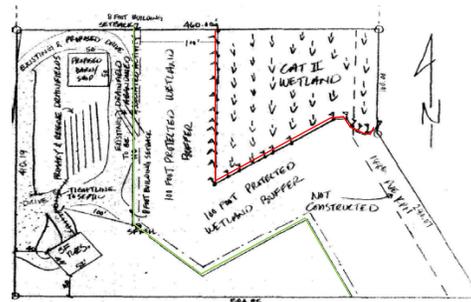
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**Table 5.** Indicators of stress in the permit buffer. Each category needs to be given a severity ranking using Table 6 below.

Field Indicators by Stressor Category	
<b>Hydrological Stressors</b>	
Ditches/ drains/ channelization	
Dikes/dams/levees/ railroad or road beds	
Culverts, pipes (point source discharge except stormwater)	
Water level control structure	
Obvious spills, discharges or odors; unusual water color or foam	
Moderate to heavy formation of filamentous algae	
Excavation, dredging	
Fill / spoil banks	
Wall/riprap	
Inlets and outlets	
Input from impervious surfaces (road drains, stormwater culvert, bioswales, roof drains)	
Lawns or other landscaped features	
<b>Habitat/Vegetation Stressors</b>	
Soil subsidence, scour or surface erosion (root exposure)	
Substrate disturbance (ATVs off-road vehicles, mountain biking)	
Sediment input (construction, erosion, agricultural runoff)	
Forest - selective cut	
Forest - clear cut (this one can affect water regime too)	
Removal of large woody debris	
Tree plantation present	
Heavily grazed grasses, excessive grazing, or mowing	
Damage of Tree canopy by pests or herbivory	
Shrub layer browsed or weakened by disease or pests	
Fire lines (fire breaks)	
Lawns, gardens, or other landscaping with non-native vegetation	
Recently burned forest canopy	
Recently burned grassland	
Mowing/shrub cutting (brush hogging)	
Other mechanical plant removal	
Chemical vegetation control (herbicide application)	
Cover of non-native or invasive species (as listed in Table 7)	
Presence of power lines or utility corridors (continual maintenance)	
Oil/gas wells	
Logging roads	
Trails, parks, and other recreational uses with dogs	
<b>Residential/Urban/Commercial Stressors</b>	
Suburban residential land use < 1 house/10 acres	
Suburban residential land use 1 house/5 – 10 acres	
Suburban residential land use 1 house/1 -5 acres	
Urban single or multifamily land use > 1 house/acre	
Urban/commercial buildings and other facilities (e.g. electric stations)	
Road – gravel	
Road – 1 or 2 lane paved	
Road- 4 lane	
Parking lot/ pavement	
Lawn/ park	
Golf course	
Landfill	
Gravel pit/mining	
Surface mine	
Military land	
Trash/ dumping	
<b>Agricultural Stressors</b>	
Pasture / rangeland	
Row crops	
Small grains	
Nursery and/or greenhouses	
Orchard	
Dairy	
Confined animal feeding operations	
Irrigation (irrigated land)	
Fallow field – recent	
Fallow field – old	
Rural residential	

## Summarizing results:

- Permit buffer per requirements of the CAO?
- Permit buffer = ecologically significant buffer?
- Or proportion of permit buffer that is ecologically significant?
- Dominant stressors?



## How to use results:

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- Compare sites to each other
- Review policies, regulations, and procedures to determine where improvements in wetland protection are needed
  - File management
  - Inspections
  - Monitoring

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## Caveats

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- Stressor lists are based on a national level assessment
- Stressor characterization is qualitative

**Table 6.** Guidelines for assessing the severity of a stressor.

Portion of Area of Permit Buffer Influenced by Stressor Category	Severity Code
less than one-third	1
between one-third and two-thirds	2
at least two-thirds	3

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# Best list for WA?



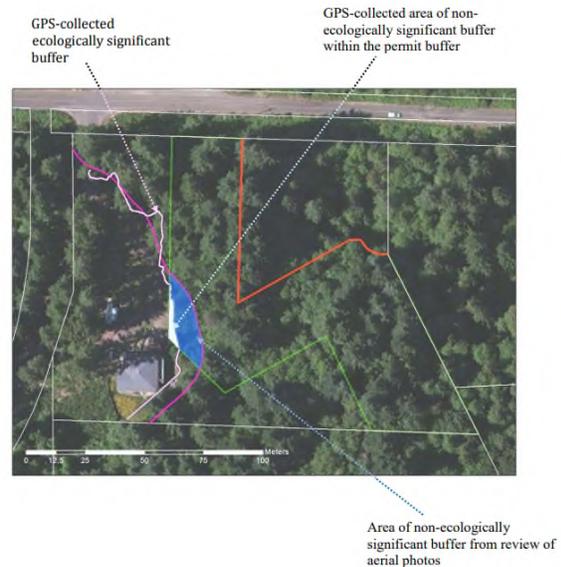
**Table 7.** List of Non-Native or Invasive Species for Metric 4\*.

Eurasian Watermilfoil	<i>Myriophyllum spicatum</i>
Waterhyacinth	<i>Eichhornia crassipes</i>
Yellow Floating Heart	<i>Nymphoides peltata</i>
Giant Salvinia	<i>Salvinia molista</i>
Garlic Mustard	<i>Alliaria petiolata</i>
Poison Hemlock	<i>Conium maculatum</i>
Mile-a-Minute Weed	<i>Persicaria perfoliata</i>
Birdsfoot Trefoil	<i>Lotus corniculatus</i>
Purple Loosestrife	<i>Lythrum salicaria</i>
Knotweed	<i>Polygonum aviculare</i>
Japanese Knotweed	<i>Polygonum cuspidatum</i>
Perennial Pepperweed	<i>Lepidium latifolium</i>
Giant Reed	<i>Arundo donax</i>
Cheatgrass	<i>Bromus tectorum</i>
Reed Canary Grass	<i>Phalaris arundinacea</i>
Common Reed	<i>Phragmites australis</i>
Johnsongrass	<i>Sorghum halepense</i>
Kudzu	<i>Pueraria montana var. lobata</i>
Multiflora Rose	<i>Rosa multiflora</i>
Common Buckthorn	<i>Rhamnus cathartica</i>
Himalayan Blackberry	<i>Rubus armeniacus</i>
Tamarisk	<i>Tamarix spp.</i>

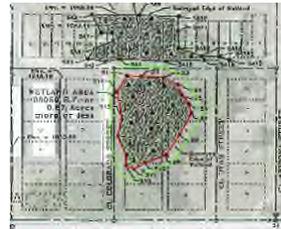
# Caveats

- GIS vs. aerial image interpretation

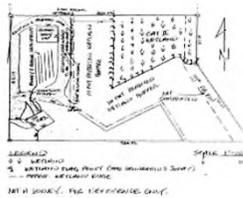
**Figure E-1.** Shows GPS-collected ecologically significant buffer (light pink line) and new area of non-ecologically significant buffer (light blue area). Compare to GIS-generated non-ecologically significant buffer (dark pink line) in Figure 5b (dark blue area).



## Does our guidance for Characterizing Wetland Buffers address condition of the wetland?



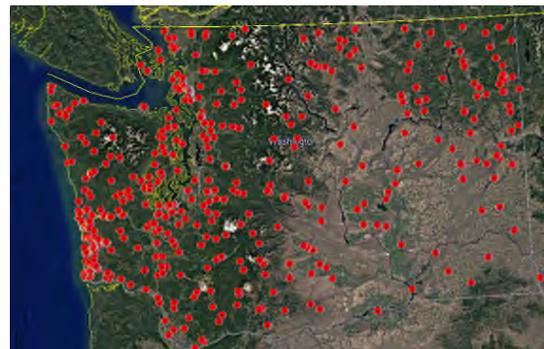
Wetland Category	Buffer width (in feet) based on habitat score			
	3-4	5	6-7	8-9
Category I: Based on total score	75	100	160	225
Category II: Bays and Wetlands of High Conservation Value		100		225
Category III: Coastal Lagoons	150		160	225
Category IV: Interland				225
Category V: Estuarine (buffer width not based on habitat scores)	75	100	160	225
Category VI: Based on score (buffer width not based on habitat scores)		100		225
Category VII: Interland Wetlands	110		160	225
Category VIII: Estuarine (buffer width not based on habitat scores)		100		225
Category IX (all)	60	100	160	225
Category X (all)			40	



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## Recommendations for monitoring and tracking wetland and wetland buffer impacts

- **For a statistical sample:**
  - Number of classes (questions)
  - Number of permits available
  - Random selection
  - Minimum of 50 samples per class
- **Small jurisdictions/few permits**
  - Use all permits available



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## Recommendations for monitoring and tracking wetland and wetland buffer impacts

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- **Maintain a database of permits:**
  - List projects
  - Location, contact information, parcel number
  - Sizes and whether restoration required
  - Variance of buffer width
- **Consider follow-up procedures:**
  - Priorities
  - Inspection program
  - Periodic review
  - Aerial imagery review
    - High resolution change detection (WDFW)



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## Q&A

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TYPE YOUR QUESTIONS IN THE Q&A BOX IN YOUR TOOLBAR



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# Poll



## Questions:



Question 1

How often do you monitor built projects for compliance with buffer protections and any required mitigation established by the permit?

Question 2

Are you interested in tracking, monitoring, and adaptively managing how wetlands are regulated within your jurisdiction?

# Thank you!



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