

Tracking Developments

on streams and wetlands

November 2001

THURSTON
Regional
Planning
COUNCIL

THURSTON REGIONAL PLANNING COUNCIL (TRPC) is a 15-member intergovernmental board made up of local governmental jurisdictions within Thurston County plus the Nisqually Indian Tribe. The Council was established in 1967 under RCW 36.70.060 which authorized creation of regional planning councils.

TRPC's mission is to "**Provide Visionary Leadership on Regional Plans, Policies and Issues.**" The primary functions of TRPC are to develop regional plans and policies for **transportation** (as the federally recognized Metropolitan Planning Organization and state recognized Regional Transportation Planning Organization), **growth management, environmental quality** and other topics determined by the Council; provide **data and analysis to support local and regional decision making**; act as a **convener** to build **community consensus** on regional issues, through information and citizen involvement; build **intergovernmental consensus** on regional plans, policies and issues, and advocate local implementation; and provide **planning, historic preservation and technical services** on a contractual basis.

This report was prepared as part of the Thurston Regional Planning Council's 2001 regional work program.

**2001 MEMBERSHIP
OF
THURSTON REGIONAL PLANNING COUNCIL**

<u>Governmental Jurisdiction</u>	<u>Name of 2001 Representative</u>
City of Lacey	Nancy Peterson , Councilmember
City of Olympia	Mark Foutch , Councilmember
City of Tenino	Ed Echtle , Councilmember
City of Tumwater	Bruce Zeller , Councilmember
City of Yelm	Adam Rivas , Mayor
Town of Bucoda	pending
Town of Rainier	pending
Thurston County	Cathy Wolfe , County Commissioner
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Port of Olympia	Steve Pottle , Port Commissioner
Griffin School District	Fred Finn , School Board Member
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Nisqually Indian Tribe	Cynthia Iyall , Tribal Council
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CHAPTER 1

INTRODUCTION

REPORT & TECHNICAL APPENDIX

This project contains two documents. The first part is the report, *Tracking Developments on Streams and Wetlands in the Thurston Region* referred to as the “Report”. The second part is the *Technical Appendix* which contains all the permit and site data which was collected as a part of this project. Because of the length of the *Technical Appendix*, it was printed as a separate document.

The report contains eight chapters which build in the level of data reviewed. The contents of each chapter are highlighted below.

- **Chapter 1:** This chapter includes a discussion of the project’s goal, Growth Management Act evaluation requirements, Best Available Science, and the Review Bodies which evaluated the report.
- **Chapter 2:** This chapter describes the project Methodology and contains a discussion of benchmarks, values and the three types of reviews: Ordinance Review, Permit Review and Site Review.
- **Chapter 3:** This chapter contains the Ordinance Review Benchmarks which comprises of nine benchmarks with their values for how well each of the local Critical Area Ordinances adopted recommended wetland and stream standards.
- **Chapter 4:** This chapter contains the Permit Review Benchmarks. A total of 11 benchmarks were created to evaluate the development permit data from 100 stream and wetland projects. Compliance in this chapter was based upon how well the permits met the adopted Critical Area Ordinance provisions.
- **Chapter 5:** This chapter contains the Site Review Benchmarks. These comprise of seven benchmarks and their values to evaluate the site or field data collected from 35 stream and wetland projects. Compliance was based upon how well the field conditions met the permit requirements or adopted Critical Area Ordinance standards.

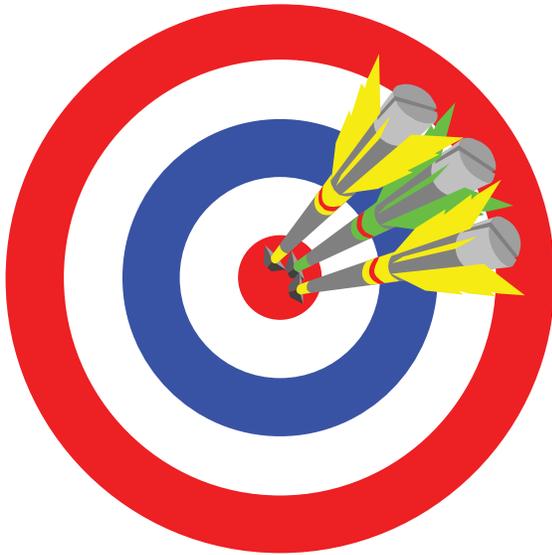
- **Chapter 6:** This chapter contains two Emerging Issues. The discussion of Wetland Mitigation Banking was generated as a direct result of the high percentage of poorly installed wetland mitigation sites. The other issue, Basin Specific Development Regulations were developed by another TRPC report, but included in this chapter as a means to differentiate between rural and urban watersheds or drainage basins.
- **Chapter 7:** This chapter includes the report Recommendations. All of these recommendations are summarized from the various benchmarks.
- **Chapter 8:** This chapter includes the references used in this report.

The *Technical Appendix* contains three appendices, which cover a broad selection of permit and site data collected for this project.

- **Appendix A:** This appendix contains examples of the forms and data management input templates.
- **Appendix B:** This appendix contains a description of each of the 20 “Reports” created to describe either permit or site data.
- **Appendix C:** This appendix contains printouts of all the 20 “Reports” prepared for this project. MS Access software was used for the data base for this project.

WHY EVALUATE DEVELOPMENT REGULATIONS?

In 1990, the Washington State Growth Management Act (GMA) required the adoption of development regulations to protect wetlands and streams as a part of local Critical Area Ordinances (CAO). Olympia, Lacey, Tumwater and Thurston County adopted CAO regulations between 1991 and 1993. Minor variations of similar wetland and stream standards were adopted in each local ordinance. Within the State, there have been no regional evaluations of these environmental regulations to determine if the local development regulations are effective, fit together, or provide adequate protection.



It would be a waste to keep shooting at a target without checking to see if had been hit or not.

But that is exactly the current condition of local government development regulations for streams and wetlands.

WHAT IS THE QUESTION?

When Phase 1 of this project started in 1997, very few people were interested in measuring the effectiveness of wetland and stream development regulations within the Thurston Region. To most it seemed like an interesting theory, but its link to practical applications was not foreseen. Thurston Regional Planning Council even found it difficult to find interested individuals to sit on the Phase 1 Advisory Committee. However, since the Endangered Species Act (ESA) listings of various species of salmon and trout, there has been an increased interest in this project.

When originally adopted in the early 1990's, local stream and wetland regulations were largely based upon information available at that time. As time has passed, jurisdictions have not checked to see if they were hitting the bulls eye or completely missing the target altogether. The central question to this project was first framed as “Are our stream and wetland regulations working”? But over time this has been refined to the following question:

Project Question: *How well are we implementing stream and wetland development regulations in the Thurston region?*

COMPLIANCE REVIEW - NOT ENVIRONMENTAL PERFORMANCE

An earlier draft of this document was called “*Environmental Performance Review*”. The project authors always intended this report to be a review of development regulations compliance. However, that title may have implied that this was a scientific document which would evaluate a number of environmental conditions. Although interesting questions, this project never intended to answer the following questions:

- “Is the state *Wetland Model Ordinance* providing adequate protection for wetlands?”
- “Do local regulations adequately protect local fish populations?”; and
- “What is the effectiveness of the required buffers?”

Other entities, such as the Washington State Department of Ecology and King County, have attempted to deal with parts of the aforementioned questions. However, the cities of Lacey, Olympia, Tumwater and Thurston County were interested in the more fundamental question noted above.

While this tracking project has relied upon a scientific approach to collect new data, and used a Science Review Team to critique an early draft, the target audience was not the scientific community. Rather, it is jurisdictional staffs, elected and appointed officials, and the communities of Lacey, Olympia, Tumwater and Thurston County. If improvements or amendments are needed, it would be up to these jurisdictions to update their Critical Area Ordinances or Shoreline Master Programs.

WHY THURSTON REGIONAL PLANNING COUNCIL?

Thurston Regional Planning Council (TRPC) is an intergovernmental board made up of 15 local jurisdictions within Thurston County. Since 1967 TRPC has performed a number of planning functions for local governments and the community. These tasks have included coordination of both the Shoreline Management Act and Growth Management Act within the region. Related activities have ranged from an exploration of the wetland and stream policy needs (Aaland, 1986); the needs for better wetland and stream mapping (Aaland, 1987), a test and first phase of a regional mapping program (Aaland, 1991 & 1993).

TRPC has assisted Olympia and Thurston County by preparing their original Critical Areas Ordinances (CAOs). TRPC is currently responsible for the Buildable Lands report for GMA and prepared the Regional Benchmark and Indicators Report (TRPC, 2000) which tracks growth management implementation across the region. Because of these skills and background TRPC is uniquely qualified to undertake this analysis of developments adjacent to wetlands and streams.

Project manager, Steven W. Morrison, has been with TRPC for almost two decades. Mr. Morrison's education includes a BS in Environmental Planning and a Masters in Public Administration. His expertise lies in environmental planning, shorelines and wetlands. He was selected to lead this project because of his experience in current planning and wetland projects. For five years he served as the Environmental Review Officer and Shoreline Administrator for both the City of Olympia and Thurston County, where he reviewed all shoreline and SEPA documents. He was the author of the 1992 Critical Area Ordinance for the City of Olympia and the 1993 and 1996 CAO author for Thurston County. Mr. Morrison continues as the project manager for the TRPC wetland mapping project which began in 1989. He is the author of the 1986 update of the Regional Shoreline Master Program and has served as an alternate to the State Shoreline Hearing Board since 1987. Mr. Morrison is the primary author of this report.

Theresa Julius has been with TRPC for two years. Ms. Julius's education includes a BA in Architecture and a Masters in Environmental Studies. Her expertise is in data management. She had worked on the TRPC Profile, a collection of population data for the region. On this project Ms. Julius was responsible for all the data management using MS Access software and the creation of the data reports found in Appendix C. She collected a majority of the permit data from the local jurisdictions, and also undertook a majority of the field inspections with local jurisdiction planners.

STATE GROWTH MANAGEMENT ACT REQUIREMENTS

In 1990, the state Growth Management Act (GMA) required all jurisdictions planning under the Act to address the 13 GMA Goals. The Act indicates that it is up to the local jurisdictions to prioritize and/or strike a balance between the various goals. While all have some influence of the scale or form of development, those goals which are listed below (#10, #9, and #6) appear to have the most relevance to this project.

GROWTH MANAGEMENT ACT - PLANNING GOALS

Goal 10: Environment. Protect the environment and enhance the state's high quality of life, including air and water quality, and the availability of water.

Goal 9: Open Space and Recreation. Encourage the retention of open space and development of recreational opportunities, conserve fish and wildlife habitat, increase access to natural resource lands and water, and develop parks.

Goal 6: Property Rights. Private property shall not be taken for public use without just compensation having been made. The property rights of landowners shall be protected from arbitrary and discriminatory actions. [RCW 36.70A.020]

The Growth Management Act required that cities and counties adopt “Critical Areas Ordinances” (CAOs) on or before September 1, 1991 [RCW 36.70A.170]. Critical Areas were defined as:

- a. **Wetlands**;
- b. Areas with a Critical Recharging effect on Aquifers used for potable water;
- c. **Fish and Wildlife Habitat Conservation Areas**;
- d. Frequently Flooded Areas; and
- e. Geologically Hazardous Areas. [RCW 36.70A.030] (*Emphasis added*)

The guidelines or rules for these local ordinances are contained in the Washington Administrative Code [WAC 365-190]. “*Wetlands*” are defined within GMA, [RCW 36.70A.030 (20)], whereas “Streams” are not. Instead, streams are defined as a type of “*Fish and Wildlife Habitat Conservation Areas*” within the CAO rules of WAC 365-190.

Of the four local jurisdictions, only the city of Tumwater adopted its Critical Areas Ordinance before the deadline established, August 20, 1991 by the GMA. When the state adopted rules for CAO adoption, this deadline was extended to March 1, 1992. Olympia adopted its CAO development regulations on March 17, 1992, followed by the City of Lacey on March 26, 1992. Thurston County adopted its CAO standards on December 20, 1993.

It should be noted that Thurston County and the City of Olympia had pre-existing wetland and stream regulations within its “Environmentally Sensitive Area” or ESA regulations. This “Environmentally Sensitive Area” term is used later in this report and should not be confused with the federal Endangered Species Act which is also referred to as the ESA.

Minor variations of similar wetland and stream standards were adopted by each jurisdiction. In general, the cities have made few changes to their standards since adoption, however Thurston County adopted a number of technical changes to facilitate administration in 1996. GMA requires that each jurisdiction review its comprehensive plan and development regulations and keep them current. The first evaluation required by the act is September 1, 2002.

If such an evaluation demonstrates an inconsistency between the adopted county-wide planning policies, comprehensive plans, and development regulations; then the jurisdiction is to adopt and implement measures “*that are reasonably likely to increase consistency during the subsequent five-year period*”. [RCW 36.70A.215]

CAO REQUIREMENTS FOR “BEST AVAILABLE SCIENCE”

In 1995 the Growth Management Act was amended to require the use of “*Best Available Science*” when designating and protecting Critical Areas. The Act requires that cities and counties include best available science in developing policies and development regulations to protect the functions and values of critical areas. A second mandate of the Act was that special consideration be given to conservation or protection measures necessary to preserve or enhance anadromous fisheries. [RCW 36.70A.172] The only use of this *Best Available Science* required by GMA is in the adoption of comprehensive plan policies or development regulations for Critical Areas.

Appeals concerning local comprehensive plan policies or development regulations are heard by one of the three Growth Management Hearing Boards. Each covers a specific geography of the state (e.g. Western Washington, Eastern Washington or Central Puget Sound). Appeals to any GMA related plans or ordinances in Thurston County communities would be heard by the Western Washington Growth Management Hearing Board. In 1996 the Central Puget Sound Growth Management Hearing Board and the Western Washington Growth Management Hearing Board, both issued decisions regarding the *Best Available Science* (BAS) requirement. The decisions provided somewhat contradictory guidance, and as a result the Washington State Department of Community Trade and Economic Development (CTED), now called the Office of Community Development (OCD), initiated a process to provide specific rules to meet this requirement.

Adopted as WAC 365-195-900, the *Best Available Science* rule provides guidance on how to comply with this threshold. Before cities or counties adopt critical areas policies or regulations, it is suggested that a “qualified scientific expert or team of qualified scientific experts” be consulted to:

1. Identify scientific information,
2. Determine the best available science, and
3. Assess its applicability to the relevant critical areas.

ATTAINING “BEST AVAILABLE SCIENCE”

1. Peer Review. The information has been critically reviewed by other persons who are qualified scientific experts in that scientific discipline. The criticism of the peer reviewers has been addressed by the proponents of the information. Publication in a refereed scientific journal usually indicates that the information has been appropriately peer-reviewed.

2. Methods. The methods that were used to obtain the information are clearly stated and able to be replicated. The methods are standardized in the pertinent scientific discipline or, if not, the methods have been appropriately peer-reviewed to assure their reliability and validity.

3. Logical conclusions and reasonable inferences. The conclusions presented are based on reasonable assumptions supported by other studies and consistent with the general theory underlying the assumptions. The conclusions are logically and reasonably derived from the assumptions and supported by the data presented. Any gaps in information and inconsistencies with other pertinent scientific information are adequately explained.

4. Quantitative analysis. The data have been analyzed using appropriate statistical or quantitative methods.

5. Context. The information is placed in proper context. The assumptions, analytical techniques, data, and conclusions are appropriately framed with respect to the prevailing body of pertinent scientific knowledge.

6. References. The assumptions, analytical techniques, and conclusions are well referenced with citations to relevant, credible literature and other pertinent existing information.

[WAC 365-195-900]

The scientific expert or experts may rely on their professional judgment based on experience and training, but they should use the criteria set out in the BAS guidelines. Since, reliable scientific information can only be produced through a valid scientific process, it is essential that any such analysis contain those elements listed above.

REVIEW BODIES

During the first phase of this project (1997-1998) an Advisory Committee was formed to provide guidance. The Phase 1 Advisory Committee helped to refine the Scope of Work, identified development regulations to be evaluated, and discussed perceived current problems with the existing Critical Area Ordinance regulations with wetland consultants. Members were selected from a cross section of the community and their affiliations are listed below.

PHASE 1 - ADVISORY COMMITTEE MEMBERS	
<u>PERSON</u>	<u>REPRESENTING</u>
Nick Adams	Hodges Commercial Real Estate
Chris Carlson	Tumwater Development Services
Debbi Carnevelli	WA State Department of Fish and Wildlife
Jean Carr	Lacey Community Development
Gary Cooper	Thurston County Development Services
Doug DeForest	Olympia Master Builders
Perry Lund	WA State Department of Ecology
Lisa Palazzi	Pacific Rim Soil and Water
Todd Stamm	Olympia Community Planning and Development
Laurie Vigue	South Puget Environmental Education Clearing House

There were two drafts of this document and the technical appendix. The first draft was reviewed by a group of eight stream and wetland consultants or managers referred to as the Science Review Team. A balance was sought between private and public interests, as well as those with expertise on wetlands and streams. Their review included commenting on the draft and attending an all day meeting with the authors. Detailed minutes from that meeting were prepared

While not “experts”, according to the “*Best Available Science*” rule, the Science Review Team provided a valuable service. They validated key questions, identified problems with the current CAO regulations, scrutinized the scientific methods and provided an in depth discussion about the results of the Ordinance and Site Reviews. Written comments

ranged from side margin edits, to a 19 page critique. However, most letters averaged about 2-3 pages in length. Their comments resulted in the elimination of some questions and reformatting much of the information. They also all approved of the use of the weather symbols (*Sunny, Partly Cloudy, or Stormy*) as values for the benchmarks.

1ST DRAFT - SCIENCE REVIEW TEAM			
<u>PERSON</u>	<u>REPRESENTING</u>	<u>LOCATION</u>	<u>EXPERTISE</u>
Jean Caldwell	Caldwell & Assoc.	Olympia, WA	Stream
Steve Keller	WDFW	Olympia, WA	Stream
Andy McMillian	WDOE	Olympia, WA	Wetland
Anna Mockler	Upstream Enterprises	Seattle, WA	Wetland
Steve Shanewise	Coot Company	Olympia, WA	Wetland
Linda Storm	US EPA	Seattle, WA	Wetland
Jennifer Thomas	King County: Water & Land Resources	Seattle, WA	Wetland
Bill Way	Watershed Company	Kirkland, WA	Stream

The final draft was reviewed by a completely different group, representing the four affected local governments, an environmental group, and a business group. They undertook a similar review, met once as a group with staff where their comments resulted in a final review draft. The Community Review Team reviewed the completed document before it was released. Comments from the Science Review Team and Community Review Team did not generate new benchmarks to explore, but some benchmarks were eliminated, combined with others, or changed to “Interesting Questions”. (See Chapter 4)

FINAL DRAFT - COMMUNITY REVIEW TEAM	
<u>PERSON</u>	<u>REPRESENTING</u>
Chris Carlson	Tumwater Development Services
Doug DeForest	Olympia Master Builders
Susan Markey	Black Hills Audubon Society
Todd Stamm	Olympia Community Planning and Development
Rick Walk	Lacey Community Development
Cindy Wilson	Thurston County Development Services

CHAPTER 2

METHODOLOGY

BENCHMARKS ... WHAT ARE THEY?

To help answer the central question posed in the previous chapter, a number of “Benchmarks” were created for the project. As used in this report, a Benchmark poses a detailed question about compliance with the Critical Area Ordinance regulations. The data base was queried and a compliance rate calculated, as the percentage of projects which fully met the benchmark.

Benchmarks were developed from a number of sources. These included the Phase 1 Advisory Committee, interviews with managers of similar projects, jurisdictional staff, and the public from local Critical Area Ordinance adoption processes. The following is an example of how an interesting question about the permit data was reformatted into a Benchmark.

Question: *How many projects met the standard wetland buffer requirement?*

Benchmark: **Wetland projects met the standard buffer requirement.**

VALUES FOR BENCHMARKS

Unlike other portions of the Growth Management Act, there is no state guidance on how jurisdictions should rate Critical Area Ordinance compliance. While it would be possible to only provide a compliance numeric for each benchmark, it has been observed that the success of similar products like *Consumer Report* is that it communicates its findings through the use of symbols or icons. Therefore, a set of symbols were created for this project to represent success or failure.

Four “Values” were used to describe each benchmark in the report. These are as follows:

- **Sunny, overall positive results**
- **Partly Cloudy, mixed results**
- **Stormy, concerns for the future**
- **Not enough data available**

A value of **Sunny, overall positive results** required the best possible conditions. The threshold for this value was very high and generally required a compliance rate of 80% and above. For example, with Ordinance Review a benchmark where all four of the jurisdictions adopted the provision, the value would be Sunny, but if the compliance was only three of four (75%) that was given a Partly Cloudy value.

A value of **Partly Cloudy, mixed results** covered the widest range, and thus there would likely be more benchmarks with this value than others. The compliance rate for a Partly Cloudy value ranged from 79% to 35%. With such a large range there is the possibility that the value may mask a serious problem. This being the case, a recommendation was formulated to address the issue.

A value of **Stormy, concerns for the future** represents a compliance rate below 35%. These benchmarks clearly warrant priority attention and need to be improved over time.

The last value, **Not enough data available**, is probably the easiest to describe. Some benchmarks were suggested after the permit or site reviews were complete. Only later did it become evident that the collected data would not support a conclusion. These benchmarks would become ones where additional data collection may be warranted and so noted as a recommendation.

Refer to Table 2-1 below which indicates the compliance rates and values used for benchmarks in this report.

**Table 2-1
Compliance Rates and Benchmark Values**

COMPLIANCE RATE	VALUES
100% - 80%	 Sunny, overall positive results
79% - 35%	 Partly cloudy, mixed results
34% - 0%	 Stormy, concerns for the future
NA	 Not enough data available

PROJECT DESIGN AND METHODS OF REVIEW

This project evaluated the impacts of development regulations based upon three levels of review. These levels proceed from the general to the specific with each level having its strengths and weaknesses. The three levels of review are as follows:

- **Ordinance Review.** Ordinance Review provides general overview of the strengths or weaknesses of the adopted regulations when compared to other jurisdictions or the “*Best Available Science*” standard. The adopted Critical Area Ordinances for the cities of Lacey, Olympia, and Tumwater and the CAO for Thurston County were evaluated in this review.

- **Permit Review.** **Permit Review** provides a more detailed level of analysis. It relies on collected permit data. A total of 100 development projects from the cities of Lacey, Olympia, and Tumwater and Thurston County were used for this review. The results of this review are based upon what was approved.
- **Site Review.** **Site Review** provides the most detailed review and includes field inspection. Since this is the most costly review type, only 35 of the projects were visited. The results of this review are based upon whether the required buffers or mitigation were provided, planted or constructed.

ORDINANCE REVIEW

Ordinance Review provides general overview of the strengths or weaknesses of the adopted regulations when compared to other jurisdictions. The adopted Critical Area Ordinances for the cities of Lacey, Olympia, and Tumwater and Thurston County were evaluated in this review.

CRITICAL AREAS ORDINANCE REVIEW

The Washington State Growth Management Act was adopted in 1990 and as of 1998 there had been no statewide evaluation of Critical Area Ordinances (CAO) or the effectiveness of those standards. In 1998, the Washington State Office of Community Development (OCD), then called the Department of Community, Trade and Economic Development, prepared an evaluation of all the adopted Critical Area Ordinances (CAOs). The evaluation was entitled the *Critical Areas Ordinance Review Project* (1998), this review was in response to the possible listing of the Chinook salmon as “Threatened” or “Endangered” under the federal Endangered Species Act (ESA) by the National Marine Fisheries Service (NMFS).

Information was collected throughout the state about the current status of adopted development regulations to protect critical areas; such as wetlands, streams, and fish and wildlife habitat. OCD took care to ensure the accuracy of these data. However a review of only the regulatory standards does not show a complete picture of the other regulations or non-regulatory programs that are also a part of local GMA compliance being used by local governments to ensure critical habitats are protected.

OCD gathered data for its report from a variety of sources. The Washington State Department of Ecology (Ecology) provided the protection standards for wetlands from the Wetland Model Ordinance (1991). The Washington Department of Fish and Wildlife (WDFW) provided the standards for streams from the Wild Salmonid Policy (1998). No attempt was made by OCD (or this report) to independently validate or refute these standards. It should also be noted that, while being the best available information the Wetland Model Ordinance was not reviewed based upon the “Best Available Science” criteria described in the previous chapter.

The Wild Salmon Policy was used as the best available guidance at the time of the statewide CAO review. However, WDFW now believes that the Management Recommendations for Washington’s Priority Habitats - Riparian (1997) contains the “Best Available Science” regarding rivers, streams and creeks. As mentioned in the previous chapter, any new CAO updates for wetland and stream standards will need to be reviewed against the “Best Available Science” reference point.

In its statewide review, OCD identified a number of Critical Area Ordinance features which were relevant to this report and are called “Ordinance Review Benchmarks”. These include the following:

- Critical Area Ordinance Adoption
- Wetland Classification
- Wetland Buffer Width
- High and Low Intensity Land Uses
- Stream Buffer Width

A number of additional Ordinance Review Benchmarks were developed based upon suggestions by the Phase I Advisory Committee and issues raised by the public during the local Critical Area Ordinance adoption processes. The additional Ordinance Review Benchmarks included:

- Critical Area Ordinance (Updated within the last 5 years)
- Wetland Size Threshold
- Wetland Replacement Ratios
- Stream Typing System

PERMIT REVIEW

Permit Review is a more detailed level of analysis. It relies on collected permit data. A total of 100 development projects from the cities of Lacey, Olympia, and Tumwater and Thurston County were used for this review. The results of this review are based upon what was approved.

PROJECT SELECTION CRITERIA

Selecting appropriate projects for this project was a significantly demanding part of this project. It had to meet the requirements of the project partners (USEPA & Ecology) and have relevance to the Office of Community Development's "Best Available Science" Rule. Since the jurisdictions do not have permit tracking systems that could distinguish "Wetland", "Stream" or "Shoreline" projects from others, the selection could not be done through a random sample. Work from an earlier phase of the project also indicated that it would be necessary to rely on the knowledge of the local jurisdictions. Therefore, development projects were solicited from the cities of Olympia, Lacey and Tumwater along with Thurston County which met these basic characteristics.

DEVELOPMENT PROJECT SELECTION CRITERIA AND PRIORITIES

Project Criteria

- *Must* be built out ... today
- Reviewed after Critical Areas Ordinance (CAO) adopted
- Reviewed after Environmentally Sensitive Areas (ESA) regs adopted (*before CAO*)
- Reviewed after Shoreline Master Program adopted, if within Shoreline Jurisdiction

Permit Priorities

- Along a Creek, Stream or River
- Adjacent to a Wetland
- If, [on a stream or wetland], also within Shoreline Management Act (SMA) Jurisdiction
- Commercial Project
- Reasonable Use Exemption (RUEs)
- Built by the Public Sector
- Projects that were Interesting, Unique or Built in Phases

An earlier priority of having available access was dropped since not all the properties would require a site visit.

PERMIT DATA COLLECTION

Staff prepared an *Environmental Performance Review - Phase 2-Permit Data Form* and collected the data on each form while reviewing permits from each jurisdiction. This technique was utilized as a quality control. Only TRPC staff collected the data and worked to completely fill out the data form. This sometimes required three visits because of the differences in archiving and organization of historical permits. As was discovered in the earlier phase, this was the most time consuming part of the project. An example of a completed data form is included in Appendix A.

All the collected data was entered into a data base created for this project using MS Access software. Data was reviewed after it was entered for accuracy, but additional reviews and quality checks have been an ongoing process. Reports which summarize this EPR data are contained in the Appendix C.

Initially, data was collected on approximately 20 more projects than the 100 used in this study. Projects were dropped for a number of reasons usually dealing with the lack of essential data. Two Washington State Department of Transportation Projects (one a stream relocation and the other a wetland mitigation project) were dropped because it was difficult to collect data on these older projects. On the flip side, two projects which had adequate data were dropped because while it is in an area regulated by the local Shoreline Master Program, the sites were not on a stream or wetland. Some projects were also very similar (e.g. phase 1 or phase 2 of a multiple year project), so in these cases staff selected the site which appeared to represent a typical situation.

Thurston County had the largest pool of possible projects since they have been regulating wetland and stream projects for the longest time within the region. It would have been desirable to have assessed a wider range of historical projects types (not to have all subdivisions or large lots), but the selection process was hampered by a permit tracking system which only had one of eight data fields filled out. The permit tracking system was hard to access due to the lack of information available in data fields about the development projects. This made it difficult to determine which development projects would be appropriate for review.

The cities had a variety of permit tracking systems (microfilm to archived bankers boxes) which all had advantages and disadvantages for this study. One of the more frustrating occurrences was obtaining a requested file on a major project, which should have included a Environmental Impact Statement, a wetland report, a staff report, and plans only to find it contained a Hearing Examiners decision, nothing more. Even though several jurisdictions have separate environmental (SEPA) and permits review processes, they have resolved the confusion of having multiple files, by using a common project numbering system.

SUMMARY OF PROJECT DATA

Rather than create 100 data base sheets (one for each project), staff chose to describe the projects in a series of data “Reports”. Each Report addresses a different characteristic or data field, and each project which contains that characteristic is listed. See Figure 1 for the general location of the project sites. Refer to Figures 2 through 5 in the Technical Appendix for detailed maps for each jurisdiction.

SITE REVIEW

Site Review is the most detailed review and included a field inspection. Since this is the most costly review level, only 35 projects were visited. The results of this review are based upon whether the required buffers or mitigation were provided, planted or constructed.

SITE SELECTION PROCESS

In order to help determine if the wetland and stream protection ordinances are being put into practice, visiting project sites was an essential element of this project. A total of 35 projects (35%) were selected for on-site visits. Those sites visited from each jurisdiction were in the same proportion as the number of permits in the data base. For example, Lacey had a total of 18 projects (18%) and so the number of site visits in Lacey totaled 6 sites. Refer to Table 2-2 on page 21. Site visits were also selected in the same proportion as the number of mitigation and non-mitigation projects per jurisdiction. As shown on Table 2-2, of the sites visited 40% had some kind of mitigation.

Actual sites were selected by a stratified random sample. The exception being when two sites were selected that were in the same location and similar projects. For example: project number #409, Eldon Bell - Large Lot and #452, Bell - Large Lot were both large lot subdivisions on Beaver Creek. Both sites were selected for site visit, but only one was actually visited, and another site was chosen for the second field visit.

Tracking Developments on Streams and Wetlands

Project Sites

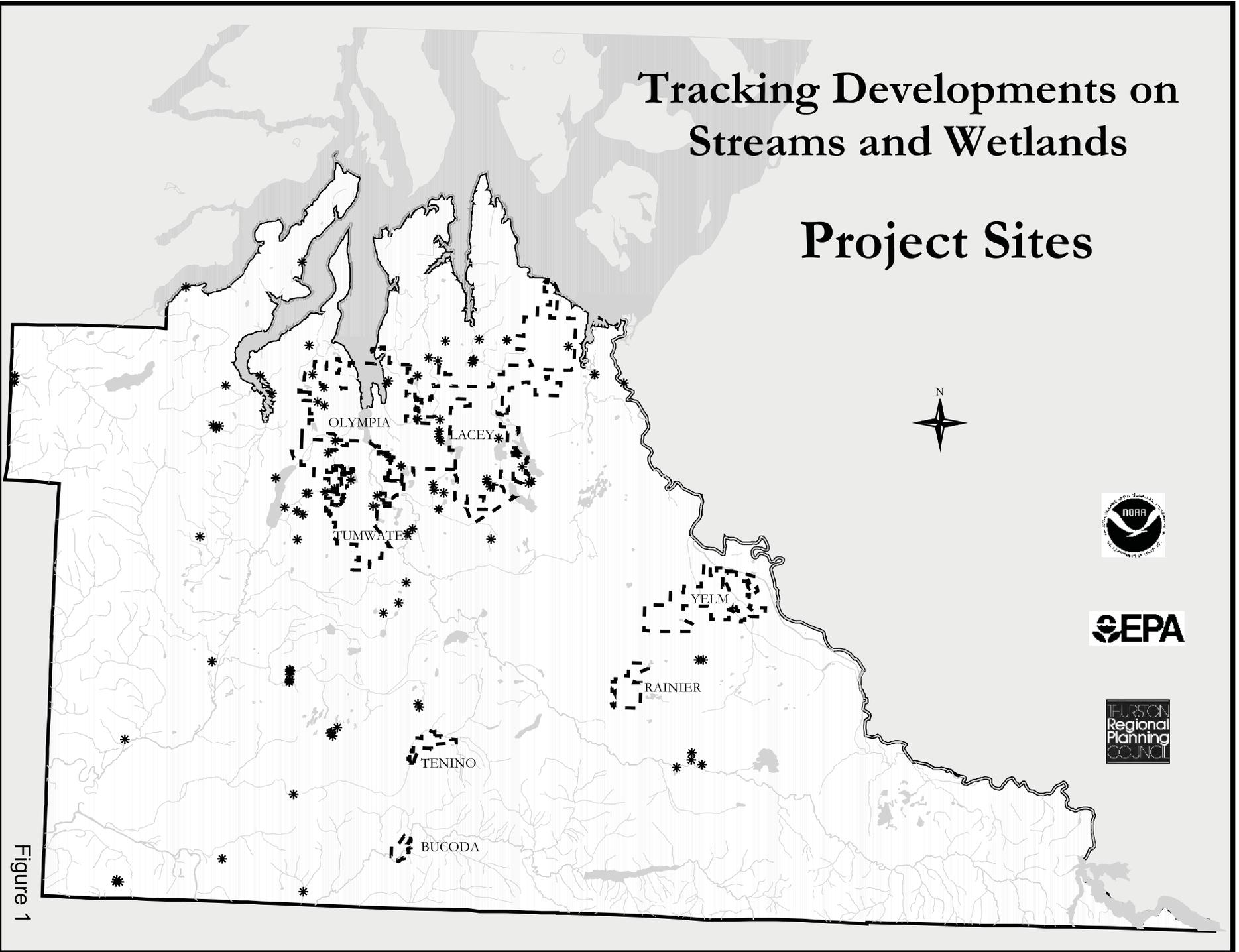


Figure 1

SITE VISIT DATA SHEET

When data collection for the project first began, an on-site observations page was included with the permit review data sheet. It later became apparent that a number of the original field related questions were no longer relevant. New questions had arisen during the permit collection stage and from conversations with persons interested in the project. Therefore, a new form was created, called the *EPR Phase 2 - Site Visit Form*, see Appendix A.

The intent of the Site Visit Form was to capture observations at a level of detail that might be done by a reasonable person. Questions that are posed by the Site Visit Form include:

- Is the permitted buffer still intact?
- What is the composition of the buffer?
- What is the level of disturbance in the buffer? And,
- Are mitigation plants surviving?

FIELD VISITS

The site field visits were made on several different days during late August, September, and early October 2000. The same TRPC staff member was responsible for being present at all site visits and collecting site review information. At least one planner from the jurisdiction the site was located in was present to help with background information and explain jurisdiction policy and regulation.

Access to wetland or stream buffer areas were made through public entry points or by owner permission. When access could not be obtained, sites were viewed from the roadway. It was attempted to view projects with a large area of buffer from more than one location, although this was not always possible. The intent of the site visit was to make observations such as a reasonable member of the public would.

**Table 2-2
Site Visit Selection**

Jurisdiction	# of Projects	% of Total Projects	# Mitigation Projects	% of the Projects in the Jurisdiction That Has Mitigation
Lacey	18	18%	5	28%
Olympia	23	23%	6	26%
Thurston County	47	47%	22	47%
Tumwater	12	12%	7	58%
TOTAL	100	100%	40	N/A
Total projects reviewed = 100 Site visits = 35				
<i>NOTE: Mitigation are sites that required wetland enhancement or creation; have an acreage for wetland mitigation; required stream riparian enhancement or creation; or have an acreage for stream mitigation.</i>				
SITE VISIT CRITERIA				
Jurisdiction	# of Projects to be Visited	# of Projects That Must be Mitigation Sites	# of Projects to be Visited W/out Mitigation	% of Total Site Visits by Jurisdiction
Lacey	6	2	5	18%
Olympia	8	2	6	23%
Thurston County	16	8	9	47%
Tumwater	4	2	2	12%
TOTAL	35	14	21	100%
<i>Numbers may be off due to rounding 40% of site visits will have mitigation</i>				

Although it was a selection criteria that the development project be built out, sometimes the field inspection discovered the project was not complete. A total of four projects, or 11% of those visited, were found to be less than 50 percent complete. These included: #322, Barrington Heights; #403, J.B.T. Vail Cut-Off Road - Large Lot; #428, Kirby - Large Lot; and #458, Pleasant Glade Ranch. However, it was still reasonable to evaluate the condition of the on-site buffer based upon the existing conditions.

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CHAPTER 3

ORDINANCE REVIEW BENCHMARKS

ORDINANCE REVIEW BENCHMARKS

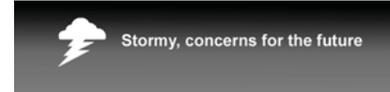
Eight benchmarks were created to evaluate the performance of the local Critical Area Ordinances. These “Ordinance Review Benchmarks” were developed from a number of sources including the statewide *Critical Areas Ordinance Review Project* (1998), Phase 1 Advisory Committee, interviews with managers of similar projects, jurisdictional staff, and the public from local Critical Area Ordinance adoption processes.

Table 3-1
Summary of Ordinance Review Benchmarks & Values

BENCHMARKS		VALUES
1.	Lacey, Olympia, Tumwater and Thurston County have up to date Critical Area Ordinances for streams and wetlands?	Stormy
2.	Lacey, Olympia, Tumwater and Thurston County adopted the wetland size thresholds from the <i>Wetland Model Ordinance</i> ?	Partly cloudy
3.	Lacey, Olympia, Tumwater and Thurston County adopted wetland classifications from the <i>Wetland Model Ordinance</i> ?	Sunny
4.	Lacey, Olympia, Tumwater and Thurston County adopted high and low intensity land uses for wetland buffers from the <i>Wetland Model Ordinance</i> ?	Sunny
5.	Lacey, Olympia, Tumwater and Thurston County adopted wetland buffer widths from the <i>Wetland Model Ordinance</i> ?	Sunny
6.	Lacey, Olympia, Tumwater and Thurston County adopted wetland replacement ratios from the <i>Wetland Model Ordinance</i> ?	Partly cloudy
7.	Lacey, Olympia, Tumwater and Thurston County adopted a stream typing system?	Sunny
8.	Lacey, Olympia, Tumwater and Thurston County adopted stream buffer widths similar to those recommended in the <i>Riparian Management Recommendations for Washington’s Priority Habitats</i> ?	Stormy

Benchmark 1

Lacey, Olympia, Tumwater and Thurston County have up to date Critical Area Ordinances for streams and wetlands?



RATIONALE:

Under GMA all 39 counties and 278 cities were required to designate and protect critical areas, such as fish and wildlife conservation areas and wetlands. Critical Areas Ordinances (CAO) are to be updated every five years according to the Growth Management Act [RCW 36.70A.215]. Further, CAO adoptions or amendments made after 1995 were subject to the requirement of 1) “*Best Available Science*” and 2) giving special consideration to the protection and enhancement of anadromous fish.

BACKGROUND:

As of the Office of Community Development’s 1998 report, they found that, 10% of Washington's counties and cities (four counties and 28 cities) had failed to act by not adopting local critical area ordinances. Within the Puget Sound region, all 12 of the counties adopted CAOs, along with 108 of the 111 cities. Also, two newly created cities in the Puget Sound region were then planning without an interim CAO.

The State OCD also found that some Critical Areas Ordinances (CAOs) were adopted as interim measures, and many jurisdictions had not amended these ordinances since their adoption. OCD did not directly collect information regarding whether the CAOs have been kept up to date.

FINDINGS:

Within the Thurston Region, only the City of Tumwater adopted its Critical Areas Ordinance before the deadline of September 1, 1991. Olympia and Lacey both adopted CAO shortly after the extended deadline of March 1, 1992. Thurston County’s adoption occurred two years after the original deadline, but it had preexisting development regulations which covered about 75% of the Critical Areas categories including both wetlands and streams.

The three cities have only made minor changes to the wetland and stream portions of their ordinances since initial adoption. The Tumwater CAO was due for an update in 1996, Olympia and Lacey in 1997.

In 1996 Thurston County adopted a number of technical corrections that affected both wetlands and streams. Since it was after a 1995 GMA amendment, the county provided documentation on its decision making process, to meet the “*Best Available Science*” test. As a result, the five-year time period just expired for the county in June 2001. Therefore, none of the four jurisdictions meet this benchmark.

VALUE:

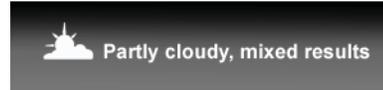
With none of the four jurisdictions having updated their CAO within the last five years, a Stormy value is warranted for this benchmark.

RECOMMENDATION:

1. The cities of Lacey, Olympia, and Tumwater along with Thurston County need to update their Critical Area Ordinances to include current stream and wetland standards and which utilizes “*Best Available Science*” in the adoption process.

Benchmark 2

Lacey, Olympia, Tumwater and Thurston County adopted the wetland size thresholds from the *Wetland Model Ordinance*?



RATIONALE:

The Ecology *Wetland Model Ordinance* was used as the basis for this benchmark. A threshold of wetland size was an important issue to both the Phase I Advisory Committee and the public during the CAO adoption process. The state OCD did not collect information about this benchmark.

BACKGROUND:

The *Wetland Model Ordinance* provides no single threshold about a minimum wetland size. In the Model Ordinance a Class 1 wetland has no minimum size; 2,500 square feet for a Class 2 or 3 wetland and 10,000 square feet (1/4 of an acre) for a Class 4 wetland. The rationale from Ecology for the variable range was the greater need of protection for the higher quality wetlands. The Science Review Team also wanted to reinforce that compliance with an adopted Critical Areas Ordinance is not equal to using “Best Available Science”.

FINDINGS:

The cities of Tumwater and Lacey both adopted the size threshold from the *Wetland Model Ordinance*. Olympia and Thurston County adopted approaches which linked their ability to map wetlands to which wetlands would be regulated.

Olympia chose a single threshold of 10,000 square feet size for all its urban wetlands. Thurston County paralleled this approach but felt that 11,000 square feet was closer to a 1/4 acre threshold. The County then doubled this number to create the 1/2 acre threshold for the rural area, which only occurs in unincorporated Thurston County. Thurston County also added an additional wetland threshold of 2,500 square feet for wetlands adjacent to a stream or in a 100 year floodplain. This size is small enough that site inspections will always be needed, but are areas which are important for fish habitat. Refer to Table 3-2.

**Table 3-2
Regulated Wetlands by Class and Size**

Wetland Classes or Categories	Ecology Model Ordinance	Lacey	Olympia	Tumwater	Thurston County	
					Urban	Rural
Class 1	No Minimum	No Minimum	10,000 sq. ft.	No Minimum	11,000 sq. ft.	22,000 sq. ft.
Class 2	2,500 sq. ft.	2,500 sq. ft.	10,000 sq. ft.	2,500 sq. ft.	11,000 sq. ft.	22,000 sq. ft.
Class 3	2,500 sq. ft.	2,500 sq. ft.	10,000 sq. ft.	2,500 sq. ft.	11,000 sq. ft.	22,000 sq. ft.
Class 4	10,000 sq. ft.	10,000 sq. ft.	10,000 sq. ft.	10,000 sq. ft.	11,000 sq. ft.	22,000 sq. ft.
Special *	----	-----	-----	-----	2,500 sq. ft.	

* = Adjacent to a stream or within 100-year floodplain

Olympia and Thurston County’s experience with their Environmentally Sensitive Areas ordinances prior to the Growth Management Act indicated that the protection of a feature was directly related to the jurisdiction’s ability to map that feature. This was further substantiated by an Ecology report of SEPA checklists which indicated that half of the them provided false or inaccurate information about the presence of wetlands on a development site (Castelle, 1992).

All four jurisdictions cooperated on a wetland and stream mapping project managed by Thurston Regional Planning Council. Because of cost constraints, two levels of accuracy were created. Within the cities and the urban growth area boundary, wetlands were mapped to 0.10 acre in size (approximately 4,500 square feet) and in the rural areas of the county, wetlands to 0.40 acre (17,500 square feet) were mapped. Through the use of 2 foot contour information regional wetlands mapping in the rural county areas can now map areas of 5,000 square feet.

Although Olympia and Thurston County believe their alternative wetland size thresholds are equal to those of the Model Ordinance, the Science Review Team concluded that the only appropriate standard was the *Wetland Model Ordinance*.

VALUE:

With only Tumwater and Lacey adopting the Model Ordinance a value of Partly Cloudy is warranted for this benchmark.

RECOMMENDATION:

1. The City of Olympia and Thurston County need to adopt wetland size threshold, which is consistent with the *Wetland Model Ordinance*.

Benchmark 3

Lacey, Olympia, Tumwater and Thurston County adopted the wetland classifications from the *Wetland Model Ordinance*?



Sunny, overall positive results

RATIONALE:

The criteria for this benchmark can be found in Ecology's *Wetland Model Ordinance*. The Model Ordinance suggests that local jurisdictions classify their wetlands as class 1 through 4 (highest to lowest quality). The state Office of Community Development collected information about this benchmark.

FINDINGS:

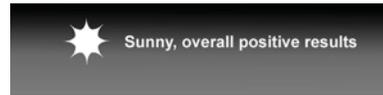
Within the Thurston Region, all four jurisdictions adopted the *Wetland Model Ordinance* classification system. Although Thurston County only has a 3 class system, it is still consistent with the Model Ordinance framework. Thurston County chose to combine class 3 & 4 wetlands together, which actually provides a greater degree of protection for the class 4 wetlands. In the Model Ordinance class 4 wetlands are defined as generally being isolated wetlands less than 2 acres in size.

VALUE:

A compliance rate of 4 of 4 warrants a Sunny value for this Benchmark.

Benchmark 4

Lacey, Olympia, Tumwater and Thurston County adopted high and low intensity land uses for wetland buffers from the *Wetland Model Ordinance*?



RATIONALE:

The criteria for this benchmark can be found in Ecology’s *Wetland Model Ordinance*. The public found the concepts of high and low intensity land uses useful during the local CAO adoption process. However, without understanding the definition used by each jurisdiction, a comparison of apples to oranges may occur.

BACKGROUND:

Within the Puget Sound region, the state OCD found that Thurston County was the only county to use the model guideline completely, and only two counties use the low intensity standards. It found that nine of the 12 counties do not meet either standard. By comparison, nine of the 111 cities in the same area use the model guideline, 10 use the low intensity standards and the remaining cities did not meet either standard.

FINDINGS:

Within the Thurston Region, all three cities and Thurston County adopted both high and low intensity land uses. The three cities are not consistent with how they defined both terms of residential density. However, Thurston County is the only jurisdiction to have both urban and rural areas. It defined **Low Intensity Land Use** as a density of 1 unit per 5 acres or less. This density includes clustered lots and their density bonus. However, within the cities, any density between 4 units per acre and 1 unit per 5 acres may be considered to be Low Intensity.

For the term **High Intensity Land Uses** all jurisdictions agree that active recreation, commercial, and industrial land uses fit this category. Again a range exists for residential land uses being anything higher than 1 unit per 5 acres in the County, to the term “Urban Residential” in Lacey which is not defined, to 5 or more units per acre in Tumwater.

VALUE:

While considered somewhat of an “out of date” concept, adoption by all four jurisdictions warrants a Sunny value.

Benchmark 5

Lacey, Olympia, Tumwater and Thurston County adopted wetland buffer widths from the *Wetland Model Ordinance*?



Sunny, overall positive results

RATIONALE:

The criteria for this benchmark can be found in Ecology's *Wetland Model Ordinance*. The widths of wetland buffers were a concern to the Phase I Advisory Committee and of extreme importance during the local CAO adoption process. The *Wetland Model Ordinance* suggests buffer distances based upon quality, type or size of the wetland and ranks it by class 1 through 4 (highest to lowest quality). Therefore, the largest buffers would be for class 1 wetlands with reductions in distances through class 4.

FINDINGS:

Within the Thurston Region, all four of the jurisdictions adopted the buffer widths recommended in the *Wetland Model Ordinance*. This may be the only region in the state where all major cities and the county adopted Ecology's Model Ordinance.

Refer to Table 3-3 which includes the recommended categories, High and Low Intensity Land Uses and buffer widths.

VALUE:

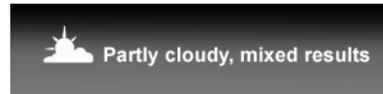
Compliance by all four jurisdictions warrants a Sunny value for this benchmark.

**Table 3-3
Wetland Buffer Widths**

Wetland Classes or Categories	<i>Ecology Model Ordinance</i>	Lacey	Olympia	Tumwater	Thurston County
HIGH INTENSITY LAND USES					
Class 1	300'	300'	300'	300'	300'
Class 2	200'	200'	200'	200'	200'
Class 3	100'	100'	100'	100'	100'
Class 4	50'	50'	50'	50'	-----
LOW INTENSITY LAND USES					
Class 1	200'	200'	200'	200'	200'
Class 2	100'	100'	100'	100'	100'
Class 3	50'	50'	50'	50'	50'
Class 4	25'	25'	25'	25'	-----

Benchmark 6

Lacey, Olympia, Tumwater and Thurston County adopted wetland replacement ratios from the *Wetland Model Ordinance*?



RATIONALE:

Wetland replacement ratios are an essential part of Ecology’s *Wetland Model Ordinance* to meet a goal of “No Net Loss of Wetlands”. It contains requirements ratios in order to attempt to replace lost wetland functions and values that have been damaged or eliminated through a permitted project. This is a factor, which OCD did not evaluate

FINDINGS:

Lacey, Olympia and Tumwater all adopted the original replacement standards from the *Wetland Model Ordinance*. Refer to Table 3-4.

**Table 3-4
Model Ordinance Wetland Replacement Ratios**

Impacted Wetland Class or Category	Type of Wetland	Restoration Ratio
I		6:1
II or III		
“	Forested	3:1
“	Scrub-Shrub	2:1
“	Emergent	1.5:1
IV	<i>(Isolated Wetlands)</i>	1.25:1

Thurston County started to implement a number of the Model Ordinance provisions before it adopted its CAO. These experiences found that mitigation measures to improve water quality and fish passage were not countable towards the replacement ratios. Even though this mitigation was not of the same kind, (e.g. wetlands for fish habitat) the County CAO acknowledges these benefits and allowed for a reduced replacement ratio of up to 50 percent.

In late 1993, Ecology and the Washington State Department of Transportation (WSDOT) agreed to a different replacement ratio. Changes included: an evaluation of the pre-existing wetland's rating, a lowering of the replacement ratio for a low quality wetland, and the addition of an enhancement option at a higher ratio. In lieu of a complete wetland replacement, WSDOT could opt to enhance twice the replacement area requirement. This flexibility was seen by Thurston County as improvements to those in the *Wetland Model Ordinance* (see Table 3-4). As a result, Thurston County adopted Table 3-5 as its CAO wetland replacement ratio.

**Table 3-5
WSDOT Wetland Replacement and Enhancement Ratios**

Impacted Wetland Class or Category	Restoration and Creation Ratio After Mitigation		Enhancement Ratio After Mitigation	
	Class II	Class III	Class II	Class III
I	4:1	6:1	8:1	12:1
II	2:1	3:1	4:1	6:1
III	1 - 1.5:1	1.5 - 2:1	2-3:1	3-4:1
Isolated Wetlands	1.0:1	1.25:1	1.5 - 2.5:1	2-3:1

Even though Thurston County believed that the WSDOT approach was a better than the ratio in the *Wetland Model Ordinance*, the Science Review Team concluded that the Model Ordinance was the only appropriate threshold for this benchmark.

VALUE:

A compliance rate of 3 of 4 jurisdictions results in a Partly Cloudy value.

RECOMMENDATION:

1. Thurston County should revise its Critical Areas Ordinance and adopt the wetland replacement ratio found in the *Wetland Model Ordinance*.

Benchmark 7

Lacey, Olympia, Tumwater and Thurston County adopted some sort of stream typing system?



Sunny, overall positive results

RATIONALE:

In the early 1990's, when local jurisdictions were adopting their CAOs, there was no equivalent system for streams, to the *Wetland Model Ordinance*. Therefore, the basis for this benchmark is the adoption of any stream typing system. OCD indirectly collected information about this benchmark.

BACKGROUND:

The OCD report found that the most often used classification system was the Washington State Department of Natural Resources (WDNR) water typing system found in WAC 222-16-035. The WDNR system contains five water types which has been recently changed to a three type system.

FINDINGS:

Within the Thurston region, Olympia, Tumwater and Thurston County utilized the WDNR stream typing system. Lacey created a wetland class #5 which applied to streams.

VALUE:

A compliance rate of 4 of 4 jurisdictions warrants a Sunny value for this benchmark.

Benchmark 8

Lacey, Olympia, Tumwater and Thurston County adopted stream buffer widths similar to those in the *Riparian Management Recommendations for Washington’s Priority Habitats*?



RATIONALE:

Stream buffer widths were an important issue to the Phase 1 Advisory Committee and the public during the CAO adoption process. Comments about stream types and buffer widths often paralleled those regarding wetlands. The Washington State Department of Fish and Wildlife (WDFW) and the Science Review Team agreed that the “*Riparian Management Recommendations for Washington’s Priority Habitats*” should be used as the threshold for this benchmark, since these they were based upon “*Best Available Science*”.

BACKGROUND:

The Office of Community Development found a wider degree of variation from jurisdiction to jurisdiction on stream classifications and buffer widths than for wetlands. Within the Puget Sound region, OCD found that two of the 12 counties (Pierce and Whatcom) and only two of the 111 cities provided stream buffers of at least 150 foot in width.

FINDINGS:

When compared to other jurisdictions within Puget Sound, the Thurston region may have fared better than average but none of the four jurisdictions met WDFW’s standard. Lacey should be given credit for the only buffer standard within the region with a 200 foot stream buffer. However, Lacey only has one stream, Woodland Creek, and this applies to only that part within the city. Olympia and Thurston County standards are similar, but are lower than recommended. It is difficult to evaluate Tumwater’s buffers, since its CAO regulations allow a case by case review. Recent conversations with Tumwater have indicated that stream projects buffers ranged from 50 to 200 feet. Refer to Table 3-6.

An observation about case by case standards is that from 1980 until the CAO was adopted in 1993, Thurston County implemented for both wetlands and streams on a case by case basis. The primary reason for abandoning this technique was the lack of certainty it provided to the property owner, developer and the community. It was also difficult to evaluate the effectiveness of a standard when it changes from project to project. This may be an appropriate technique when there are no statewide stream standards, but it becomes increasingly difficult to administer and justify unique decisions if state or regional standards exist.

**Table 3-6
Stream Buffer Widths**

WDNR Stream Types	WDFW - Riparian Management	Lacey	Olympia	Tumwater	Thurston County
Type 1	250'	100' (As required by SMP)	100'	Case-by-Case	100'
Type 2	250'	200'	100'	Case-by-Case	100'
Type 3 (5-20 ft wide)	200'	200'	75'	Case-by-Case	100'
Type 3 (< 5 ft wide)	150'				
Type 4 & 5 (High potential for mass wasting)	225'	--	--	--	--
Type 4 & 5 (Low potential for mass wasting)	150'	--	--	--	--
Type 4	--	100'	50'	Case-by-Case	50'
Type 5	--	50'	25'	Case-by-Case	25'

SMP = Shoreline Master Program

VALUE:

A compliance rate of one of four warrants a Stormy value for this benchmark.

RECOMMENDATION:

1. Lacey, Olympia, Tumwater and Thurston County should update their Critical Area Ordinances to incorporate WDFW's "*Riparian Management Recommendations for Washington's Priority Habitats*" for their stream buffer widths.

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CHAPTER 4

PERMIT REVIEW BENCHMARKS

PERMIT REVIEW BENCHMARKS

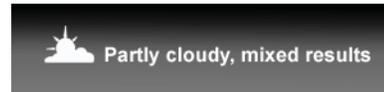
Eight benchmarks were created to evaluate the performance of development permits along streams and wetlands issued by the local jurisdictions. These “Permit Review Benchmarks” were developed from a number of sources including the Phase 1 Advisory Committee, interviews with managers of similar projects, jurisdictional staff, and the public from local Critical Area Ordinance adoption processes. A summary of the Permit Review Benchmarks and their values are as follows:

Table 4-1
Summary of Permit Review Benchmarks & Values

BENCHMARKS		VALUES
9:	Critical Area Ordinance projects met the standard wetland buffer requirements.	Partly Cloudy
10:	Critical Area Ordinance projects met the standard stream buffer requirements.	Partly Cloudy
11:	Public projects provided the standard wetland and stream buffers as often as private projects.	Partly Cloudy
12:	Public projects received buffer reductions as often as private projects.	Sunny
13:	Projects which received wetland or stream buffer reductions provided on or off-site mitigation.	Sunny
14:	Site inspections for critical areas compliance occurred during construction and after the development project was completed.	Not enough data available
15:	Annual monitoring of mitigation sites occurred after the development project was complete.	Stormy
16:	Reasonable Use Exceptions were only issued for a limited number of projects.	Sunny

Benchmark 9:

Critical Area Ordinance projects met the standard wetland buffer requirements.



RATIONALE:

The assumption in this Benchmark was that most project sponsors chose to meet the standard Critical Area Ordinance (CAO) requirements for wetlands rather than seek a buffer reduction, or on or off-site mitigation.

This benchmark was tabulated by the number of wetlands (73) rather than the number of projects which was a smaller number. This was because many projects had more than one associated wetland. Also the tabulation does not include Reasonable Use Exemptions.

FINDINGS:

The database indicates that the standard wetland buffer was met on 43 of 73 wetlands. This represents a compliance rate of 59%. Table 4-2 indicates that this varied by jurisdiction from 85% in Lacey to 36% and 38% for Tumwater and Olympia, respectively. The rate for Thurston County was 55% only slightly below the regional average. This wide range indicates the importance for all jurisdictions in the region to utilize the standard wetland buffer as the rule and not the exception.

**Table 4-2
Critical Area Ordinance Wetlands Features**

Jurisdiction	Number of Wetlands	Number of Wetlands that met Standard	Percentage of Wetlands that met CAO Standard
Lacey	26	22	85%
Olympia	16	6	38%
Tumwater	11	4	36%
Thurston County	20	11	55%
TOTAL	73	43	59%

VALUE:

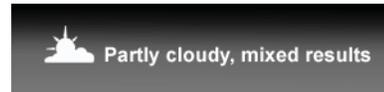
A finding of 53% warrants a Partly Cloudy value for this benchmark.

RECOMMENDATION:

1. All jurisdictions need to ensure that the standard wetland buffer is the rule, and not the exception.

Benchmark 10:

Critical Area Ordinance projects met the standard stream buffer requirements.



RATIONALE:

The assumption in this Benchmark was that most project sponsors chose to meet the standard Critical Area Ordinance (CAO) requirements for streams rather than seek a buffer reduction, or on or off-site mitigation.

This benchmark was tabulated by the number of streams (17) rather than the number of projects which was a smaller number. This was because some projects had more than one associated stream. Also, the tabulation does not include Reasonable Use Exemptions.

FINDINGS:

The database indicates that there were far fewer streams (17) than wetlands (73) on reviewed development projects. Table 4-3 indicates that the standard stream buffer was met on eight of 17 wetlands (47%). There was a wide range of compliance by the jurisdictions from 100% for Lacey, to 25% in Olympia. Tumwater did not have any stream projects and Thurston County had a rate of 45%, or slightly below the average of the region.

**Table 4-3
Critical Area Ordinance Streams Features**

Jurisdiction	Number of Streams	Number of Streams that met Standard	Percentage of Streams that met CAO Standard
Lacey	2	2	100%
Olympia	4	1	25%
Tumwater	0	--	--
Thurston County	11	5	45%
TOTAL	17	8	47%

VALUE:

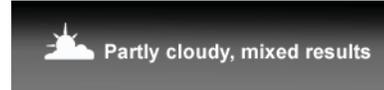
With a compliance rate of 47% a Partly Cloudy value is warranted for this benchmark.

RECOMMENDATION:

1. Jurisdictions need to use the standard stream buffer as the rule, and not the exception.

Benchmark 11:

Public projects provided the standard wetland and stream buffers as often as private projects.



RATIONALE:

The assumption for this benchmark was that both public and private projects comply with the wetland and stream regulations at a similar rate. Imbedded within this benchmark was a question of equal application of the requirements between public and private projects.

Because many development projects had more than one associated stream or wetland, this benchmark used the combined number of wetland and stream features (162) rather than the number of projects. This benchmark does not include Reasonable Use Exemptions.

FINDINGS:

In Table 4-4 below, it indicates that private developments met the buffer standard 67% of the time, whereas public developments met the buffer standard only 41%. This table also includes comparisons for buffer averaging, buffer reductions, and a number of features where no data was available. This latter condition was often associated with secondary features (e.g. a small stream running into a large wetland), which was overlooked in the permit files or in the description of critical area on site.

**Table 4-4
Compliance with the Standard Buffers**

	Joint	%	Private	%	Public	%
Buffer Met Standard	11	100%	74	67%	17	41%
Buffer Average			5	5%	1	2%
Buffer Reduced			20	18%	10	24%
Data Not Available			11	10%	13	32%
OWNERSHIP TOTAL	11	7%	110	67%	41	25%

From the findings of Table 4-4, it was believed that a major factor to lower compliance rate for public projects was due in part to the different types of developments. For example, a private subdivision may have a better opportunity to avoid impacts, whereas a public bridge may have to be built to cross the wetland or stream. Table 4-5 explores the relationship between public & private projects, permit type, and when the standard buffers are met. A total of 151 stream or wetland features were used in the table. Joint (public & private) projects were not included.

**Table 4-5
Compliance with the Standard Buffers by Permit Type**

PERMIT TYPE	Private	%	Public	%
Commercial	0 of 4	0%	---	---
Industrial	2 of 8	25%	0 of 1	0%
Institutional	---	---	1 of 4	25%
Multi Family	10 of 16	62%	---	---
Other	0 of 1	0%	---	---
Park – Golf Course	11 of 14	79%	9 of 12	75%
Road – Bridge	0 of 2	0%	7 of 19	37%
Single Family*	51 of 64	80%	---	---
Stormwater Facility	0 of 1	0%	0 of 5	0%
TOTAL	76 of 110	69%	17 of 41	41%

* = Includes one combined Single Family/Park-Golf Course permit

Table 4-5 indicates that the type of the development does have a dramatic impact on the compliance rate. It appears that Stormwater Facilities and Commercial permits have very poor compliance rate regardless of their ownership. The Park–Golf Course permit type had the highest compliance rate. Based on the type of permits it is also not surprising that Industrial and Institutional have much lower compliance rates that private Multi Family or Single Family permits. Based upon this comparison, private developments comply with the standard buffers 28% more than do public projects.

VALUE:

A variance of 28% between public and private projects warrants a Partly Cloudy value for this benchmark.

Benchmark 12:

Public projects received buffer reductions as often as private projects.



RATIONALE:

The assumption in this benchmark was that public and private projects were receiving wetland and stream buffer reductions at approximately the same rate. Like the previous benchmark, there was a concern about fair and equal application of the requirements between public and private projects.

This benchmark was tabulated by the combined number of wetland and stream features (162) rather than the number of projects which was a smaller number. This was because many projects had more than one stream or wetland on them. Also, this tabulation does not include Reasonable Use Exemptions.

FINDINGS:

Table 4-6 (which repeats part of the data from the previous Benchmark) indicates that private developments received buffer reductions 18% of the time, whereas public developments received buffer reductions 24% of the time.

Because this benchmark is similar to the previous one, it was determined that this data should also be shown in relationship to its permit type. Table 4-7, on the following page, is therefore comparable to Table 4-5 in the previous benchmark. A total of 151 stream or wetland features were used in the table. Joint (public & private) projects were not included.

**Table 4-6
Projects with Reduced Buffers**

	Joint	%	Private	%	Public	%
Buffer Reduced	---	---	20 of 110	18%	10 of 41	24%

Table 4-7 indicates the same type of variation in the compliance rate by the permit that was shown in the previous benchmark. In this case high values (e.g. 1 of 1 = 100%) are those which received the reduction from the standard buffer. Based upon this technique, private developments receive reductions in buffers 6% fewer times than public projects.

**Table 4-7
Projects with Reduced Buffers by Permit Type**

PERMIT TYPE	Private	%	Public	%
Commercial	2 of 4	50%	---	---
Industrial	5 of 8	63%	1 of 1	100%
Institutional	---	---	0 of 4	0%
Multi Family	3 of 16	19%	---	---
Other	1 of 1	100%	---	---
Park – Golf Course	1 of 14	7%	3 of 12	25%
Road – Bridge	0 of 2	0%	3 of 19	16%
Single Family	7 of 64*	11%	---	---
Stormwater Facility	1 of 1	100%	3 of 5	60%
TOTAL	20 of 110	18%	10 of 41	24%

* = Includes one combined Single Family/Park-Golf Course permit

VALUE:

A variance of only 6% between public and private projects warrants a Sunny value for this benchmark.

ADDITIONAL FINDINGS:

After reviewing Benchmarks 11 and 12, it became apparent that some permit types were receiving buffer reductions more often than others. See Table 4-5 on page 45 and Table 4-7 on page 47.

Commercial, industrial, institutional, stormwater facilities and road–bridges permit types received buffer reductions far more often than other permit types. These land uses have a higher intensity which would warrant protection of streams and wetlands, but the developments could not or did not meet minimum buffer requirements.

Buffer reductions for commercial, industrial, institutional, and stormwater facilities should not be considered the normal course of action. However, road and bridges often have no other option than to cut through stream or wetland buffers.

RECOMMENDATION:

1. Lacey, Olympia, Tumwater and Thurston County should amend their CAO regulations to make it more difficult to receive buffer reductions for commercial, industrial, institutional, and stormwater facilities.
2. Lacey, Olympia, Tumwater and Thurston County should consider rezoning areas with extensive streams or wetlands to uses other than commercial, industrial, or institutional land uses.

Benchmark 13:

Projects which receive wetland or stream buffer reductions provided on or off-site mitigation.



RATIONALE:

The question behind this benchmark was to determine the percentage of the permits which obtained a buffer reduction from the standard buffer without providing any compensatory mitigation.

This tabulation applies to the 28 projects with buffer reductions. It does not include Reasonable Use Exemptions and projects where the buffer was averaged.

FINDINGS:

Reports #7 and #8 in the Technical Appendices indicates that 24 of 28 projects (85%) which had buffer reductions provided mitigation. Therefore, only 4 of 28 or 15% did not provide mitigation.

While a buffer reduction without compensatory mitigation appears to conflict with the intent of the Critical Area Regulation, it appears to be a possibility in all the local ordinances.

VALUE:

With a compliance rate of 85%, this benchmark warrants a value of Sunny.

RECOMMENDATION:

1. Lacey, Olympia, Tumwater and Thurston County should amend their CAO regulations so that a buffer reduction is not possible without providing mitigation.

Benchmark 14:

Site inspections for critical areas compliance occurred during construction and after the development project was completed.



RATIONALE:

The assumption behind this benchmark is that site inspections to determine permit compliance are an essential part of implementing wetland and stream regulations.

The lack of site inspections has been noted as serious problem by other jurisdictions. A 1998 King County report (Mockler, 1998) found that out of 40 wetland mitigation sites in the study, an alarming **9 of 40 sites did not construct the required mitigation**. It would appear that these projects benefited doubly, by first avoiding the standard buffer requirements, and secondly the expense of constructing the required mitigation. It is unknown if King County has revised its administrative procedures, as a result of these findings.

All 100 projects were used in this tabulation.

FINDINGS:

The data for this benchmark are confusing and exhibit problems in adequately tracking a permit issued by one department, which is then administered by another. For example, a development services or planning department may negotiate and approve a permit with conditions which are to be implemented by the building department. Normally this results in files on the same project in both departments being tracked independently. In most cases, a single tracking system for field inspections could not be found. Also, this evaluation focused on permit files most often administered by the development services or planning departments. Therefore, the list of sites inspections may be located in the field notes of the building department.

Report #13 in the Technical Appendices found that an inspection was “*Not Part of the Permit Approval*” for 60 of 100 projects and “*Could not be Determined*” on another 3 of 100 projects. The high number of “*Not Part of the Permit Approval*” is likely because enforcement is assumed to be a required part of the permit, so it was not specifically added as a permit condition.

Of the 37 projects where inspections were mentioned, it was not clear what procedural requirements there were for jurisdictional staff to visit projects to determine if permit conditions had been met. It is likely to assume mitigation measures are checked before the final inspection or occupancy permit for a building permit. However, it is less clear if this occurs for any other land development project such as large lot, short plat, or subdivision in the rural part of Thurston County. One observation from the report is that city projects may have a higher probability of site inspection due to the smaller geography, traditionally higher staff ratios, and shorter build-out time for the development projects.

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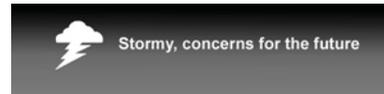
Due to difficulty in determining the number and frequency of jurisdictional staff making site inspections, it was not possible to establish a value for this benchmark.

RECOMMENDATION:

1. Lacey, Olympia, Tumwater and Thurston County need to evaluate their internal and intra-departmental procedures to ensure that required mitigation measures are constructed and that they receive adequate field inspections.

Benchmark 15:

Annual monitoring of mitigation sites occurred after the development project was complete.



RATIONALE:

The assumption behind this benchmark is that obtaining required mitigation reports is an essential part of completely implementing the wetland and stream regulations. One observation regarding the 1998 King County wetland mitigation report (Mockler, 1998) which was described in the previous benchmark is that the lack of annual monitoring reports should have been a clue that a number of the sites had not yet constructed their required mitigation. Compliance evaluations by others (Storm and Stellini, 1994 and Castelle, 1992) have shown that failure to obtain required mitigation reports translates into adverse impacts to the stream and wetland systems which these regulations were seeking to protect.

Only the 25 projects that had mitigation reports were used in this tabulation.

FINDINGS:

Of the 25 projects where mitigation reports were required, actual reports could only be located for nine projects (36%). Refer to Report 14 in the Technical Appendices. More mitigation reports may have been submitted, but only 9 of 25 could be located. Attempts were made to find mitigation reports, which were not located in the permit files. Sometimes a jurisdictional staff would create a separate file for these types of reports and keep it at their desk. As in the previous benchmark, with a primary focus on development services or planning department's files, it is possible that some reports found their ways into building or public work department files as well.

Monitoring reports are normally required after year 1, 3 and 5 for a total of three reports. However, full credit was given for this benchmark if any monitoring reports could be located. Data was not collected on how many reports were submitted for year 1, 3 and 5, but it is likely that compliance severely drops off over time. It is also not know how many permit files had **all** their required monitoring reports.

Most monitoring reports are submitted after the required mitigation is installed. Also, all permits were required to go to the local jurisdiction. This mitigation allowed the development project to be built. After construction there are few reasons for an applicant to submit a monitoring report. The report itself is costly and if there are any problems, corrections costs are often viewed as an extra cost. In fact, some wetland consultants

have indicated that monitoring reports are not routinely submitted to the reviewers unless specifically requested by the client, or demanded by the jurisdictional staff.

VALUE:

A compliance rate of 36% would normally warrant a Partly Cloudy value. However, since full credit was given when only one of three required reports was found, this reduces this benchmark to a Stormy value.

RECOMMENDATION:

1. Lacey, Olympia, Tumwater and Thurston County need to ensure that annual mitigation reports are submitted in a timely fashion and that issued identified as problems are addressed.
2. The Science Review Team independently suggested a variety of techniques, to ensure that annual mitigation reports are submitted in a timely fashion and that issued identified as problems are addressed. The author's have expanded upon these suggestions to provide the following:

Alternative A: Jurisdictions could have one staff to inspect the mitigation sites and prepare the mitigation reports. This person would require adequate education and training which is sometimes difficult for a smaller jurisdiction. An alternative to this approach would be to retain one staff with the needed expertise be shared between jurisdictions.

In this approach the applicant pays a fee to a reserve account which is equal to the cost of doing all three reports, plus some overage for problems. The staff would bill his time to this account while working on that project. Problems which occur over time would be addressed by the proponent or current owner, or the jurisdiction would authorize corrections be made and paid from a separate bond account.

Alternative B: Jurisdictions could hire one firm to undertake all their mitigation inspections and prepare the mitigation reports. That firm would not be able to review its own projects so, an alternate firm will also be needed for those circumstances.

Selection of the firm could occur after a Request for Qualification (RFQ) process. Cost for the three reports would be an agreement between the applicant, the firm and the jurisdiction. This would be similar to a "three way agreement" sometimes used to prepare Environmental Impact Statements.

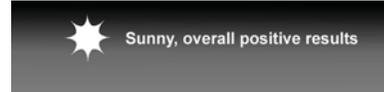
Alternative C: Jurisdictions could designate an existing staff who receives adequate education and training. Jurisdictional staffs and often planners are asked to accomplish a myriad of implementation tasks with respect to CAO regulations.

It was noted several times by the Science Review Team that planners generally lack the expertise of a wetland or riparian scientist. Additional training is one means of improving the skills of existing employees. One of the Science Review Team commented that **“increasing trained staff, in significant numbers, would be the single most important thing that jurisdictions could do to improve delineation reliability, plan and permit review, (and) permit compliance ...”**.

Alternative D: Thurston Regional Planning Council could have a specialist to inspect the mitigation sites and prepare the mitigation reports. This would be similar to Alternative A, but would a TRPC employee on contract to each of the four jurisdictions. It would likely be less expensive than Alternative A, but scheduling may be a challenge with completing demands for the same limited staff time, not unlike a private consultant. It is a less desirable alternative than the alternatives because TRPC no longer has “current planning function”, and it is unknown if there would be enough permits to justify hiring a full time person with such a specific expertise.

Benchmark 16:

Reasonable Use Exemptions were only issued for a limited number of projects.



RATIONALE:

The assumption behind this benchmark is that Reasonable Use Exemptions (RUEs) are a sort of “CAO variance”. As such, RUEs should be used sparingly and considered an exception rather than the rule.

This applies to only the nine RUE projects.

FINDINGS:

All four of the local Critical Area Ordinances (CAO) provide for Reasonable Use Exemptions. RUEs are an administrative or quasi-judicial means to deal with parcels where the CAO regulations may have made them unbuildable. RUEs respond to the Growth Management Act goal regarding protecting property rights.

The project selection bias used in this report was to collect **all** the available RUEs. RUEs represented a unique sub-set of data, which was excluded from several of the preceding benchmarks. Only Tumwater had not processed RUEs at that time of the data collection, although their ordinance also allows for them.

While it is unknown what percentage of the all the CAO permits reviews are Reasonable Use Exemption in each jurisdiction, from this review it appears that RUEs are an extremely small fraction and are only used infrequently.

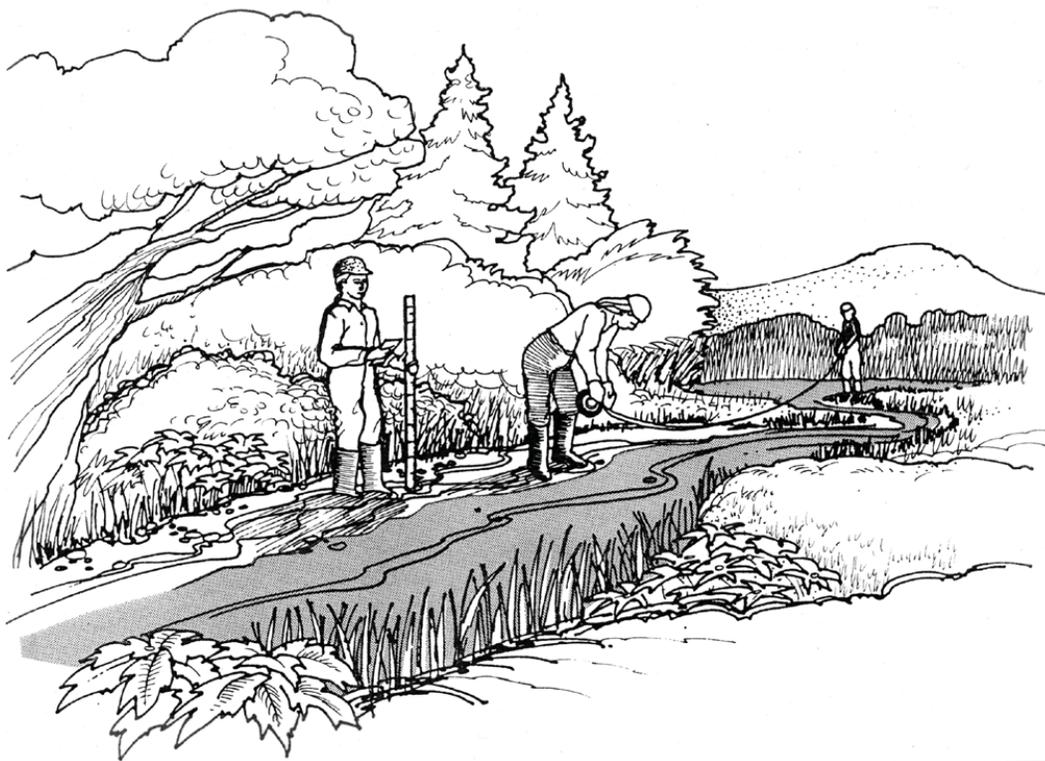
VALUE:

Based upon 91 out of 100 projects not being RUEs, and the nine RUE projects representing an extremely small fraction of all the CAO reviews, a Sunny value is warranted for this benchmark.

INTERESTING QUESTIONS *But Not Benchmarks ...*

DISCUSSION:

During the final review, the Community Review Team indicated that several of the measurements in this chapter were very interesting but were not real “Benchmarks”. They felt the information was important, and asked that it be retained in the document in another format. The following list of “Interesting Questions” is that alternative format.



INTERESTING QUESTION 1:

Were adopted wetland buffers under the Critical Area Ordinances larger or smaller than the Environmentally Sensitive Area regulations, or case by case basis standards as under the State Environmental Policy Act?

BACKGROUND:

This question excluded Reasonable Use Exemptions (RUEs), and public bridge projects since both of these fundamentally occur within required buffers.

FINDINGS:

Both Olympia and Thurston County adopted ESA regulations prior to Growth Management. According to a comparison of the average buffer width in Table 4-8 below, the average Critical Areas Ordinance (CAO) wetland buffer was 25% larger than the Environmentally Sensitive Area (ESA) regulation. This represents only a 21 foot increase and was somewhat smaller than anticipated. The average CAO wetland buffers for the cities ranged from 90-97 feet, by comparison with 133 feet for the county. Surprisingly, there were few differences between the average wetland buffers for CAO and State Environmental Policy Act (SEPA) sites. This was an area where one might have expected the greatest difference.

The Olympia CAO wetland buffer standards should be recognized as the most protective from the previous ESA standards. The average wetland buffer in Olympia increased by 31 feet when the CAO standards were adopted.

**Table 4-8
Average Wetland Buffer by Review Standard**

Jurisdiction	CAO			ESA			SEPA		
	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
Lacey	97	25	200	--	--	--	113	50	200
Olympia	95	0	200	74	25	100	--	--	--
Tumwater	90	20	200	--	--	--	88	0	150
Thurston County	133	50	200	86	0	200	--	--	--
TOTAL	105	0	200	84	0	200	94	0	200

**Table 4-9
Number of Wetland Features by Jurisdiction**

Jurisdiction	CAO	ESA	SEPA
Lacey	27	0	5
Olympia	18	8	0
Tumwater	11	0	4
Thurston County	26	39	0
TOTAL	82	47	9

Note: "Wetland Features" is the number of wetlands, not the number of projects with wetlands.

INTERESTING QUESTION 2:

Were adopted stream buffers under the Critical Area Ordinances larger or smaller than the Environmentally Sensitive Area regulations, or case by case basis standards as under the State Environmental Policy Act?

BACKGROUND:

This question excluded Reasonable Use Exemptions (RUEs), and public bridge projects since both of these fundamentally occur within required buffers.

FINDINGS:

According to a comparison of the average buffer width in Table 4-10 on the following page, the average Critical Areas Ordinance (CAO) stream buffer was actually 22 feet less (29% less) than the previous Environmentally Sensitive Area (ESA) regulation. This result was not expected. There is also a similar trend with the case by case basis provided by the State Environmental Policy Act (SEPA), but this is based on only one site.

The average CAO wetland buffer for the cities ranged from 50-125 feet, by comparison to 64 feet for the county. Even without comparing on the basis of stream (water) type, these buffers are substantially smaller than those recommended by the WDFW for streams (see Benchmark 8).

A comparison of wetland buffers Table 4-8 in the previous question and those of stream buffers in Table 4-10, on the following page, indicates that current wetland buffers are larger than those for streams. Jurisdictional staffs have shared instances when an applicant would like to have a skinny “wetland” evaluated as a “stream” because it may mean the difference from 50 to 100 foot in the buffer width.

**Table 4-10
Average Stream Buffer by Review Standard**

Jurisdiction	CAO			ESA			SEPA		
	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
Lacey	125	50	200	--	--	--	--	--	--
Olympia	50	50	50	50	50	50	--	--	--
Tumwater	—	—	--	—	—	--	200	200	200
Thurston County	64	25	100	104	50	200	--	--	--
TOTAL	75	25	200	97	50	200	200	200	200

**Table 4-11
Number of Stream Features by Jurisdiction**

Jurisdiction	CAO	ESA	SEPA
Lacey	2	0	0
Olympia	1	1	0
Tumwater	0	0	1
Thurston County	7	7	0
TOTAL	10	8	1

Note: "Stream Features" is the number of streams, not number of projects with streams.

INTERESTING QUESTION 3:

Did projects with overlapping Shoreline Master Program and Critical Area Ordinance regulations have larger buffers than other projects with only Critical Area Ordinance standards?

BACKGROUND:

The assumption for this question was two fold. First, many people believe that the State Shoreline Management Act provides a higher level of protection than the local Critical Area Ordinances. Secondly, it is often believed that overlapping regulations provide for more environmental protection. This is the old “two regulations are better than one” theory.

Report 6 in the Technical Appendices summarizes the 23 projects where both Shoreline and Critical Area regulations applied. This project total does not include Reasonable Use Exemptions.

FINDINGS:

Table 4-12 on the following page indicates that 11 of 23 shoreline projects meet the wetland buffer standard (48%), compared to 40 of 76 for non-shoreline projects (60%). The table also indicates that non-shoreline projects received a buffer reduction 18 of 67 times (27%), compared to 9 of 23 times (39%) for shoreline projects. **No Shoreline Management Act projects could be found where the wetland or stream buffers were made larger than required by the local Critical Area Ordinances.**

The question of overlapping regulations is both simple and complex. For example, “*If a stream runs through a wetland, which regulation governs?*” The typical answer to this question is whichever is the more restrictive. Now for example, “*If that same stream is a “shoreline” stream (and has a flow of greater than 20 cfs), then which governs?*” **The answer is - whichever is the more restrictive.**

When collecting the permit data, the project authors often found it difficult to determine about the secondary feature or lesser standard. Some projects were almost silent to the fact that the project was in the shoreline jurisdiction. This was because at the present time the local CAO wetland and stream regulations are more restrictive than the standards contained with the local Shoreline Master Program. In the future, Ecology’s new Shoreline Master Program guidelines may require larger stream buffers than current shoreline and CAO regulations.

**Table 4-12
Shoreline Management Act vs. Non-Shoreline Compliance**

	Shoreline (SMA) Features		Non-Shoreline Features	
Met Standard	11	3 – NA	40	4 – NA
Buffer Average	---	---	15	---
Buffer Reduced	9	---	18	---
TOTAL	23		77	

CHAPTER 5

SITE REVIEW BENCHMARKS

SITE REVIEW BENCHMARKS

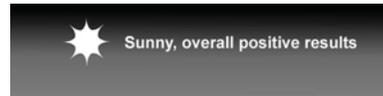
Seven benchmarks were created to evaluate site conditions of construction developments along streams and wetlands. These “Site Review Benchmarks” were developed from a number of sources including suggestions from the Phase 1 Advisory Committee, interviews with managers of similar projects, and issues raised by the public during the local Critical Area Ordinance adoption processes. A summary of the Site Review Benchmarks and their values are as follows:

Table 5-1
Summary of Site Review Benchmarks & Values

BENCHMARKS	VALUES
17: Stream or wetland buffers existed after project completion.	Sunny
18: Stream and wetland buffers were not impacted after project completion.	Partly cloudy
19: Stream and wetland buffers predominantly contained native vegetation.	Not enough data available
20: Fences and signs protected stream and wetland buffers.	Sunny
21: Stream and wetland mitigation projects were constructed and planted.	Partly cloudy
22: Vegetation for stream and wetland mitigation projects survived after project completion.	Stormy
23: Vegetation for stream and wetland mitigation projects was not overrun by invasive species.	Stormy

Benchmark 17:

Stream or wetland buffers existed after project construction.



RATIONALE:

The assumption of this benchmark was to determine if the required buffer has been left according to the required plans. This benchmark was one of the key questions of the Advisory Committee, jurisdictional staff and the public.

All 35 site review projects were used for this tabulation. RUEs were not excluded from this review, because knowing the site conditions of all permit types was an important finding of this Benchmark. *[NOTE: Only 35 of the 100 project were visited during the Site Review phase of the project.]*

FINDINGS:

The database indicated that for 33 of 35 projects (94%), the post development buffers are similar in width to that which was permitted. Refer to the data in Report #16 in Appendix C. The two projects which did not meet this benchmark were both Reasonable Use Exemptions (RUEs).

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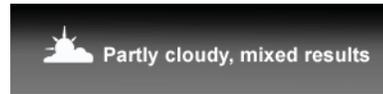
With a compliance rate of 94%, this benchmark warrants a Sunny value.

RECOMMENDATION:

1. Lacey, Olympia, Tumwater and Thurston County should ensure that RUEs receive a higher level of construction and post-development monitoring than do other CAO projects.

Benchmark 18:

Stream and wetland buffers were not impacted after project completion.



RATIONALE:

Other studies (Castelle, 1992 & Storm and Stellini, 1994) have noted that post-development activities often impact required buffers. The assumption of this benchmark was that most required buffers remain intact once the adjacent land was developed.

All 35 site review projects were used for this tabulation.

FINDINGS:

The level of buffer disturbance was rated for each project using a very generalized scale which ranged from **No Impact** to **Complete Impact**. Paths were the most common disturbance found on 10 projects. The second most common disturbance was mowing or lawn clippings on nine projects. The other types of disturbances varied from random refuse piles, to tree clearing, and to private fencing of part of the buffer. See Appendix B for a description of the rating system and the project data from Report #17 in Appendix C.

Of the 35 projects, only three projects (9%) received a rating of **No Impact**. These projects included #403, J.B.T - Vail Cut-Off Road - Large Lot; #422, Sjodin RUE; and #450, ORV Park New Bridge. The J.B.T - Vail Cut-Off Road project received this rating because it was essentially undeveloped, the Sjodin RUE project has not had any disturbance beyond the placement of the home, and the ORV Park New Bridge project buffers appeared to be undisturbed, but it had received a buffer reduction to 25 feet.

Of the 35 projects, 21 projects (60%) were found to have **Some Impact**. Examples of **Some Impact** include planned or unplanned paths, some garbage or grass clippings, or slight edge mowing of the buffer.

Of the 35 projects, five projects (14%) were found to have buffers with **Moderate Impact**. Examples of projects with a **Moderate Impact** would have larger piles of debris or a noticeable amount of vegetation removed around the buffer.

Only two of the 35 projects (6%) were found to have buffers with **High Impact**. These included the Reasonable Use Exemptions (RUEs) mentioned in the previous Benchmark.

No projects were found to have a **Complete Impact**. A total of four of the 35 projects (11%) were considered to be **Not Applicable** (N/A) due to inability to access the site or the incompleteness of project.

One recommendation from the WDFW “*Riparian Management Recommendations for Washington’s Priority Habitats*”, suggests that trails be limited in riparian habitat (Pg. 110). While beyond the scope of this report, it has been observed that many proposed “*Urban Trails*” within the Thurston region appear to be located on sites with significant wetlands or streams. Therefore, this sort of policy review would appear to be timely.

VALUE:

With only a few projects having no disturbance and a large majority of the projects having some disturbance, a value of Partly Cloudy appears warranted for this benchmark.

RECOMMENDATION:

1. Lacey, Olympia, Tumwater and Thurston County should evaluate the size, location and conditions under which pedestrian paths are allowed in required stream and wetland buffers, when updating their Critical Area Ordinances.
2. If a *Tracking Developments* report is replicated in the future, the Science Review Team made a few suggestions for improvement. These included:
 - a. Replacing the generalized levels of disturbance scale with one based upon the percent of the buffer that was disturbed,
 - b. Accurately determining the level of disturbance would require access to the entire buffer area, or analysis of post development aerial photography, and
 - c. Individuals doing this evaluation need adequate scientific training, (e.g. planners are not biologists or wetland scientists).

Benchmark 19:

Stream and wetland buffers predominantly contained native vegetation.



RATIONALE:

Protecting what is already there was a fundamental philosophy for many Critical Area regulations. Native vegetation is known to have higher habitat value for fish and wildlife than does introduced species. This benchmark assumes that pre-existing buffer vegetation was dominated by native vegetation types.

All 35 site review projects were used for this tabulation.

FINDINGS:

The dominant and co-dominant species of vegetation were recorded for each site. As a result, the numbers contained in Table 5-2 below do not correspond to the number of sites visited. **Native Shrubs** were noted 23 times as the dominant or co-dominant species. Common Native Shrubs included wild rose, spirea and immature willows. **Native Trees** were noted another nine times. Common Native Trees included douglas fir, alders and willows. Vegetative species such as, **Blackberries**, **Scot's Broom**, or **Pasture Grass** were found 15 times. While Scot's broom and blackberries appear to be effective at keeping people and animals out of buffers, they are of less value as fish and wildlife habitat. The data for this benchmark is displayed in Report #18 in Appendix C.

**Table 5-2
Dominant & Co-Dominant Vegetation Species**

Native Trees	Native Shrubs	Grass/ Pasture	Scot's Broom	Blackberries	Other
9	23	8	3	4	4

Note: The one or two most common species were recorded on the site. The numbers will not be equal to the number of sites visited.

VALUE:

Even though native species were found on a majority of the sites, the data was not accurate enough to provide a value for this benchmark. To have adequate data, a predevelopment vegetation plan would have to be available for the buffer area.

RECOMMENDATION:

1. If a *Tracking Developments* report is replicated in the future, the Science Review Team made a number of suggestions for improvement. Their suggestions were:
 - a. Aerial photographs could be used to assess the distribution of vegetation types based upon an accepted vegetation typing methodology prior to and after development,
 - b. Field assessments should be made prior to development for documentation and then later compared to a post development assessment of the same site, and
 - c. Field assessments would be redone 5 and 10 years after completion of the development project, and
 - d. Individuals doing this evaluation need adequate scientific training, (e.g. planners are not biologists or wetland scientists).

Benchmark 20:

Fences and signs protected stream and wetland buffers.



RATIONALE:

The effectiveness of fences and signs has been a key question of elected officials, jurisdictional staff and the public. The assumption of this benchmark was that fences and signs affect the behavior of residents on adjacent parcels and provide an added degree of protection for wetland or stream buffers.

All 35 site review projects were used for this tabulation.

FINDINGS:

A total of 13 of 35 projects (37%) had a fence or sign along the wetland or stream buffer. The level of disturbance was recorded as an impact rating, which was discussed in Benchmark 18.

Of the projects with a fence or sign, 12 of 13 projects (92%) had an impact rating of **No Impact** or **Some Impact**. By comparison, those projects with a buffer disturbance of **Moderate** or **High Impact**, only one of nine projects (11%) had a sign and none had a fence. From this data, it could be inferred that projects without fences or signs are more likely to have Moderate to **High Impact**. Refer to the data in Reports #16 and #17 in Appendix C.

The site inspections found a variety of fence and sign combinations that appeared to be effective in protecting the buffer based upon the site and situation. Fences and signs can be placed in a manner that protects the buffer without obstructing views while also providing a continual reminder of the presence of the buffer even after the property has been transferred to a second or third owner.

Fences act as a physical barrier between the protected area and human activity. A fence should be chosen that is most appropriate for the site. A commercial property that has high level of activity may need the added protection a high fence provides, by completely blocking human access to the protected area. **[See Photos A and B]**

In residential areas, a less obtrusive fence can be used. A fence can provide a boundary, but not block views. This also can help discourage dumping over the fence because refuse can be seen from the property. **[See Photos C and D]**

Signs can be informative and educational. A sign announces the boundary for the protected area. [See Photo E]

Tumwater’s policy is to place a “Native Vegetation Protection Area” sign in the center of each lot adjacent to the buffer. This may be more effective than Thurston County’s approach placing signs at property corners where they can more easily be obscured or damaged. A visible sign in the center of the property will help the current and future property owners identify where activities are permitted and where they are not.

Signs can be educational by explaining the needs of the protected area, why there is a protected area, or how to keep the area protected. For example, the City of Lacey uses an attractive educational “Wetland Buffer Boundary” sign that informs people of the reason for the protected area. [See Photo F]

Another useful sign used by the City of Lacey is a “No Dumping” sign that provides information on alternatives to dumping refuse. Used in combination of protected area signs and appropriate fencing, this could be very effective. [See Photo G]

SOME FENCE AND SIGN GUIDELINES FOR CRITICAL AREA BUFFERS

1. Fences and signs together provide a physical barrier and announce it.
2. Fences should be used to deter access, but not necessarily block views. A solid fence may be used to hide trash and grass clippings from property owner’s view.
3. Place signs in center on each parcel next to the protected area. That way, each property owner is provided the same information and there is no confusion to which it applies.
4. Fences should provide pass through for wildlife. Even a high solid fence can be designed with wildlife passages that do not provide human access.
5. Signs should be informative, and educational. Provide information on alternatives to dumping refuse and why the natural area should be protected.
6. Install fences that protect natural areas prior to site development. This will help ensure that equipment, materials, and workers do not damage these areas.
7. Signs must be clear and posted where they will be seen. Place signs where people are looking. [See Photo H]
8. Fences and signs should be functional and attractive as to not detract from the site.

RECOMMENDATIONS:

1. Lacey, Olympia, Tumwater and Thurston County should use some sort of fence and sign combination with all CAO buffer projects.



Photo A – Site #302 Westside Safeway

This 6' solid fence, adjacent to commercial activity, completely blocks unauthorized access into the protected area. A small sign is present, but is difficult to read.



Photo B - Site #302 Westside Safeway – Mud Bay Road

This is another view of the site from photo A, which uses two different fencing techniques, and height and distance to provide protection. A retaining wall and railing provide a physical barrier between the protected area and the public spaces.



Photo C – Site # 311 Grass Lake Bungalows

This low fence reminds homeowners where their yard ends and the wetland buffer begins without overwhelming the site or obstructing views. Olympia Planner, Todd Stamm noted that "if you put a fence in, people tend to respect it."



Photo D – Site # 114 Campus Green

A high fence in a residential area does not have to block views if the site is sloping and homes are on the upper slope. The fence won't block views, but is also clearly present. Note, this fence does not meet the ground and will allow smaller wildlife to pass through.



Photo E – Site # 205 Streamland Estates
This sign clearly and plainly identifies the protected area boundary along Percival Creek.



Photo F – Site # 101 Willows Crossing
This wetland buffer boundary sign is not only attractive, but also provides educational information.



Photo G – Site # 109 Woodland Creek Storm Facility

This no dumping sign informs potential violators of their refuse disposal options.

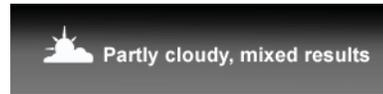
Photo H – Site # 107 Meridian Campus Golf Course

This wetland protection sign, shown with native vegetative buffer, is used unobtrusively along the buffer edge within the golf course. Signs are placed low to the ground where golfers, searching for balls, will take notice.



Benchmark 21:

Stream and wetland mitigation projects were constructed and planted.



RATIONALE:

Other studies (Mockler, 1998 and Johnson, 2000) have found that an alarmingly high number of required mitigation projects were not being constructed. The assumption of this benchmark was that project mitigation in the Thurston region was being installed as required by the permit.

Some of the Science Review Team believed establishing a value for this benchmark would not be appropriate, because it did not evaluate the field conditions against the approved mitigation plan. However, this benchmark was retained because it still provided a useful measure, of at least *attempted compliance*. Also, the technique use to evaluate compliance was believed to be similar to what might be used by a jurisdictional staff, a citizen or resident.

All 35 site review projects were used for this tabulation.

FINDINGS:

A total of 17 of 35 projects (49%) required mitigation. Of the projects which required mitigation, 11 of 17 sites (65%) had some vegetation planted. In 4 of 17 sites (23%) it was unclear whether the mitigation had been planted. Finally, it was possible to confirm that the site had NOT been planted in 2 of 17 sites (12%), and one of these was a RUE. Further refinement of this compliance rate was not possible, due to locating only some of the required mitigation plans in the permit files, and the site inspections by project staff without scientific credentials. Refer to Table 5-1 and Report #19 in Appendix C.

Unfortunately, this benchmark confirms that local compliance problems are not unlike those found in King County (Mockler, 1998) and throughout the state by the Washington Department of Ecology (Johnson, 2000).

VALUE:

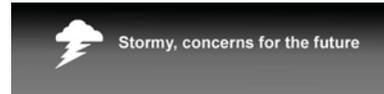
With a confirmed compliance ratio of 65%, this benchmark warrants a Partly Cloudy value.

RECOMMENDATIONS:

1. The Science Review Team suggested that the local Critical Area Ordinances be modified to make the mitigation project of equal importance to the development project, by revising how mitigation projects are financed and bonded. Unfortunately, no other details were provided.
2. If a *Tracking Developments* report is replicated in the future, the Science Review Team suggested the following:
 - a. Individuals doing this evaluation need adequate scientific training, (e.g. planners are not biologists or wetland scientists), and
 - b. Benchmark 21 should be changed to evaluate the field conditions against the approved mitigation plan.

Benchmark 22:

Vegetation for stream and wetland mitigation projects survived after project completion.



RATIONALE:

This question was of great importance to the jurisdictional staff. This was because the impacts of a constructed project have already occurred, and this would help determine if the lost wetland or stream functions have been replaced. Landscaping plans most often have over planting due to expected mortality. A common standard for plant survival in mitigation reports is 80% at the end of five years, and this standard represented full compliance for this project.

Some of the Science Review Team believed that plant survival is not a very meaningful measurement. However, it was used in this report because this could be measured by jurisdictional staff, or by citizens and residents which do not have a degree in biology, hydrology, or soil science.

All 35 site review projects were used for this tabulation.

FINDINGS:

A mitigation planting survival rate was determined for each site by comparing the approximate number of dead and alive plants. This was often the only means of comparison because a number of sites lacked mitigation planting details. This data is displayed in Reports #19 and #20 in Appendix C.

It was only possible to determine the survival rate on 11 of 17 mitigation projects (65%). This was because it was not possible to determine the survival rate (**Can't Tell**) on 4 of 17 sites (23%) and two projects (12%) had not been planted.

Only 2 of 11 mitigation projects (18%) appeared to have a survival rate of **Over 50%**. At the other end of the scale, 1 of 11 projects (9%) had **Less than 50%** survival rate. There were 3 of 11 projects (27%) which were found to have a **Few** plantings alive. Unfortunately, 5 of 11 projects (45%) had an **Unknown** survival rate. This was because although there were live plants on-site, it was not possible to determine a survival rate without the planting plans.

The failure of mitigation plantings should be viewed a symptom which may have a number of causes. One may be old mitigation standards, since most of the local CAOs were written in the early 1990's.

VALUE:

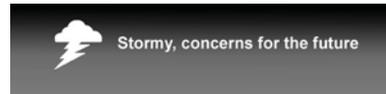
With a compliance rate of 18% for a 50% plant survival, this benchmark warrants a stormy value.

RECOMMENDATION:

1. Lacey, Olympia, Tumwater and Thurston County should reevaluate their mitigation sections based upon the best available standards, when they revise their Critical Area Ordinances.
2. If a *Tracking Developments* report is replicated in the future, some members of the Science Review Team suggested the following:
 - a. “Success” and “failure” not be limited to plant survival of the approved plan. That approved plan does not account for surprises found in the field and the positive contribution of volunteer plant species, and
 - b. Individuals doing this evaluation need adequate scientific training, (e.g. planners are not biologists or wetland scientists).

Benchmark 23:

Vegetation for stream and wetland mitigation projects was not overrun by invasive species after project completion.



RATIONALE:

Other studies (Castelle, 1992) have found that planting survival rates have been adversely affected by the presence of invasive species. This benchmark assumes that the plantings, after the completion of the project, will look similar to the approved mitigation plan.

The Science Review Team believed that establishing a value for this benchmark without a detailed threshold for invasive species would not be appropriate. However, this benchmark was retained because it still provided a useful measure for jurisdictional staff, citizens or residents.

All 35 site review projects were used for this tabulation.

FINDINGS:

Invasive species, such as Scot's broom and blackberries, were found in the buffers on 10 of 15 mitigation projects that were planted (67%). Mitigation plantings were barely visible due to the amount of native species, which were already in the buffer, on three of 15 projects (20%). The mitigation plantings could not be seen through the number of invasive species on one of the 15 projects (7%). There was only one project where invasive species completely overran the mitigation site, Project #116, Hawks Prairie Golf Course. On that site it was necessary to traverse through Scot's broom over 5 feet high to locate the mitigation plants.

Although invasive species can be a problem, Andy Haub, the project manager for the North Percival Stormwater Management Facility in Olympia (Site #314) believes that "*We can deal with Scot's broom*". However, reed canary grass appears to be a big problem at almost all the mitigation sites.

In some projects mitigation plants were trying to survive amidst a sea of reed canary grass (Site #450, ORV Park New Bridge). An observation from this project and other field trips to mitigation sites within the region is that adding vegetation to a site without controlling reed canary grass will likely result in a project which most jurisdictional staff, citizens and residents would consider being ... a failure.

VALUE:

With invasive species affecting 67% of the mitigation sites, a Stormy value was warranted for this benchmark.

RECOMMENDATION:

1. If a *Tracking Developments* report is replicated in the future, the Science Review Team suggested the following:
 - a. Benchmark 23 should establish a maximum threshold for invasive species, and
 - b. Individuals doing this evaluation need adequate scientific training, (e.g. planners are not biologists or wetland scientists).

CHAPTER 6

EMERGING ISSUES

ISSUES WARRANTING ADDITIONAL CONSIDERATION

Since TRPC began this project other state departments and local governments have undertaken evaluations similar to this report. The following chapter, (Chapter 7) provides a number of Recommendations for how local governments may improve their wetlands and stream development regulations and implementation. However, two issues emerged from this and other reports as not fitting the traditional mold of “Recommendations”. This chapter will highlight two issues, which warrant additional consideration. These issues include *Wetland Mitigation Banking* and *Basin Specific Development Regulations*.

1. WETLAND MITIGATION BANKING

After reviewing many CAO permits the question arose, “How do you provide appropriate mitigation?” While this report has demonstrated that most mitigation projects might be considered by some to be failures. There are several possible reasons include 1) most mitigation sites were not implemented according to plan, 2) inappropriate or poor design and 3) poor or complete lack of maintenance.

The concept of a *Wetland Mitigation Bank* has been around since the 1970’s. At its most basic, it is where someone restores, creates, enhances or preserves a wetland in order to generate “credits”. These credits reflect the degree of increased ecological benefit the bank site provides. Credits are typically expressed in terms of area of a certain wetland type (e.g. forested wetlands) and quality. These “credits” can then be sold to a person who needs to provide compensation for unavoidable wetland impacts. When credits are used or sold for use, they are deducted or “debited” from the mitigation bank.

Some entities like the Washington State Department of Transportation (WSDOT) have shifted from site by site mitigation to regional wetland mitigation banks. WSDOT calls these “Advanced Mitigation” sites and believes they are a cost-effective approach, which can be effective when done on a watershed or landscape scale.

In 1996, the Thurston County Roads and Transportation Services Department submitted a grant application for a county public project “Wetland Mitigation Bank”. Although the grant was not funded at that time, it may warrant another look given the limited success of site by site mitigation.

Wetland mitigation banking may be superior to on-site mitigation for some development projects because a wetland bank can address the mitigation failures that were noted above.

1. **Mitigation not implemented according to plan.** A mitigation bank has already been designed and approved as an appropriate mitigation site and would already be implemented as planned.
2. **Inappropriate or poor design.** As addressed with the first failure, a mitigation bank has already been carefully designed with the goal of success.
3. **Poor or complete lack of maintenance.** Unlike a small, possibly unmonitored project, a mitigation bank is regularly monitored for effectiveness and the design is upgraded as needed.

Mitigation banking could help eliminate the number of small man-made wetlands that are scattered, built on inappropriate sites, unmonitored or maintained, by combining several small projects into one larger one that is well maintained and more likely to properly replace lost wetland functions.

Earlier this year, the *National Academy of Sciences Report on Wetland Mitigation and Restoration* (2001) was released. Among its findings, the committee evaluated several third-party compensation approaches (e.g. mitigation banks or fee-in-lieu programs) and developed a taxonomy to evaluate their strengths and weaknesses. While the committee did not favor any particular mechanism, they have offered recommendations that will, if adopted, assure that there will be no net loss of wetlands. Such “off-site mitigation” is already allowed by each of the four Critical Area Ordinances.

The status of public wetland or stream mitigation sites varies between jurisdictions. The importance of mitigation sites diminishes after the developments are complete and the five-year maintenance reports have been submitted. As new mitigation sites get added, the site may become more geographically isolated, maintenance become more costly and long-term success may be jeopardized.

Recognizing these issues, the Washington State Department of Ecology should finish a rule for *Wetland Mitigation Banking - (Chapter 173-700 WAC)* within the next year. Once this has been adopted, the jurisdictions may again want to explore Wetland Mitigation Banks, in at least some drainage basins.

2. BASIN SPECIFIC DEVELOPMENT REGULATIONS

Earlier this year, a detailed land cover analysis was prepared for all of Thurston County by Thurston Regional Planning Council. Much of the following text is from that report (Tabbutt, 2001). It identified a total of nine different types of land cover ranging from forests to highly urbanized areas. The land cover data base was combined with other GIS boundaries, to identify the magnitude of urbanization or forest cover by watershed or basin level. Land cover was found to be one of the three key inputs into hydrologic models to assess the effects of stormwater runoff within a watershed.

There are 68 separate basins or watersheds within Thurston County. They are listed in Tables 2 and 3 at the end of this Chapter. The tables also provide a summary of the various land cover types used in the 2000 TRPC report. Of specific importance are the percentages of urban land cover, forest land cover, and forest cover within 150 feet of the stream corridor (which is often referred to as the *Riparian Zone*).

Recent research on Puget Sound streams has found a direct correlation between the percent of forest cover, impervious area, and stream conditions (Booth, 2000). In addition, modeling efforts (such as those for the Green Cove Creek basin in West Olympia) have explored the hydrologic flow response of basins based on differing levels of forest cover and impervious surfaces. From this research it is becoming apparent that Land Cover can be used as a predictor of stream stability.

Figure 6-1, shows a stylized relationship between impervious surface and stream health. As impervious surface reaches 10 percent of the area in a basin, stream health begins to be impacted. At 30 percent, stream health is degraded (Arnold, 1996).

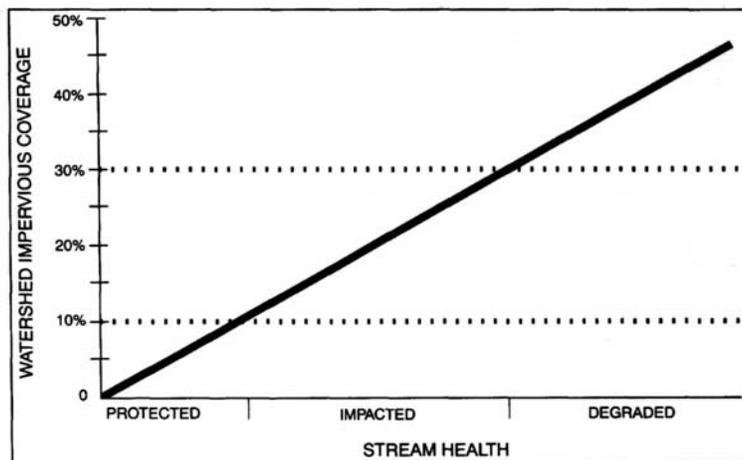


FIGURE 6-1: STYLIZED RELATIONSHIP OF IMPERVIOUSNESS TO STREAM HEALTH.
SOURCE: (ARNOLD, 1996).

In another attempt to conceptualize this relationship, Figure 6-2 shows how the percent of riparian forest and land use combine to be indicators of biotic integrity of a stream (Booth, 2000). Only when there is an intact riparian forest, and urban land use under 10 percent, can the biotic integrity of a basin be considered to be “Excellent”.

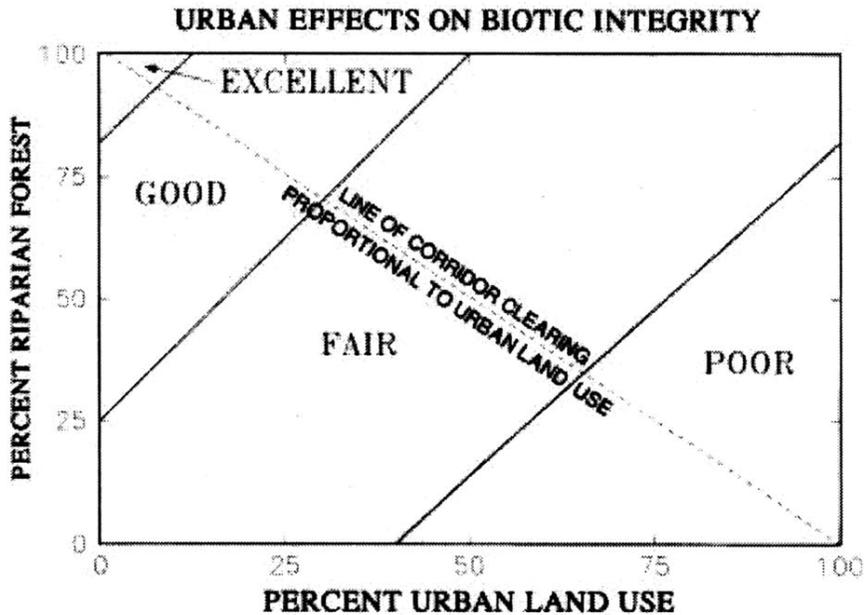


FIGURE 6-2: CONCEPTUAL RELATIONSHIP BETWEEN URBAN LAND USE (*Impervious Surfaces*), Forest Cover and Biological Conditions. Source: (Booth, 2000)

The draft *Kitsap Salmon Habitat Protection Plan* (Kitsap County, 2001) proposes a three tiered approach to habitat restoration and recovery shown in Figure 6-3, below. This Protection Plan was based upon the thresholds of existing watershed conditions and their regional significance to salmonid populations. Priority would be to be given to actions that have the greatest benefit for imperiled salmon stocks, while maintaining healthy stocks. Figure 6-2, above, can also be viewed as a generalized relationship between salmon protection actions and the likelihood for success in terms of stream health.

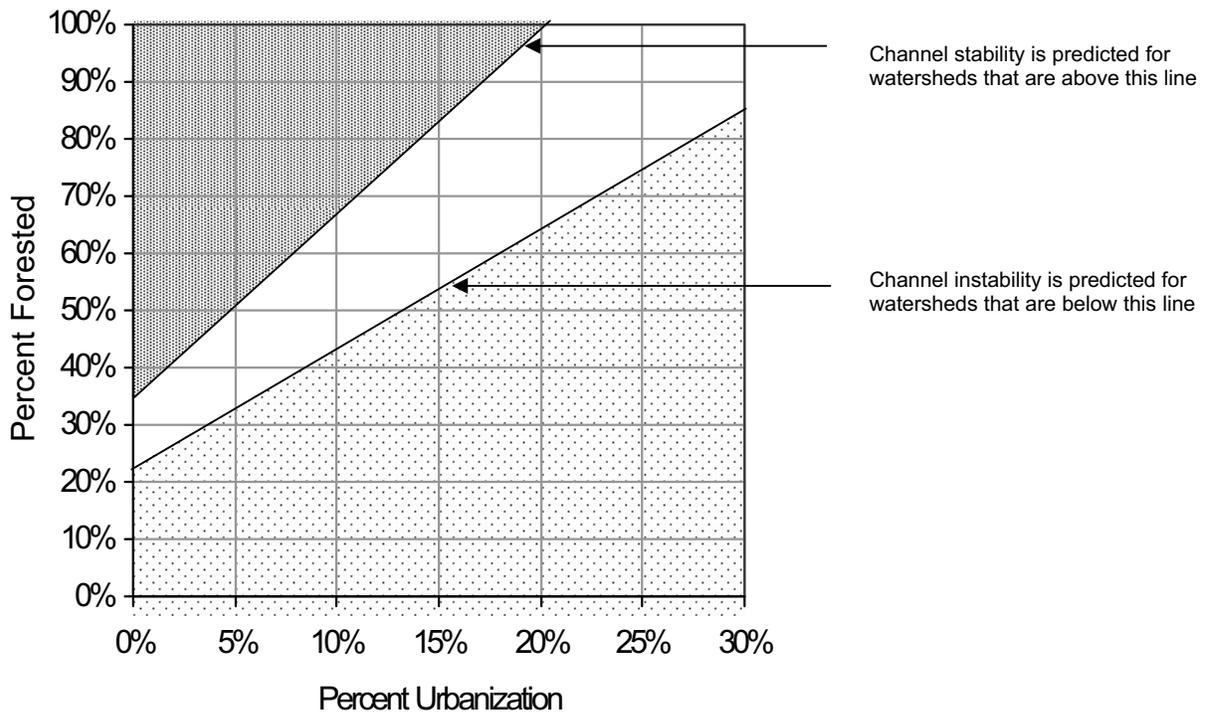


FIGURE 6-3: KITSAP COUNTY THREE TIER WATERSHED RECOVERY APPROACH.
Source: Based on chart adapted from Booth, 2000. (Kitsap County, 2001).

Kitsap County estimated its existing watershed conditions through a land cover analysis process similar to Thurston County’s, although there has not been a similar effort in Thurston County to establish local watershed and salmon thresholds. However, if the Kitsap thresholds were applied to Thurston County basins, we could get a glimpse of what such a new management approach might look like. Any new approach would not simply rely upon the conditions of the stream, but would be based upon the characteristics and the relative health of its watershed or drainage basin. Such a concept would be called *“Basin Specific Development Regulations”*.

APPLYING STANDARDS USED IN OTHER STUDIES, (BOOTH, 2000 AND KITSAP COUNTY, 2001) A TOTAL OF 15 OF 68 THURSTON COUNTY BASINS ARE PREDICTED TO HAVE STREAM CHANNEL INSTABILITY BASED UPON THEIR CURRENT LEVELS OF URBANIZATION AND FOREST COVER. SEE FIGURE 6-4 AND TABLE 6-1.

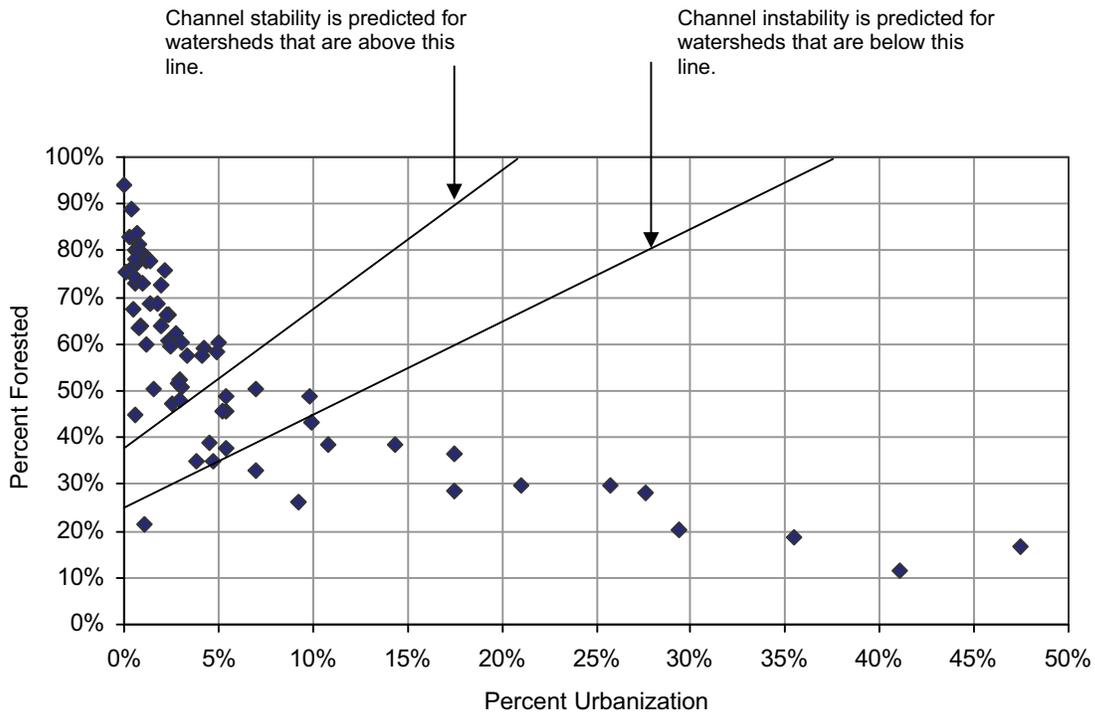


FIGURE 6-4: DISTRIBUTION OF THURSTON COUNTY BASINS BASED UPON THE DRAFT KITSAP COUNTY SALMON HABITAT PROTECTION PLAN.

(EACH DIAMOND REPRESENTS A SINGLE THURSTON COUNTY BASIN.)

Table 6-1 Land Cover Analysis of Stream Basins

Basins	Percent	Finding
• 13 of 68	19%	Over 10 percent of basin is Urbanized
• 3 of 13	23%	More than 30 percent Urbanized
• 15 of 68	22%	Less than 65 percent of basin has Forest Cover.
• 10 of 68	15%	Less than 50 percent Forest Cover within 150 feet of Stream (<i>Riparian Zone</i>).
• 15 of 68	22%	Predicted to have stream channel instability (<i>Based upon their percentages of Forest Cover and Urbanization</i>).

Source: Figure 6-4

Developing basin specific development regulations should be considered in order to provide the appropriate level of stream protection for the basin. If a basin is already determined to be degraded, development regulations could be implemented that would improve the stream system, keep the system at current level, or allow further degradation. Development regulations would be enacted that reflect the desired stability for the basin. Looking at the basin system at the watershed level, each basin in the watershed would have development regulations that allow for an accepted level of degradation.

Table 6-2: Land Cover Characteristics of Thurston County Basins

BASIN	Land Cover (acres)					Total	% Urban	% Forest	Forested 150 ft. riparian
	Urban	Forest	Other	Water					
ALDER LAKE	1	2,503	126	26	2,656	0.0%	94.2%	96%	
ALLEN CREEK	162	1,197	1,936	123	3,418	4.7%	35.0%	29%	
BALD HILL LAKE	1	598	195	-	794	0.1%	75.3%	86%	
BEAVER CREEK	397	6,706	5,991	73	13,166	3.0%	50.9%	55%	
BLACK LAKE	510	1,443	3,032	540	5,526	9.2%	26.1%	43%	
BLACK RIVER	958	8,714	15,373	48	25,092	3.8%	34.7%	52%	
BLOODY RUN	9	1,836	216	1	2,062	0.4%	89.1%	89%	
BLOOM DITCH	127	2,357	2,476	50	5,010	2.5%	47.0%	54%	
BURNS	6	96	65	0	166	3.3%	57.7%	68%	
CAPITOL LAKE	683	191	534	255	1,663	41.1%	11.5%	27%	
CHAMBERS	1,468	2,420	4,344	184	8,416	17.4%	28.8%	39%	
CLEAR LAKE	8	1,409	271	162	1,850	0.4%	76.2%	86%	
DANA PASSAGE	35	693	403	15	1,146	3.0%	60.5%	63%	
DEMPSEY CREEK	116	3,726	1,983	19	5,844	2.0%	63.8%	69%	
DESCHUTES RIVER	2,368	33,229	20,610	78	56,284	4.2%	59.0%	75%	
EAST BAY	275	1,197	1,283	6	2,761	9.9%	43.4%	52%	
EAST FORK INDEPENDENCE CR	14	989	548	-	1,551	0.9%	63.8%	72%	
ELBOW LAKE	7	847	244	65	1,163	0.6%	72.9%	86%	
ELD INLET	441	5,281	3,279	60	9,061	4.9%	58.3%	58%	
ELLIS CREEK	79	673	714	6	1,472	5.4%	45.7%	60%	
FALL CREEK	11	1,174	257	-	1,443	0.8%	81.4%	87%	
FROST PRAIRIE	6	1,528	300	9	1,844	0.3%	82.9%	86%	
GREEN COVE CREEK	260	1,284	1,090	2	2,636	9.9%	48.7%	71%	
HANAFORD CREEK	38	2,739	3,213	105	6,095	0.6%	44.9%	59%	
HENDERSON	213	3,842	3,237	44	7,335	2.9%	52.4%	60%	
INDIAN CREEK	440	306	741	13	1,500	29.3%	20.4%	47%	
JOHNSON CREEK	37	5,216	1,242	1	6,495	0.6%	80.3%	82%	
KENNEDY CREEK	101	7,857	1,905	13	9,876	1.0%	79.6%	85%	
LAKE LAWRENCE	88	771	536	293	1,687	5.2%	45.7%	53%	
LINCOLN CREEK	14	1,196	670	-	1,879	0.7%	63.6%	75%	
LOST VALLEY	8	914	221	-	1,143	0.7%	80.0%	82%	
MCALLISTER CREEK	1,383	10,020	8,129	286	19,818	7.0%	50.6%	47%	
MCINTOSH LAKE	32	1,125	227	102	1,486	2.2%	75.7%	84%	
MCLANE CREEK	97	5,022	2,183	2	7,305	1.3%	68.8%	76%	
MICHIGAN	31	1,571	1,021	7	2,630	1.2%	59.7%	69%	
MIMA CREEK	57	6,158	1,724	2	7,941	0.7%	77.5%	83%	

Table 6-2: Land Cover Characteristics of Thurston County Basins (continued)

BASIN	Land Cover (acres)					Total	% Urban	% Forest	Forested 150 ft. riparian
	Urban	Forest	Other	Water					
MISSION CREEK	92	107	160	-	359	25.7%	29.8%	63%	
MONROE CREEK	10	782	280	-	1,072	0.9%	72.9%	88%	
MOXLIE CREEK	695	244	523	1	1,463	47.5%	16.7%	60%	
NISQUALLY	745	19,305	11,550	135	31,736	2.3%	60.8%	65%	
NISQUALLY REACH	232	2,816	1,609	6	4,662	5.0%	60.4%	69%	
O'CONNOR	12	1,624	553	0	2,189	0.6%	74.2%	79%	
OFFUT LAKE	63	883	414	172	1,532	4.1%	57.7%	81%	
PERCIVAL CREEK	1,302	1,330	2,037	42	4,712	27.6%	28.2%	44%	
PERRY CREEK	81	2,947	1,018	1	4,047	2.0%	72.8%	76%	
PIERRE	2	52	49	0	103	1.6%	50.5%	52%	
PORTER CREEK	63	7,888	1,474	3	9,427	0.7%	83.7%	89%	
PRAIRIE CREEK	737	5,093	7,578	143	13,551	5.4%	37.6%	66%	
REICHEL LAKE	91	3,540	1,506	10	5,147	1.8%	68.8%	78%	
SALMON CREEK	535	2,445	4,317	21	7,318	7.3%	33.4%	43%	
SALMON CREEK (SK)	11	2,492	327	1	2,831	0.4%	88.0%	89%	
SCATTER CREEK	1,245	10,675	15,457	46	27,423	4.5%	38.9%	59%	
SCHNEIDER	241	128	312	-	680	35.4%	18.8%	66%	
SCHNEIDER CREEK	123	3,471	1,636	13	5,243	2.3%	66.2%	76%	
SHERMAN CREEK	39	4,845	1,302	0	6,187	0.6%	78.3%	80%	
SKOOKUMCHUCK	275	4,553	4,583	61	9,472	2.9%	48.1%	60%	
SPURGEON CREEK	151	4,408	2,079	24	6,662	2.3%	66.2%	59%	
SQUAXIN PASSAGE	52	187	238	8	485	10.8%	38.5%	31%	
SUMMIT LAKE	55	984	365	496	1,900	2.9%	51.8%	56%	
TEMPO LAKE	9	583	132	25	749	1.2%	77.8%	73%	
THOMPSON CREEK	489	5,227	4,539	40	10,295	4.8%	50.8%	46%	
THOMPSON CREEK (SK)	290	13,566	6,767	551	21,174	1.4%	64.1%	71%	
TOTTEN INLET	113	2,567	1,367	65	4,113	2.8%	62.4%	64%	
WADDELL CREEK	154	8,716	2,312	0	11,182	1.4%	77.9%	84%	
WEST BAY	275	735	902	6	1,918	14.4%	38.3%	38%	
WOODARD	782	1,630	2,064	3	4,479	17.5%	36.4%	62%	
WOODLAND	3,960	5,601	8,609	703	18,873	21.0%	29.7%	54%	
YELM CREEK	1,098	5,185	9,347	36	15,667	7.0%	33.1%	29%	
ZENKNER	15	2,022	962	3	3,002	0.5%	67.4%	69%	
TOTAL	24,520	253,459	186,686	5,201	469,867				
AVERAGE						5.2%	53.9%	69%	

CHAPTER 7

RECOMMENDATIONS

ARE WE ASKING THE RIGHT QUESTION?

This project began in 1997, by asking a rather simplistic question *“How well are we implementing stream and wetland development regulations in the Thurston region?”*

Since then Thurston Regional Planning Council with the assistance of the cities of Lacey, Olympia, Tumwater and Thurston County have attempted to answer this question by creating a number of surrogate benchmarks. These Benchmarks have provided a range of answers based upon the level of detail of the review. While, there may be a desire by some for this report to provide qualitative answers on the effectiveness of some measures, this report has a limited focus on compliance of currently adopted regulations.

TRPC has attempted to create a reliable data base which relied upon a large number of projects for both wetlands and stream corridors, and included as many site visits as the budget allowed. There are no established GMA benchmarks for this sort of project, so TRPC created benchmarks which represented a wide variety of community interests. Values were created to rate these benchmarks, and these became the key means to identify areas which need improvement.

To ensure quality control, drafts of the report have been reviewed by different review teams as a means of helping to validate the conclusions and substantiate the recommendations. Above all, the report also sought balance. TRPC realizes it is always difficult to be objective while noting areas of excellence, differences, and items for improvement. From the jurisdictional staff’s perspective it is never easy being evaluated after the fact.

WHAT HAVE WE LEARNED?

Table 7-1 on the following page is a summary of all the Benchmark Values throughout the report. One could conclude that conditions are not all rosy. Nor is it all gloom and doom. While it would be nice to provide some overall letter grade or value for the entire project, this would mask the details of the report. Therefore, the most appropriate response to the aforementioned questions may be, *“Not too bad, but it looks like we need some improvement.”*

**Table 7-1
Summary of Benchmark Values**

BENCHMARK VALUES	ORDINANCE REVIEW	PERMIT REVIEW	SITE REVIEW	TOTAL	PERCENT OF TOTAL
 Sunny, overall positive results	4	3	2	9	39%
 Partly cloudy, mixed results	2	3	2	7	30%
 Stormy, concerns for the future	2	1	2	5	22%
 Not enough data available	0	1	1	2	9%

WHAT NEEDS ATTENTION?

Recommendations for improvements were contained within each benchmark. From all of these, three areas of emphasis emerged, which all the jurisdictions will need to be addressed in varying degrees. These areas of emphasis are listed below. No new recommendations were included in this chapter, and one “Author’s Note” was added below. The following summary of recommendations was organized by emphasis area:

- **Upgrade Critical Area Ordinances**
- **Improve Permit Reviews and Monitoring**
- **Improvements for the Next *Tracking Developments* Report**

UPGRADE CRITICAL AREA ORDINANCES

Recommended changes to local Critical Areas Ordinances are as follows:

1. The cities of Lacey, Olympia, and Tumwater along with Thurston County need to update their Critical Area Ordinances to include current stream and wetland standards and which utilizes “*Best Available Science*” in the adoption process. (Benchmark 1)
2. The City of Olympia and Thurston County need to adopt wetland size threshold, which is consistent with the *Wetland Model Ordinance*. (Benchmark 2)
3. Thurston County should revise its Critical Areas Ordinance and adopt the wetland replacement ratio found in the *Wetland Model Ordinance*. (Benchmark 6)
4. Lacey, Olympia, Tumwater and Thurston County should update their Critical Area Ordinances to incorporate WDFW’s “*Riparian Management Recommendations for Washington’s Priority Habitats*” for their stream buffer widths. (Benchmark 8)

AUTHOR’S NOTE: Jurisdictions may want to explore the *Basin Specific Development Regulations* discussed in Chapter 6 with respect to this recommendation.

5. Lacey, Olympia, Tumwater and Thurston County should amend their CAO regulations to make it more difficult to receive buffer reductions for commercial, industrial, institutional, and stormwater facilities. (Benchmark 12)

6. Lacey, Olympia, Tumwater and Thurston County should consider rezoning areas with extensive streams or wetlands to uses other than commercial, industrial, or institutional land uses. (Benchmark 12)
7. Lacey, Olympia, Tumwater and Thurston County should amend their CAO regulations so that a buffer reduction is not possible without providing mitigation. (Benchmark 13)
8. Lacey, Olympia, Tumwater and Thurston County should evaluate the size, location and conditions under which pedestrian paths are allowed in required stream and wetland buffers, when updating their Critical Area Ordinances. (Benchmark 18)
9. The Science Review Team suggested that the local Critical Area Ordinances be modified to make the mitigation project of equal importance to the development project, by revising how mitigation projects are financed and bonded. (Benchmark 21)
10. Lacey, Olympia, Tumwater and Thurston County should reevaluate their mitigation sections based upon the best available standards, when they revise their Critical Area Ordinances. (Benchmark 22)

IMPROVE PERMIT REVIEWS AND MONITORING

These recommendations focus on improvements to the administrative details of permit processing and monitoring of developments with streams or wetlands.

11. All jurisdictions need to ensure that the standard wetland buffer is the rule and not the exception. (Benchmark 9)
12. Jurisdictions need to use the standard stream buffer as the rule, and not the exception. (Benchmark 10)
13. Lacey, Olympia, Tumwater and Thurston County need to evaluate their internal and intra-departmental procedures to ensure that required mitigation measures are constructed and that they receive adequate field inspections. (Benchmark 14)
14. The Science Review Team independently suggested a variety of techniques, to ensure that annual mitigation reports are submitted in a timely fashion and that issued identified as problems are addressed. The report authors have expanded upon these suggestions to provide the following:

Alternative A: Jurisdictions could have one staff to inspect the mitigation sites and prepare the mitigation reports. This person would require adequate education and training which is sometimes difficult for a smaller jurisdiction. An alternative to this approach would be one staff, which is share between jurisdictions.

In this approach the applicant pays a fee to a reserve account which is equal to the cost of doing all three reports, plus some overage for problems. The staff would bill his time to this account while working on that project. Problems which occur over time would be addressed by the proponent or current owner, or the jurisdiction would authorize corrections be made and paid from a separate bond accounts.

Alternative B: Jurisdictions could hire one firm to undertake all their mitigation inspections and prepare the mitigation reports. That firm would not be able to review its own projects so, an alternate firm will also be needed for those circumstances.

Selection of the firm could occur after a Request for Qualification (RFQ) process. Cost for the three reports would be agreed to in an agreement between the applicant, the firm and the jurisdiction. This would be similar to a “three way agreement” sometimes used to prepare Environmental Impact Statements.

Alternative C: Jurisdictions could designate an existing staff who receives adequate education and training. Jurisdictional staffs and often planners are asked to accomplish a myriad of implementation tasks with respect to CAO regulations.

It was noted several times by the Science Review Team that planners generally lack the expertise of a wetland or riparian scientist. Additional training is one means of improving the skills of existing employees. One of the Science Review Team commented that **“increasing trained staff, in significant numbers, would be the single most important thing that jurisdictions could do to improve delineation reliability, plan and permit review, (and) permit compliance ...”**.

Alternative D: Thurston Regional Planning Council could have a specialist to inspect the mitigation sites and prepare the mitigation reports. This would be similar to Alternative A, but a TRPC employee would be on contract to each of the four jurisdictions.

It would likely be less expensive than Alternative A, but scheduling may be a challenge with completing demands for the same limited staff time, not unlike a private consultant. It is a less desirable alternative than the other alternatives because TRPC no longer has “current planning function”, and it is unknown if there would be enough permits to justify hiring a full time person with such a specific expertise. (Benchmark 15)

15. Lacey, Olympia, Tumwater and Thurston County should ensure that RUEs receive a higher level of construction and post-development monitoring than do other CAO projects. (Benchmark 17)
16. Lacey, Olympia, Tumwater and Thurston County should use some sort of fence and sign combination with all CAO buffer projects. (Benchmark 20)

IMPROVEMENTS FOR THE NEXT TRACKING DEVELOPMENT REPORT

If a *Tracking Developments* report is replicated in the future, the Science Review Team made a number of suggestions for improvement. These included the following:

17. Placing the generalized levels of disturbance scale with one based upon the percent of the buffer that was disturbed. (Benchmark 18)
18. Accurately determining the level of disturbance would require access to the entire buffer area, or analysis of pre and post development aerial photography. (Benchmark 18)
19. Individuals doing these types of evaluations need adequate scientific training, (e.g. planners are not biologists or wetland scientists). (Benchmarks 18, 19, 21, 22, & 23)
20. Aerial photographs could be used to assess the distribution of vegetation types based upon an accepted vegetation typing methodology prior to and after development. (Benchmark 19)
21. Field assessments should be made prior to development for documentation and then later compared to a post development assessment of the same site. (Benchmark 19)
22. Field assessments would be redone 5 and 10 years after completion of the development project. (Benchmark 19)
23. Benchmark 21 should be changed to evaluate the field conditions against the approved mitigation plan. (Benchmark 21)
24. “Success” and “failure” not be limited to the number of plants on the approved plan that survived. That approved plan does not account for surprises found in the field and the positive contribution of volunteer plant species. (Benchmark 22)
25. Benchmark 23 should establish a maximum threshold for invasive species. (Benchmark 23)

CHAPTER 8

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Tracking Developments on Streams and Wetlands

EXECUTIVE SUMMARY

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**Thurston Regional Planning Council
Olympia, WA**

November 2001

Local jurisdictions within the Thurston Region adopted Critical Area Ordinances (CAO's) in the early 1990's as a part of compliance with the state Growth Management Act (GMA). The recent listings of several salmon species as "*Threatened*" under that Endangered Species Act lead many in the community to ask the following question:

How well are local jurisdictions implementing stream and wetland development regulations in the Thurston region?

In 1997 Thurston Regional Planning Council (TRPC) began to answer this question. This project evaluated built-out development projects within the cities of Lacey, Olympia, Tumwater, and Thurston County. A total of 100 projects were selected, which contained either stream or wetland features, and which may have been located within Shoreline Management Act (SMA) jurisdiction.

TRPC collected data from 18 sites in Lacey, 23 sites in Olympia, 47 sites in unincorporated Thurston County, and 12 sites in Tumwater. A number of sites had more than one stream or wetland per site. A total of 138 wetland features and 40 stream features were found. Also, approximately 25% of these features were within Shoreline jurisdiction.

Permit data was collected on all 100 sites, but site inspections were made to only 35 sites. Sites to be visited were selected randomly from each jurisdiction. Visits were made to projects with and without mitigation in the same percentage as the total number of projects. Sites data was collected during the spring and summer of 2000 and in the fall of 2000. All site visits were made with a staff from the local jurisdiction.

Multiple drafts of this report were prepared. The first draft was reviewed by an eight member Science Review Team. The second and proof drafts were reviewed by a six member Community Review Team, which included local staff from Lacey, Olympia, Tumwater and Thurston County.

Funding for the project came from two Coastal Zone Management (CZM) grants provided by the Washington State Department of Ecology and a Wetland Development grant from the USEPA. The total project cost was \$77,000.

This report focuses on compliance and not on the environmental performance of any particular regulation or standard. Three levels of compliance were measured. These became three chapters of the text:

- Critical Area Ordinance Review
- Permit Review, and
- Site Review

To adequately evaluate these various reviews, **Benchmarks** were created which translated questions into evaluation criteria. For example;

Question: How many projects met the standard wetland buffer requirement?

Benchmark: *Wetland projects met the standard buffer requirement.*

Four values were created to evaluate each Benchmark. These four values and the compliance ratio associated with each are listed below. *(Tables below from report)*

**Table 2-1
Compliance Rates and Benchmark Values**

COMPLIANCE RATE	VALUES
100% - 80%	 Sunny, overall positive results
79% - 35%	 Partly cloudy, mixed results
34% - 0%	 Stormy, concerns for the future
NA	 Not enough data available

Table 3-1
Summary of Ordinance Review Benchmarks & Values

BENCHMARKS		VALUES
1.	Lacey, Olympia, Tumwater and Thurston County have up to date Critical Area Ordinances for streams and wetlands?	Stormy , concerns for the future
2.	Lacey, Olympia, Tumwater and Thurston County adopted the wetland size thresholds from the <i>Wetland Model Ordinance</i> ?	Partly cloudy , mixed results
3.	Lacey, Olympia, Tumwater and Thurston County adopted wetland classifications from the <i>Wetland Model Ordinance</i> ?	Sunny , overall positive results
4.	Lacey, Olympia, Tumwater and Thurston County adopted high and low intensity land uses for wetland buffers from the <i>Wetland Model Ordinance</i> ?	Sunny , overall positive results
5.	Lacey, Olympia, Tumwater and Thurston County adopted wetland buffer widths from the <i>Wetland Model Ordinance</i> ?	Sunny , overall positive results
6.	Lacey, Olympia, Tumwater and Thurston County adopted wetland replacement ratios from the <i>Wetland Model Ordinance</i> ?	Partly cloudy , mixed results
7.	Lacey, Olympia, Tumwater and Thurston County adopted a stream typing system?	Sunny , overall positive results
8.	Lacey, Olympia, Tumwater and Thurston County adopted stream buffer widths similar to those recommended in the <i>Riparian Management Recommendations for Washington's Priority Habitats</i> ?	Stormy , concerns for the future

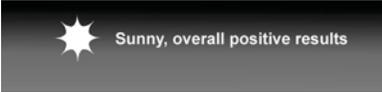
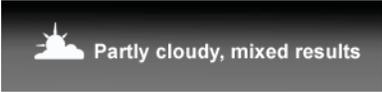
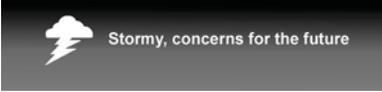
**Table 4-1
Summary of Permit Review Benchmarks & Values**

BENCHMARKS		VALUES
9:	Critical Area Ordinance projects met the standard wetland buffer requirements.	Partly Cloudy , mixed results
10:	Critical Area Ordinance projects met the standard stream buffer requirements.	Partly Cloudy , mixed results
11:	Public projects provided the standard wetland and stream buffers as often as private projects.	Partly Cloudy , mixed results
12:	Public projects received buffer reductions as often as private projects.	Sunny , overall positive results
13:	Projects which received wetland or stream buffer reductions provided on or off-site mitigation.	Sunny , overall positive results
14:	Site inspections for critical areas compliance occurred during construction and after the development project was completed.	Not enough data available
15:	Annual monitoring of mitigation sites occurred after the development project was complete.	Stormy , concerns For the future
16:	Reasonable Use Exceptions were only issued for a limited number of projects.	Sunny , overall positive results

**Table 5-1
Summary of Site Review Benchmarks & Values**

BENCHMARKS		VALUES
17:	Stream or wetland buffers existed after project completion.	Sunny , overall positive results
18:	Stream and wetland buffers were not impacted after project completion.	Partly cloudy , mixed results
19:	Stream and wetland buffers predominantly contained native vegetation.	Not enough data available
20:	Fences and signs protected stream and wetland buffers.	Sunny , overall positive results
21:	Stream and wetland mitigation projects were constructed and planted.	Partly cloudy , mixed results
22:	Vegetation for stream and wetland mitigation projects survived after project completion.	Stormy , concerns for the future
23:	Vegetation for stream and wetland mitigation projects was not overrun by invasive species.	Stormy , concerns for the future

**Table 7-1
Summary of Benchmark Values**

BENCHMARK VALUES	ORDINANCE REVIEW	PERMIT REVIEW	SITE REVIEW	TOTAL	PERCENT OF TOTAL
 Sunny, overall positive results	4	3	2	9	39%
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 Stormy, concerns for the future	2	1	2	5	22%
 Not enough data available	0	1	1	2	9%

RECOMMENDATIONS

Question:

How well are we implementing stream and wetland development regulations in the Thurston region?

Answer:

Not too bad, but it looks like we need some improvement.

UPGRADE CRITICAL AREA ORDINANCES

Recommended changes to local Critical Areas Ordinances are as follows:

1. The cities of Lacey, Olympia, and Tumwater along with Thurston County need to update their Critical Area Ordinances to include current stream and wetland standards and which utilizes “*Best Available Science*” in the adoption process. (Benchmark 1)
2. The City of Olympia and Thurston County need to adopt wetland size threshold, which is consistent with the *Wetland Model Ordinance*. (Benchmark 2)
3. Thurston County should revise its Critical Areas Ordinance and adopt the wetland replacement ratio found in the *Wetland Model Ordinance*. (Benchmark 6)
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Author’s Note: Jurisdictions may want to explore the *Basin Specific Development Regulations* discussed in Chapter 6 with respect to Recommendation #4.

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10. Lacey, Olympia, Tumwater and Thurston County should reevaluate their mitigation sections based upon the best available standards, when they revise their Critical Area Ordinances. (Benchmark 22)

IMPROVE PERMIT REVIEWS AND MONITORING

These recommendations focus on improvements to the administrative details of permit processing and monitoring of developments with streams or wetlands.

11. All jurisdictions need to ensure that the standard wetland buffer is the rule and not the exception. (Benchmark 9)
12. Jurisdictions need to use the standard stream buffer as the rule, and not the exception. (Benchmark 10)
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16. The Science Review Team independently suggested a variety of techniques, to ensure that annual mitigation reports are submitted in a timely fashion and that issued identified as problems are addressed. The report authors have expanded upon these suggestions to provide the following:

Alternative A: Jurisdictions could have one staff to inspect the mitigation sites and prepare the mitigation reports. This person would require adequate education and training which is sometimes difficult for a smaller jurisdiction. An alternative to this approach would be one staff, which is share between jurisdictions.

Alternative B: Jurisdictions could hire one firm to undertake all their mitigation inspections and prepare the mitigation reports. That firm would not be able to review its own projects so, an alternate firm will also be needed for those circumstances.

Alternative C: Jurisdictions could designate an existing staff who receives adequate education and training. Jurisdictional staffs and often planners are asked to accomplish a myriad of implementation tasks with respect to CAO regulations.

One of the Science Review Team commented that “increasing trained staff, in significant numbers, would be the single most important thing that jurisdictions could do to improve delineation reliability, plan and permit review, (and) permit compliance ...”.

Alternative D: Thurston Regional Planning Council could have a specialist to inspect the mitigation sites and prepare the mitigation reports. This would be similar to Alternative A, but a TRPC employee would be on contract to each of the four jurisdictions. (Benchmark 15)

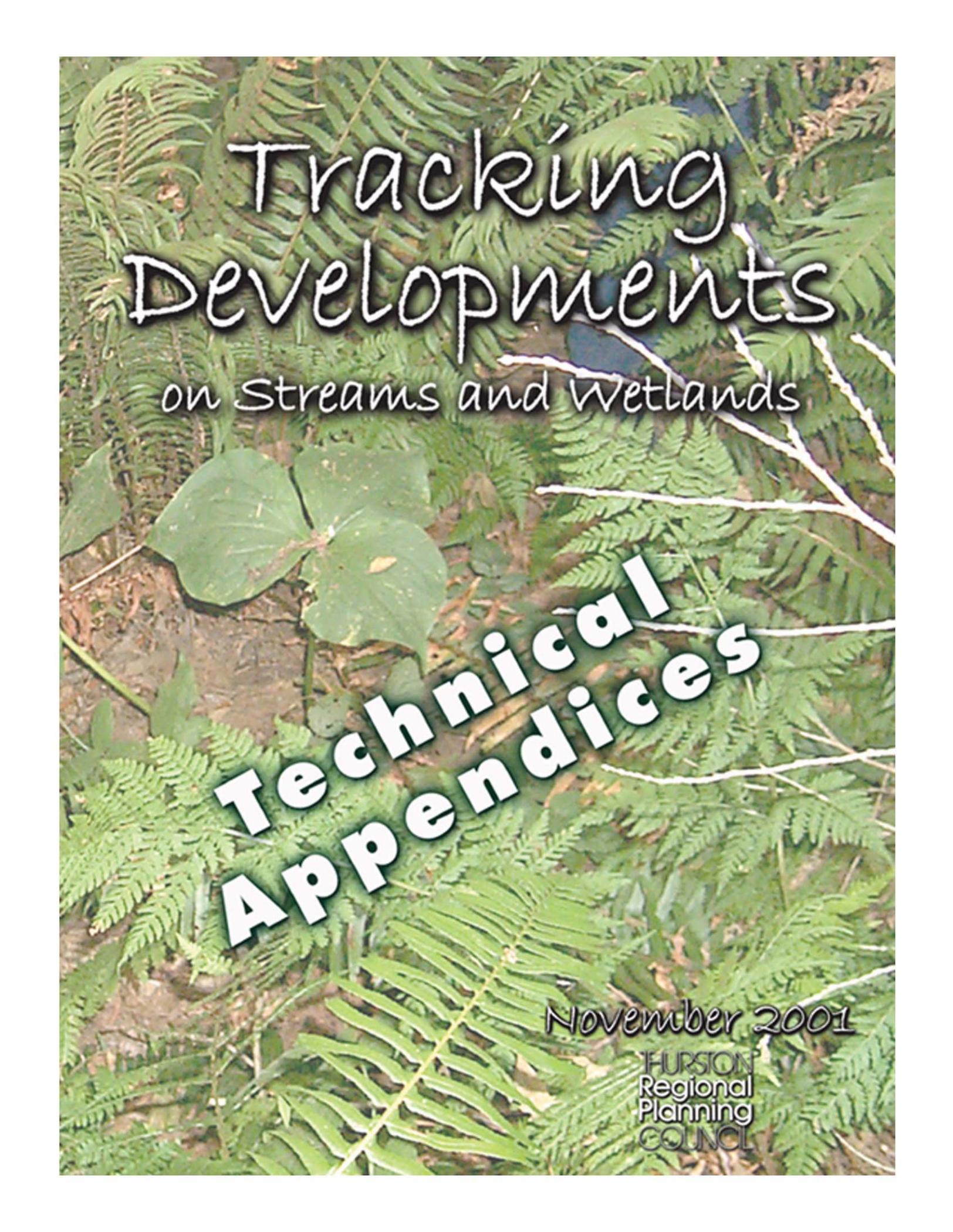
IMPROVEMENTS FOR THE NEXT TRACKING DEVELOPMENT REPORT

If a *Tracking Developments* report is replicated in the future, the Science Review Team made a number of suggestions for improvement. These included the following:

17. Placing the generalized levels of disturbance scale with one based upon the percent of the buffer that was disturbed. (Benchmark 18)
18. Accurately determining the level of disturbance would require access to the entire buffer area, or analysis of pre and post development aerial photography. (Benchmark 18)

19. Individuals doing these types of evaluations need adequate scientific training, (e.g. planners are not biologists or wetland scientists). (Benchmarks 18, 19, 21, 22, & 23)
20. Aerial photographs could be used to assess the distribution of vegetation types based upon an accepted vegetation typing methodology prior to and after development. (Benchmark 19)
21. Field assessments should be made prior to development for documentation and then later compared to a post development assessment of the same site. (Benchmark 19)
22. Field assessments would be redone 5 and 10 years after completion of the development project. (Benchmark 19)
23. Benchmark 21 should be changed to evaluate the field conditions against the approved mitigation plan. (Benchmark 21)
24. “Success” and “failure” not be limited to the number of plants on the approved plan that survived. That approved plan does not account for surprises found in the field and the positive contribution of volunteer plant species. (Benchmark 22)
25. Benchmark 23 should establish a maximum threshold for invasive species. (Benchmark 23)

20:lb



Tracking Developments

on streams and wetlands

Technical Appendices

November 2001

FURSTON
Regional
Planning
COUNCIL

TRACKING DEVELOPMENTS ON STREAMS AND WETLANDS

TECHNICAL APPENDICES



•This report was funded in part through a cooperative agreement with the National Oceanic and Atmospheric Administration. •

•The views expressed herein are those of the author(s) and do not necessarily reflect the views of NOAA or any of its sub-agencies. •

Thurston Regional Planning Council
November 2001

THURSTON REGIONAL PLANNING COUNCIL (TRPC) is a 15-member intergovernmental board made up of local governmental jurisdictions within Thurston County plus the Nisqually Indian Tribe. The Council was established in 1967 under RCW 36.70.060 which authorized creation of regional planning councils.

TRPC's mission is to "**Provide Visionary Leadership on Regional Plans, Policies and Issues.**" The primary functions of TRPC are to develop regional plans and policies for **transportation** (as the federally recognized Metropolitan Planning Organization and state recognized Regional Transportation Planning Organization), **growth management, environmental quality** and other topics determined by the Council; provide **data and analysis to support local and regional decision making**; act as a "**convener**" to build **community consensus** on regional issues, through information and citizen involvement; build **intergovernmental consensus** on regional plans, policies and issues, and advocate local implementation; and provide **planning, historic preservation and technical services** on a contractual basis.

This report was prepared as part of the Thurston Regional Planning Council's 2001 regional work program.

**2001 MEMBERSHIP
OF
THURSTON REGIONAL PLANNING COUNCIL**

<u>Governmental Jurisdiction</u>	<u>Name of 2001 Representative</u>
City of Lacey	Nancy Peterson , Councilmember
City of Olympia	Mark Foutch , Councilmember
City of Tenino	Ed Echtle , Councilmember
City of Tumwater	Bruce Zeller , Councilmember
City of Yelm	Adam Rivas , Councilmember
Town of Bucoda	pending
Town of Rainier	Mike Elliott , Mayor
Thurston County	Cathy Wolfe , County Commissioner
Intercity Transit	Graeme Sackrison , Transit Authority Board Member
Port of Olympia	Steve Pottle , Port Commissioner
Griffin School District	Fred Finn , School Board Member
North Thurston School District	Chuck Namit , School Board Member
Nisqually Indian Tribe	Cynthia Iyall , Tribal Council
Timberland Regional Library	Douglas Mah , Library Board Member
Thurston Conservation District	Doug Rushton , District Board Member

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APPENDIX A

PERMIT DATA FORM AND EXAMPLE OF DATABASE INPUT FORM

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- SEPA file -

TRPC ENVIRONMENTAL PERFORMANCE REVIEW: PHASE 2 - PERMIT DATA FORM

Date: 3/15/00
By: gj

PROJECT IDENTIFICATION

Jurisdiction: Thurston County Tumwater Lacey Olympia Other _____

EPR ID Number: 414

Parcel Numbers: 0957003200 09330002002

Project Name: Chambers Creek

AKA Name: _____

Site Address: 3142 Yelm Hwy, SE

Property Owner: DN Woodside Development Co.

WRIA: Deschutes

waterbody

Watershed: Deschutes River

Chambers
Creek

Basin: Chambers Creek

Permit Type: Planned Residential Dev. (PRD)

Permit #: 558, PRD-029

SEPA #: T-94-030

State Permit #: _____

<u>Data Source or Archive:</u>	<u>Permit Type</u>	<u>Film Size</u>	<u>Reel</u>	<u>Page</u>
<u>bx 541</u>	<u>BA:BI</u>	<u>U:P</u>	<u>S:3</u>	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Comments: Sec 31 TIBN RIW

.multi family A-3

WETLAND CHARACTERISTICS

Total Wetlands On-Site: _____ acres (permit) _____
 _____ acres (GIS) _____

WDOE Wetland Rating: 1 2 3 4 5 *Unclassified* *Multiple*

____ Type ____ Rating _____ acres (source) _____
 ____ Type ____ Rating _____ acres (source) _____
 ____ Type ____ Rating _____ acres (source) _____
 ____ Type ____ Rating _____ acres (source) _____

CAO Guidance: _____ feet

Wetland Buffer: _____ feet *Standard* *Average* *Reduction/Mitigation*

Buffer Reduction: _____ feet

Minimum Buffer: _____ feet

Maximum Buffer: _____ feet

Pre-Existing Buffer Condition: (percentage cover for each: **Total = 100%**)

____ <i>Mature Coniferous Forest (>50)</i>	____ <i>Inter Coniferous Forest (50-20)</i>	____ <i>Young Coniferous Forest (<20)</i>
____ <i>Mature Deciduous Forest</i>	____ <i>Inter Deciduous Forest</i>	____ <i>Young Deciduous Forest</i>
____ <i>Mature Mixed Forest</i>	____ <i>Inter Mixed Forest</i>	____ <i>Young Mixed Forest</i>
____ <i>Native Shrubs</i>	____ <i>Scot Broom</i>	____ <i>Pasture</i>
____ <i>Commercial/Industrial</i>	____ <i>Residential</i>	____ <i>Landscaping</i> ____ <i>Unknown</i>

Buffer Management: *Property Owner* *Homeowners* *Land Trust* *Govm't* *Other* _____

Buffer Type: *Easement* *CAO Tract* *Deed Restriction* *Other* _____

CAO Tract Area: _____ acres

Mitigation Required: *yes* *no*

Mitigation Type: (Circle all that apply)

Wetland Creation *Wetland Enhancement* *Fence* *Sign* *Other* _____

Mitigation Area Mang'mt: *Property Owner* *Homeowners* *Land Trust* *Govm't* *Other* _____

Mitigation Location: *On-Site* *Off-Site < 1/4 mile* *Off-Site w/in Watershed* *Land Bank*

Mitigation Area: _____ acres

Mitigation Details:

STREAM CHARACTERISTICS

Total Streams On-Site: _____ acres (permit) _____
 _____ acres (GIS) _____

WDNR Stream Class: 1 2 3 4 5 Unclassified Multiple

Local Classification: _____ (if different) Chambers Creek

____ Class _____ feet (source) _____
 ____ Class _____ feet (source) _____
 ____ Class _____ feet (source) _____
 ____ Class _____ feet (source) _____

CAO Guidance: _____ feet

Stream Buffer: 100 feet Standard Average Reduction/Mitigation

Buffer Reduction: _____ feet

Minimum Buffer: _____ feet

Maximum Buffer: _____ feet

Pre-Existing Buffer Condition: (percentage cover for each: **Total = 100%**)

____ Mature Coniferous Forest (>50)	____ Inter Coniferous Forest (50-20)	____ Young Coniferous Forest (<20)
____ Mature Deciduous Forest	____ Inter Deciduous Forest	____ Young Deciduous Forest
____ Mature Mixed Forest	____ Inter Mixed Forest	____ Young Mixed Forest
____ Native Shrubs	____ Scot Broom	____ Pasture
____ Commercial/Industrial	____ Residential	____ Landscaping ____ Unknown

Buffer Management: Property Owner Homeowners Land Trust Govm't Other _____

Buffer Type: Easement CAO Tract Deed Restriction Other open space
shaded with wet ponds

CAO Tract Area: _____ acres

Mitigation Required: yes no - for stream crossing

Mitigation Type: (Circle all that apply)

Riparian Creation Riparian Enhancement Fence Sign Other stream enhancement

Mitigation Area Mang'mt: Property Owner Homeowners Land Trust Govm't Other _____

Mitigation Location: On-Site Off-Site < 1/4 mile Off-Site w/in Watershed Land Bank

Mitigation Area: _____ acres

Mitigation Details: shading and pools for salmon habitat

PROJECT MONITORING & COMPLIANCE

Buffer Inspection: (Circle all that apply)

During Construction *Immediately After Construction* *Within First Year* *Annual Inspection* *Oops*

Annual Monitoring Required: *yes* *no* *3 years*

Who Performs Monitoring: ? (Circle all that apply)

Property Owner *Consultant* *Homeowners* *Local Government* *Other* _____

Monitoring Reports Required: *yes* *no*

Who Prepares Monitoring Report: ? (Circle all that apply)

Property Owner *Consultant* *Applicant* *Homeowners* *Local Government* *Other* _____

Who Reviews Monitoring Report: (Circle all that apply & Fill in Department/Agency name)

Local _____ *State* _____ *Federal* _____
Consultant *Applicant* *Homeowners* *Land Trust* *Other* *appropriate regulatory agency*

Comments on Monitoring:

Monitoring for Buffer/Mitigation Effectiveness: *yes* *no*

Effectiveness Monitoring Being Done By: ? (Circle all that apply & Fill in Department/Agency name)

Local _____ *State* _____ *Federal* _____
Consultant *Applicant* *Homeowners* *Land Trust* *Other* _____

Comments on Monitoring:

Enforcement Action: *yes* *no*

Results of Enforcement:

ON-SITE OBSERVATIONS

Observations By: _____ *staff* *advisory committee* *technical committee*

Date of Visit(s): _____

Wetland Buffers Intact: *yes* *no* *cannot determine* _____ *% disturbed*

Width of Existing Buffer: _____ *feet*

Adequate Buffer Management: *yes* *no* *cannot determine*

If "No" describe: _____

Upland Use Conflicts: *yes* *no* *cannot determine*

If "Yes" describe: _____

Mitigation Complies with Permit: *yes* *no* *cannot determine*

If "No" describe: _____

Comments: _____

Stream Buffers Intact: *yes* *no* *cannot determine* _____ *% disturbed*

Width of Existing Buffer: _____ *feet*

Adequate Buffer Management: *yes* *no* *cannot determine*

If "No" describe: _____

Upland Use Conflicts: *yes* *no* *cannot determine*

If "Yes" describe: _____

Mitigation Complies with Permit: *yes* *no* *cannot determine*

If "No" describe: _____

Comments: _____



Input Form

ID # 414	Date permit data form completed 03/2000	Jurisdiction Thurston County	WRIA Deschutes
Parcel Number(s): 09570032000 09330002002	Project name Chambers Creek	Watershed Deschutes River	Basin Chambers Creek
	Site Address: 3142 Yelm Highway SE	Water Body: Chambers Creek	

Development Type Multifamily	Permit Type
Selected for Site visit X	Subdivision: <input type="checkbox"/> CUP/SUP: <input type="checkbox"/> RUE: <input type="checkbox"/> SDP: <input type="checkbox"/> Large Lot: <input type="checkbox"/> PRD/PUD: <input checked="" type="checkbox"/> Short Plat: <input type="checkbox"/> Grading Permit: <input type="checkbox"/> Building Permit: <input type="checkbox"/> Permit Type Other: <input type="text"/>

Permit number T-94-030, #558, P	Review Ordinance X	Application Date 02/1994	SMA Category
Review Standard CAO	Local Review Ordinance Corps 404: <input type="checkbox"/> Fisheries HPA: <input checked="" type="checkbox"/> Ecology 401: <input type="checkbox"/> JARPA: <input type="checkbox"/>	Environmental Review Process MDNS	Shoreline Jurisdiction: <input type="checkbox"/> Natural: <input type="checkbox"/> <input type="checkbox"/> Rural: <input type="checkbox"/> Conservancy: <input type="checkbox"/> Suburban: <input type="checkbox"/> Urban: <input type="checkbox"/> Special Area Mgmt: <input type="checkbox"/>
Project size 23.88 acre	Wetland <input type="checkbox"/>	Stream <input checked="" type="checkbox"/>	Project Monitoring Compliance X

Open Wetland and Stream combined data Table form

Wetland Characteristics

Stream Characteristics

Project Monitoring and Compliance

Site Visit 2000 form

(old) On-Site Observations

Add Record

Previous Record

Next Record

First Record

Last Record

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ERP II 2000 Site Visit

Fill out multiple forms for a project with more than one wetland or stream or observation point

Project Number: 414

Project Name: Chambers Creek

Date of visit: 9/22/00

By whom: Roger Siebelhaus and Theressa Vulus

Looking at: Wetland (Stream)

Buffer Information

Permitted buffer: 100

Buffer width same as permit: (yes) no

Approximate buffer width: 100

What is present: sign fence (buffer)

Dominant buffer condition: (grass) scot broom trees native/natural other _____

Description. What does the buffer look like and what appears to be the management (approx. in feet):

grass w/ blackberries next to stream

Rate the buffer disturbance: 1 (2) 3 4 5 6 7 8 9 10 (1 = little disturbance, 10 = lots of disturbance)

Disturbance comments:

stormwater retention items from construction still in place

Mitigation Information (only if mitigation was a permit requirement) - yes required

Are there plantings: yes (no) - not started

Do plantings look alive: yes no

little frog in ditch

Does there appear to be invasive species: yes no

Does mitigation appear to be approximate size or plantings as required by permit: yes no

Mitigation comments:

In order to get 2nd phase permitted (stream crossing) the mitigation needs to be completed. Disagreement with developer on mitigation.

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Site Visit Projects, Dates, and Attendance

- **Tumwater**
August 29, 2000
Projects: 203, 204, 205, & 208
Chris Carlson, Tumwater
Steve Morrison, Thurston Regional Planning Council
Theresa Julius, Thurston Regional Planning Council
- **Olympia**
August 29, 2000
Projects: 306, 311, 312, 317, 318, 322, & 324
Todd Stamm, Olympia
Steve Morrison, Thurston Regional Planning Council
Theresa Julius, Thurston Regional Planning Council
- **Olympia**
October 6, 2000
Project: 314
Andy Hobb, Olympia
Steve Morrison, Thurston Regional Planning Council
Theresa Julius, Thurston Regional Planning Council
- **Lacey**
August 29, 2000
Projects: 101, 108, & 109
Rick Walk, Lacey
Steve Morrison, Thurston Regional Planning Council
Theresa Julius, Thurston Regional Planning Council
- **Lacey**
October 13, 2000
Projects: 107, 114, 116, & 120
Rick Walk, Lacey
Joyce Phillips, Lacey
Theresa Julius, Thurston Regional Planning Council
- **Thurston County**
September 22, 2000
Projects: 414, 422, 435, & 450
Roger Giebelhaus, Thurston County
Theresa Julius, Thurston Regional Planning Council

- **Thurston County**
September 26, 2000
Projects: 404, 420, 424, 428, 433, & 441
Cindy Wilson, Thurston County
Theressa Julius, Thurston Regional Planning Council
- **Thurston County**
September 27, 2000
Projects: 403, 423, 425, 432, 452, & 458
Linda Witcher, Thurston County
Theressa Julius, Thurston Regional Planning Council

APPENDIX B

DATA REPORTS

PROJECT DATA COLLECTION

Rather than create 100 data base sheets (one for each project), staff chose to describe the projects in a series of data •Reports• using MS Access software. Each Report addresses a different characteristic or data field, and each project which contains that characteristic is listed. The following is a summary of the various characteristics or data fields contained within each of the Reports which can be found in Appendix C under the number and title of each report.

REPORT 1: PROJECT DESCRIPTIONS

- **ID #**

Each project received its own identification number. This was essential since some projects were developed by the same company. Gaps in the numbering indicate where projects were removed because critical data was not available. A different series of numbers was used for each jurisdiction.

-100s =	Lacey Projects
-200s =	Tumwater Projects
-300s =	Olympia Projects
-400s =	Thurston County Projects

- **Project Name**

Each project was given a name even it was only the developer's name and type of project, (e.g. Bell Large Lot). The most current project name was used if there was more than one.

- **Development Type**

This term refers to the type of development. The distribution of the various projects by the eight categories are listed below.

**Table B-1
Development Types By Jurisdiction**

Jurisdiction	Comm- ercial	Indus- trial	Multi- Family	Park/ Golf Course	Single Family	Storm- water Facilit y	Institu- tional	Road/ Bridge	Other	TOTAL
Lacey	1	1		3.5	8.5	2	2			18
Olympia	3		8	1	6	2	2	1		23
Tumwater		1	3	1	5	1		1		12
Thurston County	1	4	2	3	30			6	1	47
TOTAL	5	6	13	8.5	49.5	5	4	8	1	100

- **Project Ownership**

This term was defined as •private•, •public• and •joint• projects.

- **Project Size**

This data field captured the size of the project in acres. The distribution of the various project size by its jurisdiction is listed below.

**Table B-2
Project Size By Jurisdiction**

Jurisdiction	Average	Minimum	Maximum
Lacey	83 acres	0.8 acres	720 acres
Olympia	12 acres	0.2 acres	42 acres
Tumwater	19 acres	0.7 acres	19 acres
Thurston County	52 acres	0.3 acres	463 acres
TOTAL	44.6 acres	0.2 acres	720 acres

- **Review Standards**

There were three types of local ordinances used to review these projects. •CAO• refers to projects reviewed under a local Critical Areas Ordinances. •ESA• refers to projects reviewed under an Environmentally Sensitive Areas Ordinance, which only Thurston County and Olympia had adopted. •SEPA• refers to the Washington State Environmental Policy Act. SEPA requires that most major projects prepare an environmental checklist or Environmental Impact Statement, and mitigation may be required as a condition of permit approval. The distribution of the various projects by the type of its review and jurisdiction are listed below.

**Table B-3
Review Standard By Jurisdiction**

Jurisdiction	CAO	ESA	SEPA	TOTAL
Lacey	13	--	5	18
Olympia	13	13	--	26
Tumwater	10	--	2	12
Thurston County	21	26	--	47
TOTAL	57	36	7	100

- **Application Date**

The importance of this data field was to make sure that the project is tabulated under the correct Review Standard. Refer to Chapter 1 for the adoption date of each CAO.

REPORT 2: PROJECT LOCATION

- **Jurisdiction**

See Figure 1 for the general location of the project sites. Refer to Figures 2 to 5 for detailed location maps for each jurisdiction. See Table B-4 below for the number of projects in each jurisdiction.

**Table B-4
Project Location By Jurisdiction**

Jurisdiction	Projects
Lacey	18
Olympia	26
Tumwater	12
Thurston County	47
TOTAL	100

- **WRIA**

WRIA is a term created by the Washington State Department of Ecology as quasi watershed boundaries. WRIA stands for •Water Resource Inventory Area•.

- **Watershed**

Watershed is the physical river boundary based upon surface topography. There can be a differences between a site•s WRIA and watershed location.

- **Basin**

Refers to the stream basin drainage basin also based upon surface topography.

- **Water Body**

Refers to the lake, stream, river or marine environment the project touches.

REPORT 3: LOCAL PERMIT TYPE

Report 3 identifies ten different types of local jurisdiction permits that could be issued. This is different than the development type description from Report 1. The Report is laid out in a matrix format, so the •X• corresponds to the various projects. Also, a single project may include multiple permits. Staff attempted to locate as many •Reasonable Use Exemptions• as possible because they are land use variances to the CAO regulations. Staff also worked hard to find a broad variety of permits using the project selection criteria. See the definitions to the abbreviated permit types below.

LOCAL PERMIT TYPES - DEFINITIONS

- CUP = Conditional Use Permits
- PRD = Planned Residential Development
- PUD = Planned Unit Development
- RUE = Reasonable Use Permit
- SDP = Shoreline Development Permit
- SUP = Special Use Permits

REPORT 4: FEDERAL AND STATE PERMIT TYPE

Report 4 is a companion to Report 3, and identifies four different types of federal or state permits that could be issued. The table is laid out in a matrix format, so the •X• corresponds to the various projects. A single project may also include multiple permits. See the definitions of the abbreviated state and federal permit types below.

FEDERAL & STATE PERMIT TYPES - DEFINITIONS

- Corps 404 = U.S. Army Corps Section 404 Permits
- Ecology 401 = Washington Department of Ecology Section 401 Permit
- Fisheries HPA = Washington Department of Fish and Wildlife
Hydraulic Project Approval
- JARPA = Joint Aquatic Resources Protection Application

REPORT 5: SHORELINE, WETLAND OR STREAM PROJECTS

Report 5 identifies five different types of project conditions. The table is laid out in a matrix format, so the •X• corresponds to the various projects. A single project may be marked in multiple categories.

•Shoreline Jurisdiction• identifies a project which is covered by the State Shoreline Management Act. •Wetland• was marked where there is a wetland on site. If the site is only located in the •Wetland Buffer• then only this field would be marked. •Stream• is distinct from •Stream Buffer• in the same way.

REPORT 6: SHORELINE ENVIRONMENTS

The Act requires each local jurisdiction to protect and categorize its shorelines through a document called a Shoreline Master Program. All four of the jurisdictions utilize the *Shoreline Master Program for the Thurston Region* (1990), which contains a variety of •Shoreline Environments•. Each corresponds to a varying level of protection from •Natural• the most restrictive to •Urban• which allows the most intense development.

REPORT 7: WETLAND BUFFERS

Report 7 identifies eight different wetland characteristics. The table contains a range of numbers in various categories. The reason for the large space between the projects is that some projects have up to five different wetlands and each wetland is listed on a separate line. All the buffer distances in this Report are in feet. Since one project may have more than one wetland on it, Table B-5 below summarizes the wetland sites and not just the projects with wetlands.

**Table B-5
Number of Wetland Sites by Jurisdiction**

Jurisdiction	Review Standard			
	CAO	ESA	SEPA	Total
Lacey	26	0	5	31
Olympia	14	8	0	22
Tumwater	10	0	4	14
Thurston County	7	37	0	44
Total	57	45	9	111

CAO = Critical Area Ordinance
ESA = Environmentally Sensitive Area regulations
SEPA = State Environmental Policy Act

- **Wetland Rating**

This data field relates to the Washington State Department of Ecology's - Wetland Rating System in the Wetland Model Ordinance. It rates wetlands based upon the quality, type or size of the wetland by class; 1 through 4 (highest to lowest quality). The term •Unclassified• was inserted in this column when the project pre-dated the CAO regulations.

**Table B-6
Wetland Rating by Jurisdiction**

Jurisdiction	Wetland Rating						
	1	2	3	4	5	N/A	Unclassified
Lacey	3	12	6	6	0	1	3
Olympia	0	8	9	1	0	8	0
Tumwater	0	7	5	0	0	0	3
Thurston Co	1	26	16	0	0	0	22
TOTAL	4	53	36	7	0	9	28

- **Standard Buffer**

This category is the •Standard• buffer distance as required by the local CAO. If the project pre-dates the CAO regulations, then this column will be blank.

- **Buffer Met Standard**

This data field was simply used to indicate if the •Standard Buffer• requirement has been met. Projects where this has occurred are marked with a corresponding •X• in the column.

- **Permitted Buffer**

This category refers to what was allowed by the local jurisdiction. This column will contain data when a CAO project was permitted at a buffer width of something different than •standard•.

- **Buffer Averaging**

This data field documents that an alternative approach to meeting the •Standard Buffer• has been selected. Projects where this has occurred are marked with a corresponding •X• in the column.

Buffer averaging was only used on 6 of the 100 projects. It allows flexibility and can result in a larger buffer area. This is done by varying the buffer distances along the wetland or stream. For example, a 100 foot buffer could be averaged by having 50 feet on one side and 150 feet on the other. According to recent evaluation of buffer averaging, (McMillian, 2000) this is not a scientifically valid technique and may adversely impact the habitat it is intended to protect.

- **Buffer Reduced**

This data field helps document that a buffer has been reduced. Projects where this has occurred are marked with a corresponding •X• in the column. A total of 35 projects indicate they received wetland buffer reductions.

- **Buffer Reductions**

All the local Critical Area Ordinances allow for wetland and stream buffer reductions. This category indicates if such a buffer reduction was granted. Sometimes, but not always, the buffer reduction is tied to mitigation.

- **Mitigation Required**

This data field indicates those projects which provided some type of on-site or off-site mitigation in terms of enhancement/restoration or wetland creation. Refer to Report 12 for the •On-Site Protection Techniques• (such as a fence or sign) which is sometimes referred to as Mitigation in the permit file.

REPORT 8: STREAM BUFFERS

Report 8 is a twin of Report 7, but for Streams. It identifies eight different stream characteristics. Table B-7 contains a range of numbers in various categories.

**Table B-7
Stream Sites by Jurisdiction and Review Standard**

Jurisdictions	Review Standard			
	CAO	ESA	SEPA	Total
Lacey	2	0	1	3
Olympia	3	3	0	6
Tumwater	0	0	1	1
Thurston County	7	10	0	17
TOTAL	12	13	2	27

- **Stream Class**

This data field relates to the Washington State Department of Natural Resources (WDNR) five category water typing system found in WAC 222-16-035. This water class system had emergency update and now only includes three categories, but this report refers to the original five category system.

Refer to the discussion of Report 7 for a complete description of all the other related Stream features.

REPORT 9: BUFFER PROTECTION TECHNIQUES

Report 9 identifies six different techniques which the buffer could be protected. The table is laid out in a matrix format, so the •X• corresponds to the various projects. A single project may also be marked in multiple categories. This Reports notes if a project contains a wetland, stream or both, on-site.

- **CAO/ Open Space Tract**

This technique is often applied when land is subdivided. Often the wetland and the buffer is put into a separate parcel of land called a •Tract•. This Tract is sometimes owned by a different party (e.g. land trust, government or most common a homeowners association).

- **Property Easements**

This technique can be applied with property subdivision or recorded on a property at any time.

- **Deed Restriction**

This technique is similar to the easement, but it is recorded with the deed of the property.

- **Permit Conditions**

This technique is as it sounds, a condition only documented in the permit file.

- **Unknown**

In this case a protection technique could not be determined.

- **Other**

This column contains textual information about the project condition.

REPORT 10: BUFFER MANAGERS

Report 10 identifies five different entities which can be responsible for the long-term property management of the wetland, stream and/or their buffer. The terms are self descriptive, with •Government• being of federal, state or local level. The table is laid out in a matrix format, so the •X• corresponds to the various projects. A single project may also be marked in multiple categories. This Reports notes if a project contains a wetland, stream or both, on-site.

REPORT 11: MITIGATION SITE CHARACTERISTICS

This Report describes the various kinds of sites used for mitigation activities within the wetland or its buffer. Wetland or stream •Enhancement• refers to the technique of improving something that already exists (such as enhancing the buffer by the planting or additional trees). •Wetland Creation• is the term used when a wetland is to be created when one has never existed before. The remainder of the terms should be self descriptive. This Reports notes if a project contains a wetland, stream or both, on-site.

REPORT 12: ON-SITE PROTECTION TECHNIQUES

This Report describes those techniques which are most employed between the development and the buffer. These include signs, fences and •other• factors that may have been required. The table is laid out in a matrix format, so the •X• corresponds to the various projects. A single project may also be marked in multiple categories. This Reports notes if a project contains a wetland, stream or both, on-site.

Whichever buffer protection technique is selected (Report 9), there also needs to be a way to convey wetland buffer information onto the second and third owner of a property. Fences and signs do this without relying on legal recording documents or governmental actions. Unfortunately, they can be the target of vandalism, age and neglect. However, almost all fences and signs which were visited (see the site review chapter) appear to be in good condition and functioning as intended.

REPORT 13: POST DEVELOPMENT SITE INSPECTIONS

This Report describes those conditions under which local government planners inspected the development after it was constructed. The terms should be self explanatory. The table is laid out in a matrix format, so the •X• corresponds to the various projects. A single project may also be marked in multiple categories.

REPORT 14: POST DEVELOPMENT MONITORING

This Report describes who will be responsible for the post development monitoring of a project. The terms should be self explanatory.

REPORT 15: REASONABLE USE EXEMPTIONS

Reasonable Use Exemptions (RUEs) could be described as •CAO variances•. They would allow something that under normal circumstances would be prohibited by the Critical Area Ordinance.

REPORT 16: SITE VISIT - BUFFER INFORMATION

Report 16 displays buffer information for the projects as found during the site visit. The details are described below.

- **Buffer width looks similar to permit.**

The permitted buffer width was compared to the width that could actually be seen on site. If they were approximately the same the project got a •Yes•, if not it got a •No•.

- **Present on Site**

Sign, fence, or buffer was marked accordingly to what was present on the site.

- **Wildlife observed on site**

Text of the wildlife present during the site inspections was recorded.

REPORT 17: SITE VISIT - BUFFER DISTURBANCE

Report 17 displays the amount and kind of disturbances observed on site for the stream or wetland buffer. The details are described below.

- **Impact**

The amount of impact that was observed within the buffer. Five levels of impact were used. They are described in more detail below.

**Levels of Impacts
to Wetland and Stream Buffers**

- No Impact (or None)
- Some Impact
- Moderate Impact
- High Impact
- Completely Impacted

To give some examples: **No Impact** would be no disturbance found within the buffer; a **Some Impact** would be paths or some garbage/grass clippings or slight edge mowing found within the buffer; a **Moderate Impact** would be large piles of refuse or a noticeable amount of vegetation removal found within the buffer; a **High Impact** would be large portions of the buffer had been cleared, filled, or dumped on; and **Completely Impacted** would be when the buffer no longer exists.

- **Buffer Disturbance**

Recorded activities or items that were observed on site in the buffer. The most common ones: paths, mowing, lawn clippings were grouped separately. Miscellaneous disturbances were recorded in the •Other• field. A single project could have multiple disturbances recorded. Paths included both that were planned and ones which appear to have been created over time.

REPORT 18: SITE VISIT - BUFFER DESCRIPTION

Report 18 shows the data that was collected to describe the wetland or stream buffer. See below for an explanation of report fields.

- **Dominant Buffer species**

Six fields were used to record the dominant vegetative species found upon site review. The most common ones: grass/pasture, scot's broom, trees, native shrubs, and blackberries were grouped separately. The •Other• field was used to fill in other types of vegetation found.

- **Text Description of the Buffer**

A narrative description of the buffer was provided.

REPORT 19: SITE VISIT - MITIGATION PLANTING

Report 19 displays information on the vegetated plantings that were required as a part of mitigation. The details are described below.

- **Mitigation not started**

This category is marked if the required mitigation had not been done.

- **Plantings**

It was recorded if mitigation plantings could be found. If plantings were found •Yes• was marked, if they were not to be found (such as mitigation not started) •No• was marked, and if it was unclear if plantings were present •Can't Tell• was marked.

- **Plantings Alive?**

This was to record mitigation planting survival. Survival was determined by estimating the number of plants alive that were part of the mitigation. Due to lack of information available on the mitigation planting details there are several uncertain categories. **Over 50%** was marked when it was clear that over half of the mitigation plants had survived. **Less than 50%** was marked when it was determined that under half of the mitigation plants had survived. **Unknown %** was marked when there were a number of plants alive but it was unknown what the percentage of the entire mitigation plantings they represented. **Few** was marked when a minimal number of plants could be found but it was unclear what the percentage of the entire mitigation plantings they represented. **Can't Tell** was marked when the situation was extremely unclear.

REPORT 20: SITE VISIT - MITIGATION OBSERVATIONS

Report 20 shows the information found regarding the condition of the mitigation. The details are described below.

- **Invasive Species**

If an invasive species was noticed •Yes• was marked, if not •No• was marked.

- **Mitigation Approximate to Permit**

This is to determine if the mitigation was planted as designed. •Yes• was marked if it was, •No• was marked if it was not, and •Unknown• was marked when unsure. Due to lack of information on the planting plans, this information was collected from the Planner during site visit.

- **Can't see Mitigation through Invasives**

This category was created because at some sites the invasive species were so prevalent that it was impossible to tell if any mitigation had taken place.

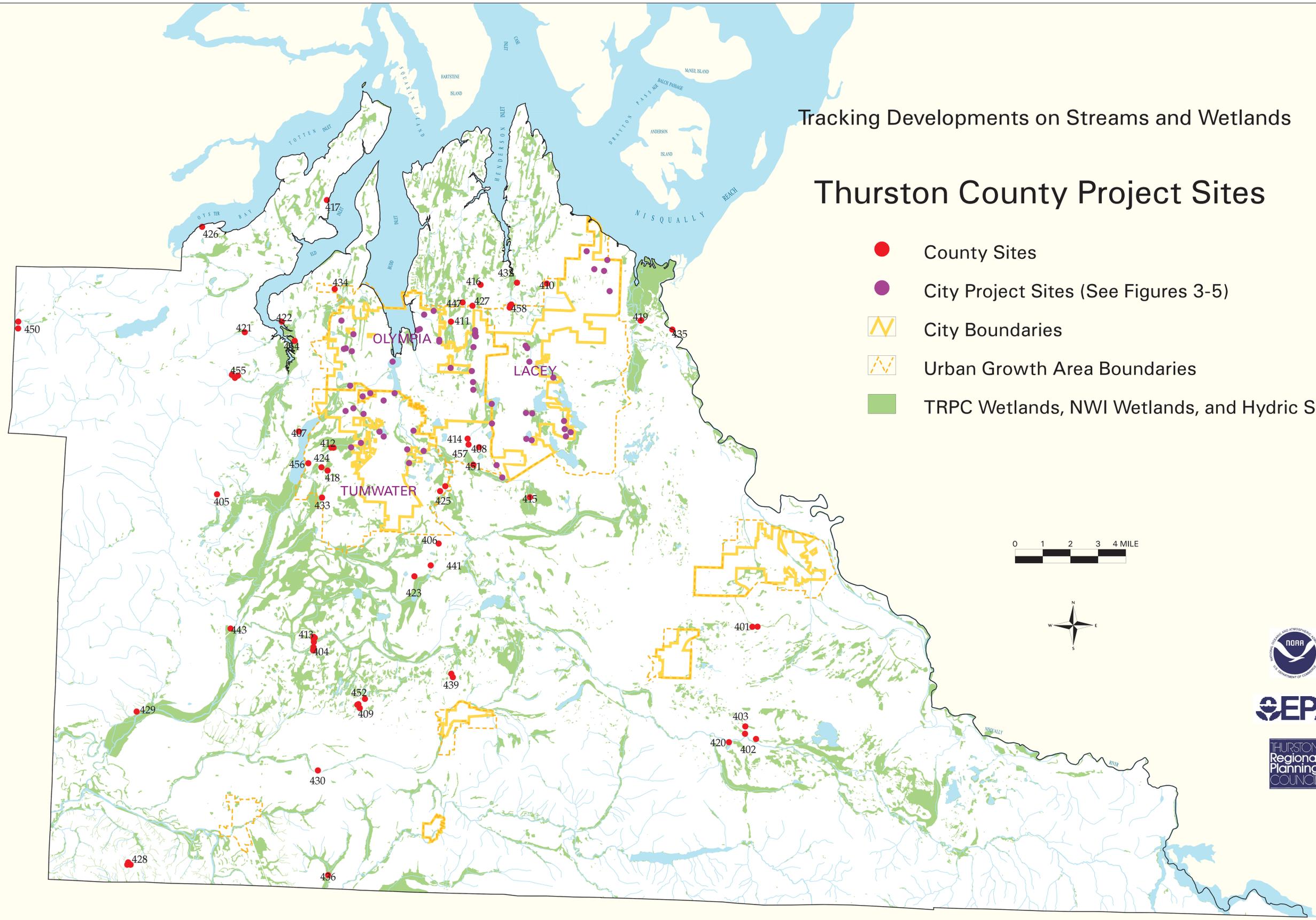
- **Can't see Mitigation through Natives**

This category was created because at some sites the native species were so well established that it was difficult to locate mitigation plantings.

Tracking Developments on Streams and Wetlands

Thurston County Project Sites

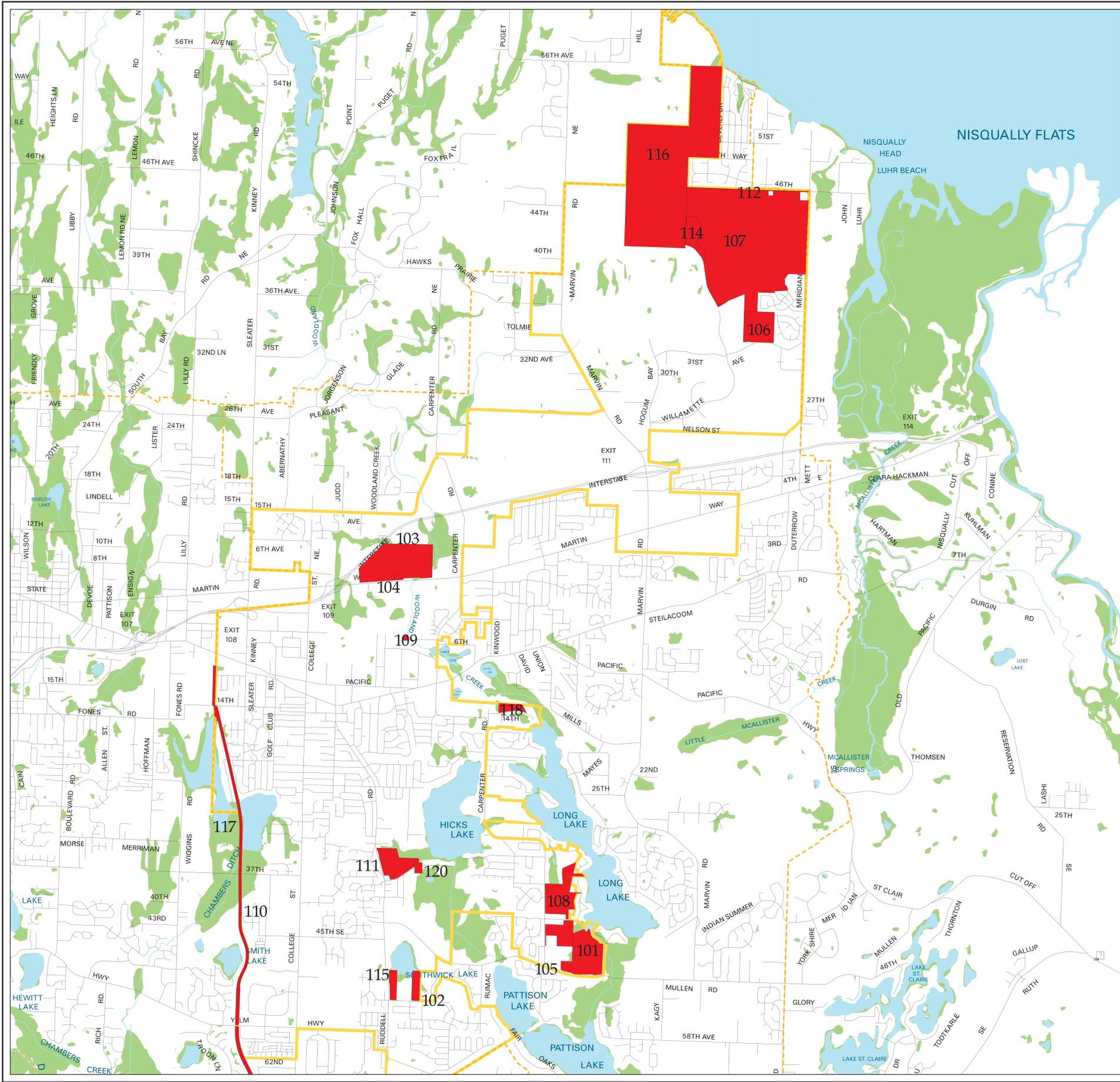
- County Sites
- City Project Sites (See Figures 3-5)
- ▭ City Boundaries
- ▭ Urban Growth Area Boundaries
- TRPC Wetlands, NWI Wetlands, and Hydric Soils



For copies of this map or for more information,
please contact Thurston Regional Planning Council
(07/19/02, /trpc/projects/epr/studyarea.aml)

Thurston County

Figure 2



Tracking Developments on Streams and Wetlands

Lacey Project Sites

- TRPC Wetlands, NWI Wetlands, and Hydric Soils
- City Boundaries
- Urban Growth Area Boundaries



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(07/19/02, /trpc/projects/epr/cities.aml)

Figure 3

Tracking Developments on Streams and Wetlands

Tumwater Project Sites

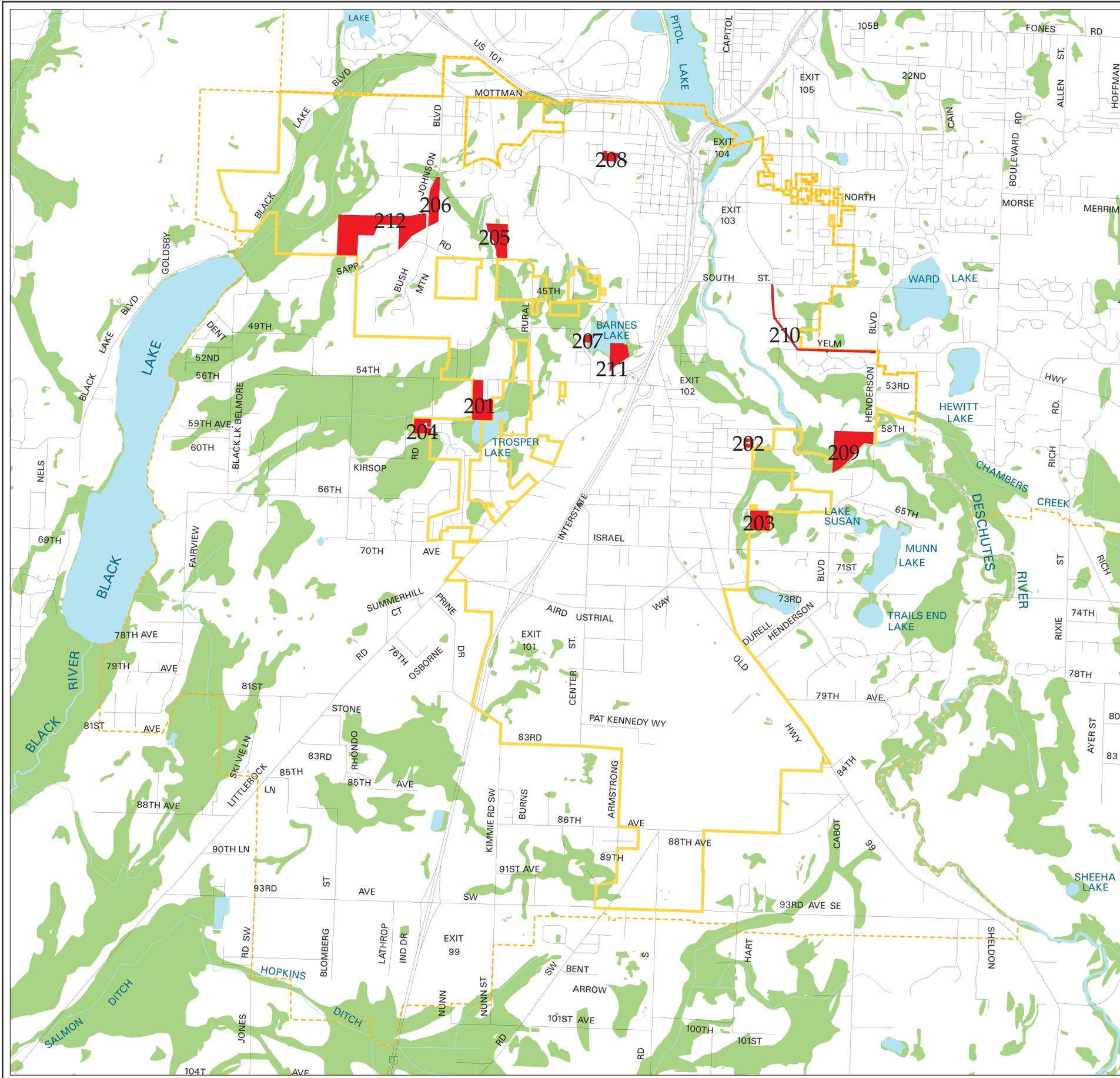
-  TRPC Wetlands, NWI Wetlands, and Hydric Soils
-  City Boundaries
-  Urban Growth Area Boundaries



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(07/19/02, /trpc/projects/epr/cities.aml)

Figure 5



APPENDIX C

REPORT APPENDICES

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Report 1: Wetland and Stream Projects

ID #	Project Name	Development Type	Project Ownership	Project Size	Review Standard	Application Date
101	Willows Crossing	Single Family	Private	59.60 acre	CAO	09/1995
102	Lake Hills	Single Family	Private	23 acre	SEPA	08/1990
103	Martin Village	Commercial	Private	38.50 acre	SEPA	01/1991
104	Martin Way - Sewer Pump Station	Institutional	Public	0.85 acre	SEPA	01/1990
105	Rosewood	Single Family	Private	5.11 acre	CAO	11/1993
106	Continental Crest	Single Family	Private	40.14 acre	CAO	07/1992
107	Meridian Campus Golf Course	Single Family/Park Golf Course	Private	184 acre	CAO	11/1992
108	Meadow Lake	Single Family	Private	67.50 acre	SEPA	07/1990
109	Woodland Creek - Stormwater Treatment Facility	Stormwater Facility	Public	2.10 acre	SEPA	02/1990
110	Washington Natural Gas Pipeline - Phase II	Institutional	Joint	43.63 acre	CAO	01/1995
111	Ruddell Road Stormwater Treatment Facility	Stormwater Facility	Public	31 acre	CAO	02/1999
112	Hawks Prairie Planned Community Culvert	Park/Golf Course	Private	720 acre	CAO	10/1996
114	Campus Green	Single Family	Private	17 acre	CAO	05/1997
115	Ivy Hill	Single Family	Private	9.06 acre	CAO	06/1998
116	Hawks Prairie Golf Course	Park/Golf Course	Private	220 acre	CAO	07/1997
117	Chehalis Western Trail - Phase I	Park/Golf Course	Joint	6.95 acre	CAO	01/1996
118	Woodland Creek Estates	Single Family	Private	8.10 acre	CAO	5/1997
120	Nguyen RUE	Single Family	Private	5.31 acre	CAO	3/99
201	Lakeside Estates	Single Family	Private	14.83 acre	CAO	04/1994
202	Silver Oaks	Single Family	Private	2.28 acre	SEPA	04/1991
203	Silver Ridge	Single Family	Private	9.29 acre	CAO	12/1992
204	Southwood	Single Family	Private	6.27 acre	CAO	02/1991

ID #	Project Name	Development Type	Project Ownership	Project Size	Review Standard	Application Date
205	Streamland Estates	Single Family	Private	25.10 acre	CAO	05/1996
206	Simmons Mill	Multifamily	Private	10.40 acre	CAO	05/1994
207	Lake Park Drive SW	Multifamily	Private	1.10 acre	CAO	05/1995
208	Grant Court	Multifamily	Private	3.06 acre	CAO	02/1993
209	Pioneer Park	Park/Golf Course	Public	85 acre	SEPA	1990
210	Cleveland Avenue	Road/Bridge	Public		CAO	02/1997
211	Mega Foods Storm Pond	Stormwater Facility	Private	.69 acres	CAO	1995
212	Mottman Business Park	Industrial	Private	52.15 acre	CAO	04/1996
301	Home Depot	Commercial	Private	26.40 acre	CAO	11/1993
302	Westside Safeway	Commercial	Private	15 acre	CAO	8/1993
303	Woodfield Estates	Single Family	Private	24.82 acre	ESA	1/1990
304	Hanson Elementary	Institutional	Public	16.13 acre	CAO	02/1993
305	Woodard Creek Inn	Multifamily	Private	6.80 acre	ESA	03/1989
306	Woodard Green	Single Family	Private	19.55 acre	ESA	12/1988
307	Landis Pointe	Multifamily	Private	5 acre	ESA	8/1990
308	Mother Josephs	Multifamily	Private	4.80 acre	ESA	03/1989
309	Hughes RUE	Single Family	Private	0.22 acre	CAO	09/1993
311	Grass Lake Bungalows	Multifamily	Private	1.69 acre	CAO	06/1994
312	Hawthorne RUE	Single Family	Private	3.80 acre	CAO	11/1993
313	Yauger Medical Park - Phase III	Commercial	Private	2.20 acre	ESA	03/1991
314	North Percival Stormwater Management Facility	Stormwater Facility	Public	42 acre	CAO	04/1999
315	South Puget Sound CC - Phase II	Institutional	Public	21 acre	ESA	05/1991
316	Ashwood Downs	Multifamily	Private	5.46 acre	CAO	04/1994
317	Devon Place	Single Family	Private	14.25 acre	ESA	03/1991

ID #	Project Name	Development Type	Project Ownership	Project Size	Review Standard	Application Date
318	St. Francis House	Multifamily	Private	3.78 acre	CAO	02/1996
319	Creekwood PRD	Multifamily	Private	13.40 acre	ESA	05/1986
320	Heritage Park	Park/Golf Course	Public	32.60 acre	CAO	07/1997
321	Ashbury Heights	Multifamily	Private	2.87 acre	CAO	02/1990
322	Barington Heights	Single Family	Private	9.36 acre	ESA	07/1991
323	South Puget Sound CC - Mottman Pond	Stormwater Facility	Public	0.50 acre	CAO	08/1997
324	Harrison Avenue Widening - Phase I	Road/Bridge	Public	5.20 acre	CAO	03/1999
401	Schoro - Large Lot	Single Family	Private	66 acre	ESA	08/1993
402	J.B.T. - Deschutes - Large Lot	Single Family	Private	50 acre	ESA	05/1993
403	J.B.T. - Vail Cut-Off Road - Large Lot	Single Family	Private	40 acre	ESA	11/1992
404	Richie Brothers - Parking Facility	Industrial	Private	22.98 acre	ESA	11/1993
405	David Lapp - Large Lot	Single Family	Private	40 acre	ESA	08/1992
406	Springer Lake Trails - Phase 3	Single Family	Private	55.50 acre	ESA	06/1995
407	Black Lake Blvd Widening	Road/Bridge	Public	9.71 acre	ESA	1/1991
408	Yelm Highway Widening	Road/Bridge	Public	5.69 acre	ESA	4/1992
409	Eldon Bell - Large Lot	Single Family	Private	195 acre	ESA	03/1991
410	Hawks Prairie Road Widening	Road/Bridge	Public	5.33 acre	CAO	8/1994
411	Bigelow Park	Single Family	Private	37.90acre	ESA	07/1990
412	Tumwater Gardens	Industrial	Private	39.50 acre	ESA	02/1993
413	Richie Brothers - Equipment Storage Yard	Industrial	Private	31.39 acre	ESA	12/1990
414	Chambers Creek	Multifamily	Private	23.88 acre	CAO	02/1994
415	Rainier Road Widening	Road/Bridge	Public	7.27 acre	CAO	11/1994
416	South Bay Fire Station	Institutional	Public	5 acre	CAO	04/1995
417	Brandt RUE	Single Family	Private	4.88 acre	CAO	03/1996

ID #	Project Name	Development Type	Project Ownership	Project Size	Review Standard	Application Date
418	Christy/Clauson RUE	Single Family	Private	32.50 acre	CAO	09/1998
419	Jacobs RUE	Commercial	Private	0.59 acre	CAO	11/1997
420	Shiplely RUE	Single Family	Private	0.28 acre	CAO	02/1997
421	Gerhard RUE	Single Family	Private	3.30 acre	CAO	04/1994
422	Sjodin RUE	Single Family	Private	1.70 acre	CAO	03/1998
423	Remington Ridge	Multifamily	Private	60 acre	ESA	02/1993
424	Black Hawk	Single Family	Private	25 acre	ESA	03/1991
425	Deschutes Ridge Golf Club Estates - Phase I	Single Family	Private	57.18 acre	ESA	07/1990
426	Sergeant - Large Lot	Single Family	Private	10 acre	CAO	02/1994
427	The Farm at South Bay	Single Family	Private	34.51 acre	CAO	12/1995
428	Kirby - Large Lot	Single Family	Private	22.35 acre	CAO	07/1994
429	North Fork Timber Company - Large Lot	Single Family	Private	62.24 acre	ESA	01/1991
430	Creekside Meadows - Division 1 & 2	Single Family	Private	44 acre	ESA	04/1990
432	Holly Woods	Single Family	Private	146 acre	ESA	07/1986
433	Ski View Estates	Single Family	Private	76.51 acre	ESA	09/1989
434	Cedrona	Single Family	Private	78.30 acre	ESA	07/1990
435	Nisqually Bridge Replacement	Road/Bridge	Private	1.34 acre	CAO	10/1994
436	McElfresh Road Bridge Replacement	Road/Bridge	Public		CAO	4/1994
439	Wheeler - Large Lot	Single Family	Private	30 acre	ESA	07/1991
441	High Tech Farms	Single Family	Private	317 acre	ESA	08/1989
443	Giacomini Ski Lake	Other	Private	48 acre	ESA	02/1990
447	Woodard Place	Single Family	Private	32.10 acre	ESA	12/1987
450	ORV Park New Bridge	Park/Golf Course	Public		CAO	01/1996
451	Indian Summer Golf and Country Club	Park/Golf Course	Private	463 acre	ESA	3/1990

ID #	Project Name	Development Type	Project Ownership	Project Size	Review Standard	Application Date
452	Bell - Large Lot	Single Family	Private	37.70 acre	ESA	11/1990
454	McLane Point	Single Family	Private	28.22 acre	CAO	04/1994
455	Swanson - Large Lot	Single Family	Private	45 acre	CAO	04/1994
456	Kenneydell County Park	Park/Golf Course	Private	18 acre	CAO	5/1993
457	The Hamptons	Single Family	Private	8.80 acre	CAO	10/1995
458	Pleasant Glade Ranch	Single Family	Private	27.88 acre	CAO	1/1998

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Report 2: Project Location

ID #	Project Name	Jurisdiction	WRIA	Watershed	Basin	Water Body
101	Willows Crossing	Lacey	Deschutes	Henderson Inlet	Woodland Creek	Long Lake
102	Lake Hills	Lacey	Deschutes	Henderson Inlet	Woodland Creek	Southwick Lake
103	Martin Village	Lacey	Deschutes	Henderson Inlet	Woodland Creek	Woodland Creek
104	Martin Way - Sewer Pump Station	Lacey	Deschutes	Henderson Inlet	Woodland Creek	Woodland Creek
105	Rosewood	Lacey	Deschutes	Henderson Inlet	Woodland Creek	
106	Continental Crest	Lacey	Deschutes	Henderson Inlet	Woodland Creek	
107	Meridian Campus Golf Course	Lacey	Deschutes	Henderson Inlet	Woodland Creek/Nisqually Reach	
108	Meadow Lake	Lacey	Deschutes	Henderson Inlet	Woodland Creek	Long Lake
109	Woodland Creek - Stormwater Treatment Facility	Lacey	Deschutes	Henderson Inlet	Woodland Creek	Woodland Creek
110	Washington Natural Gas Pipeline - Phase II	Lacey	Deschutes	Deschutes River	Chambers Creek	Chambers Lake
111	Ruddell Road Stormwater Treatment Facility	Lacey	Deschutes	Henderson Inlet	Woodland Creek	Hicks Lake
112	Hawks Prairie Planned Community Culvert	Lacey	Deschutes	Nisqually River	Nisqually Reach	
114	Campus Green	Lacey	Deschutes	Nisqually River	Nisqually Reach	
115	Ivy Hill	Lacey	Deschutes	Henderson Inlet	Woodland Creek	Southwick Lake
116	Hawks Prairie Golf Course	Lacey	Nisqually	Nisqually River	Nisqually Reach	

ID #	Project Name	Jurisdiction	WRIA	Watershed	Basin	Water Body
117	Chehalis Western Trail - Phase I	Lacey	Deschutes	Henderson Inlet & Deschutes River	Chambers Creek	
118	Woodland Creek Estates	Lacey	Deschutes	Henderson Inlet	Woodland Creek	
120	Nguyen RUE	Lacey	Deschutes	Henderson Inlet	Woodland	
201	Lakeside Estates	Tumwater	Deschutes	Deschutes River	Percival Creek	Trosper Lake
202	Silver Oaks	Tumwater	Deschutes	Deschutes River	Deschutes River	
203	Silver Ridge	Tumwater	Deschutes	Deschutes River	Deschutes River	
204	Southwood	Tumwater	Upper Chehalis	Deschutes River	Black Lake	
205	Streamland Estates	Tumwater	Deschutes	Deschutes River	Percival Creek	Percival Creek
206	Simmons Mill	Tumwater	Deschutes	Deschutes River	Percival Creek	
207	Lake Park Drive SW	Tumwater	Deschutes	Deschutes River	Deschutes River	Barnes Lake
208	Grant Court	Tumwater	Deschutes	Deschutes River		
209	Pioneer Park	Tumwater	Deschutes	Deschutes River	Deschutes River	Deschutes River
210	Cleveland Avenue	Tumwater	Deschutes	Deschutes River	Percival Creek	
211	Mega Foods Storm Pond	Tumwater	Deschutes	Deschutes River	Percival Creek	
212	Mottman Business Park	Tumwater	Deschutes	Deschutes River	Percival Creek	
301	Home Depot	Olympia	Deschutes	Henderson Inlet	Woodard Creek	
302	Westside Safeway	Olympia	Deschutes	Deschutes River	Percival Creek	

ID #	Project Name	Jurisdiction	WRIA	Watershed	Basin	Water Body
303	Woodfield Estates	Olympia	Deschutes	Deschutes River	Chamber Creek	
304	Hanson Elementary	Olympia	Deschutes	Eld Inlet	Green Cove Creek	
305	Woodard Creek Inn	Olympia	Deschutes	Henderson Inlet	Woodard Creek	
306	Woodard Green	Olympia	Deschutes	Henderson Inlet	Woodard Creek	
307	Landis Pointe	Olympia	Deschutes	Henderson Inlet	Woodard Creek	
308	Mother Josephs	Olympia	Deschutes	Henderson Inlet	Woodard Creek	
309	Hughes RUE	Olympia	Deschutes	Budd Inlet	Budd Inlet	
311	Grass Lake Bungalows	Olympia	Deschutes	Eld Inlet	Green Cove Creek	
312	Hawthorne RUE	Olympia	Deschutes	Budd Inlet	Mission Creek	
313	Yauger Medical Park - Phase III	Olympia	Deschutes	Deschutes River	Percival Creek	
314	North Percival Stormwater Management Facility	Olympia	Deschutes	Deschutes River	Percival Creek	
315	South Puget Sound CC - Phase II	Olympia	Deschutes	Deschutes River	Percival Creek	
316	Ashwood Downs	Olympia	Deschutes	Deschutes River	Chambers Creek	
317	Devon Place	Olympia	Deschutes	Budd Inlet	Mission Creek	
318	St. Francis House	Olympia	Deschutes	Henderson Inlet	Woodard Creek	
319	Creekwood PRD	Olympia	Deschutes	Budd Inlet	Indian Creek	Indian Creek
320	Heritage Park	Olympia	Deschutes	Deschutes River	Capitol Lake	Capitol Lake

ID #	Project Name	Jurisdiction	WRIA	Watershed	Basin	Water Body
321	Ashbury Heights	Olympia	Deschutes	Budd Inlet	Budd Inlet	
322	Barington Heights	Olympia	Deschutes	Budd Inlet	Mission Creek	
323	South Puget Sound CC - Mottman Pond	Olympia	Deschutes	Deschutes River	Percival Creek	
324	Harrison Avenue Widening - Phase I	Olympia	Deschutes	Deschutes River	Percival & Green Cove Creeks	
401	Schorno - Large Lot	Thurston County	Nisqually	Nisqually River	Yelm Creek	
402	J.B.T. - Deschutes - Large Lot	Thurston County	Deschutes	Deschutes River	Deschutes River	Deschutes River
403	J.B.T. - Vail Cut-Off Road - Large Lot	Thurston County	Deschutes	Deschutes River	Deschutes River	Deschutes River
404	Richie Brothers - Parking Facility	Thurston County	Upper Chehalis	Black River	Beaver Creek	Beaver Creek
405	David Lapp - Large Lot	Thurston County	Upper Chehalis	Black River	Dempsey Creek	Stoney Creek
406	Springer Lake Trails - Phase 3	Thurston County	Upper Chehalis	Black River	Salmon Creek	
407	Black Lake Blvd Widening	Thurston County	Upper Chehalis	Deschutes River	Black Lake	Balck Lake
408	Yelm Highway Widening	Thurston County	Deschutes	Deschutes River	Chambers Creek	Chambers Creek
409	Eldon Bell - Large Lot	Thurston County	Upper Chehalis	Black River	Beaver Creek	
410	Hawks Prairie Road Widening	Thurston County	Deschutes	Henderson Inlet	Woodland Creek	
411	Bigelow Park	Thurston County	Deschutes	Black River	Indian Creek	
412	Tumwater Gardens	Thurston County	Upper Chehalis	Deschutes River	Black lake	
413	Richie Brothers - Equipment Storage Yard	Thurston County	Upper Chehalis	Black River	Beaver Creek	

ID #	Project Name	Jurisdiction	WRIA	Watershed	Basin	Water Body
414	Chambers Creek	Thurston County	Deschutes	Deschutes River	Chambers Creek	Chambers Creek
415	Rainier Road Widening	Thurston County	Deschutes	Deschutes River	Chambers Creek	
416	South Bay Fire Station	Thurston County	Deschutes	Henderson Inlet	Woodard Creek	
417	Brandt RUE	Thurston County	Kennedy Goldsborough	Eld Inlet	Eld Inlet	Eld Inlet
418	Christy/Clauson RUE	Thurston County	Deschutes	Deschutes River	Percival Creek	
419	Jacobs RUE	Thurston County	Nisqually	Nisqually River	McAllister Creek	McAllister Creek
420	Shipley RUE	Thurston County	Deschutes	Deschutes River	Deschutes River	
421	Gerhard RUE	Thurston County	Deschutes	Eld Inlet	Eld Inlet	
422	Sjodin RUE	Thurston County	Deschutes	Eld Inlet	Shoreline of Mud Bay	
423	Remington Ridge	Thurston County	Upper Chehalis	Black River	Bloom Ditch	
424	Black Hawk	Thurston County	Upper Chehalis	Budd Inlet	Black Lake	
425	Deschutes Ridge Golf Club Estates - Phase I	Thurston County	Deschutes	Deschutes River	Deschutes River	
426	Sergeant - Large Lot	Thurston County	Kennedy Goldsborough	Totten Inlet	Tottem Inlet	
427	The Farm at South Bay	Thurston County	Deschutes	Henderson Inlet	Woodard Creek	
428	Kirby - Large Lot	Thurston County	Upper Chehalis	Chehalis River	Lincoln Creek	
429	North Fork Timber Company - Large Lot	Thurston County	Upper Chehalis	Black River	Mima Creek	
430	Creekside Meadows - Division 1 & 2	Thurston County	Upper Chehalis	Chehalis River	Scatter Creek	

ID #	Project Name	Jurisdiction	WRIA	Watershed	Basin	Water Body
432	Holly Woods	Thurston County	Deschutes	Henderson Inlet	Woodland Creek	Woodland Creek
433	Ski View Estates	Thurston County	Upper Chehalis	Black River	Salmon Creek	
434	Cedrona	Thurston County	Deschutes	Eld Inlet	Green Cove Creek	
435	Nisqually Bridge Replacement	Thurston County	Nisqually	Nisqually River	Nisqually River	Nisqually River
436	McElfresh Road Bridge Replacement	Thurston County	Upper Chehalis	Skookumchuck River	Coffee Creek	Coffee Creek
439	Wheeler - Large Lot	Thurston County	Upper Chehalis	Black River	Beaver Creek	
441	High Tech Farms	Thurston County	Upper Chehalis	Black River	Salmon Creek	
443	Giacomini Ski Lake	Thurston County	Upper Chehalis	Black River	Black River	
447	Woodard Place	Thurston County	Deschutes	Henderson Inlet	Woodland Creek	Woodard Creek
450	ORV Park New Bridge	Thurston County	Upper Chehalis	Chambers	Porter Creek	
451	Indian Summer Golf and Country Club	Thurston County	Deschutes	Deschutes River	Chambers Creek	Bordeaux Mill Pond
452	Bell - Large Lot	Thurston County	Upper Chehalis	Black River	Beaver Creek	
454	McLane Point	Thurston County	Deschutes	Eld Inlet	Mud Bay	
455	Swanson - Large Lot	Thurston County	Deschutes	Eld Inlet	McLane Creek	
456	Kenneydell County Park	Thurston County	Upper Chehalis	Deschutes River	Black lake	Black Lake
457	The Hamptons	Thurston County	Deschutes	Deschutes River	Chambers Creek	Chambers Creek
458	Pleasant Glade Ranch	Thurston County	Deschutes	Henderson Inlet	Woodland Creek	Woodland Creek

Report 3: Local Permit Type

ID #	Project name	Subdivision	PRD/ PUD	Large Lot	Short Plat	CUP/ SUP	SDP	Building Permit	Grading Permit	RUE	Other
101	Willows Crossing	X									
102	Lake Hills	X									
103	Martin Village							X			
104	Martin Way - Sewer Pump Station					X					
105	Rosewood	X									
106	Continental Crest	X									
107	Meridian Campus Golf Course					X					
108	Meadow Lake	X									
109	Woodland Creek - Stormwater Treatment Facility								X		
110	Washington Natural Gas Pipeline - Phase II						X		X		
111	Ruddell Road Stormwater Treatment Facility								X		
112	Hawks Prairie Planned Community Culvert	X									
114	Campus Green	X									
115	Ivy Hill	X									
116	Hawks Prairie Golf Course					X					
117	Chehalis Western Trail - Phase I					X	X				
118	Woodland Creek Estates	X									
120	Nguyen RUE									X	
201	Lakeside Estates	X					X				
202	Silver Oaks	X									

ID #	Project name	Subdivision	PRD/ PUD	Large Lot	Short Plat	CUP/ SUP	SDP	Building Permit	Grading Permit	RUE	Other
203	Silver Ridge	X									
204	Southwood	X									
205	Streamland Estates	X									
206	Simmons Mill		X								
207	Lake Park Drive SW				X						
208	Grant Court	X									
209	Pioneer Park						X				
210	Cleveland Avenue								X		
211	Mega Foods Storm Pond								X		
212	Mottman Business Park	X									
301	Home Depot							X			
302	Westside Safeway							X			
303	Woodfield Estates	X									
304	Hanson Elementary					X					
305	Woodard Creek Inn							X			
306	Woodard Green	X									
307	Landis Pointe							X			
308	Mother Josephs							X			
309	Hughes RUE							X		X	
311	Grass Lake Bungalows				X						
312	Hawthorne RUE							X		X	
313	Yauger Medical Park - Phase III							X			

ID #	Project name	Subdivision	PRD/ PUD	Large Lot	Short Plat	CUP/ SUP	SDP	Building Permit	Grading Permit	RUE	Other
314	North Percival Stormwater Management Facility						X		X		
315	South Puget Sound CC - Phase II					X					
316	Ashwood Downs							X			
317	Devon Place	X									
318	St. Francis House							X			
319	Creekwood PRD		X								
320	Heritage Park						X				
321	Ashbury Heights	X									
322	Barington Heights	X									
323	South Puget Sound CC - Mottman Pond					X					
324	Harrison Avenue Widening - Phase I					X	X				
401	Schorno - Large Lot			X							
402	J.B.T. - Deschutes - Large Lot			X							
403	J.B.T. - Vail Cut-Off Road - Large Lot			X							
404	Richie Brothers - Parking Facility								X		
405	David Lapp - Large Lot			X							
406	Springer Lake Trails - Phase 3			X							
407	Black Lake Blvd Widening						X				
408	Yelm Highway Widening										
409	Eldon Bell - Large Lot			X							
410	Hawks Prairie Road Widening								X		
411	Bigelow Park	X									

ID #	Project name	Subdivision	PRD/ PUD	Large Lot	Short Plat	CUP/ SUP	SDP	Building Permit	Grading Permit	RUE	Other
412	Tumwater Gardens			X							
413	Richie Brothers - Equipment Storage Yard								X		
414	Chambers Creek		X								
415	Rainier Road Widening								X		
416	South Bay Fire Station					X					
417	Brandt RUE										X
418	Christy/Clauson RUE							X			X
419	Jacobs RUE						X				X
420	Shipleigh RUE							X			X
421	Gerhard RUE							X			X
422	Sjodin RUE										X
423	Remington Ridge		X								
424	Black Hawk	X									
425	Deschutes Ridge Golf Club Estates - Phase I	X									
426	Sergeant - Large Lot			X							
427	The Farm at South Bay	X									
428	Kirby - Large Lot			X							
429	North Fork Timber Company - Large Lot			X							
430	Creekside Meadows - Division 1 & 2	X									
432	Holly Woods	X									
433	Ski View Estates	X									
434	Cedrona	X									

ID #	Project name	Subdivision	PRD/ PUD	Large Lot	Short Plat	CUP/ SUP	SDP	Building Permit	Grading Permit	RUE	Other
435	Nisqually Bridge Replacement						X				
436	McElfresh Road Bridge Replacement								X		
439	Wheeler - Large Lot			X							
441	High Tech Farms			X							
443	Giacomini Ski Lake						X		X		
447	Woodard Place	X									
450	ORV Park New Bridge							X			
451	Indian Summer Golf and Country Club					X					
452	Bell - Large Lot			X							
454	McLane Point		X								
455	Swanson - Large Lot			X							
456	Kenneydell County Park					X	X				
457	The Hamptons		X								
458	Pleasant Glade Ranch	X									
Totals:		31	6	14	2	11	12	15	12	9	0

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Report 4: Federal or State Permit Type

ID #	Project Name	Corps 404	Ecology 401	Fisheries HPA	JARPA
111	Ruddell Road Stormwater Treatment Facility	X	X		
117	Chehalis Western Trail - Phase I	X		X	X
205	Streamland Estates	X		X	
314	North Percival Stormwater Management Facility	X	X	X	
315	South Puget Sound CC - Phase II			X	
320	Heritage Park	X	X	X	X
406	Springer Lake Trails - Phase 3			X	
407	Black Lake Blvd Widening			X	
408	Yelm Highway Widening	X		X	
409	Eldon Bell - Large Lot			X	
414	Chambers Creek			X	
415	Rainier Road Widening	X		X	
416	South Bay Fire Station			X	
428	Kirby - Large Lot			X	
435	Nisqually Bridge Replacement	X	X	X	X
436	McElfresh Road Bridge Replacement			X	
439	Wheeler - Large Lot			X	
450	ORV Park New Bridge			X	
455	Swanson - Large Lot			X	
456	Kenneydell County Park	X		X	

ID #	Project Name	Corps 404	Ecology 401	Fisheries HPA	JARPA
		Corps 404	Ecology 401	Fisheries HPA	JARPA
		Totals: 9	4	19	3

Report 5: Shoreline, Wetland or Stream Projects

ID #	Project Name	Shoreline Jurisdiction	Wetland	Wetland Buffer	Stream	Stream Buffer
101	Willows Crossing		X	X		
102	Lake Hills	X	X	X		
103	Martin Village		X	X		
104	Martin Way - Sewer Pump Station				X	X
105	Rosewood		X	X		
106	Continental Crest		X	X		
107	Meridian Campus Golf Course		X	X		
108	Meadow Lake	X	X	X		
109	Woodland Creek - Stormwater Treatment Facility		X	X		
110	Washington Natural Gas Pipeline - Phase II		X	X		
111	Ruddell Road Stormwater Treatment Facility	X	X	X		
112	Hawks Prairie Planned Community Culvert		X	X	X	X
114	Campus Green		X	X		
115	Ivy Hill		X	X		
116	Hawks Prairie Golf Course		X	X		
117	Chehalis Western Trail - Phase I	X	X	X	X	X
118	Woodland Creek Estates		X	X		
120	Nguyen RUE	X	X	X		
201	Lakeside Estates	X	X	X		
202	Silver Oaks		X	X		

ID #	Project Name	Shoreline Jurisdiction	Wetland	Wetland Buffer	Stream	Stream Buffer
203	Silver Ridge		X	X		
204	Southwood		X	X		
205	Streamland Estates		X	X		
206	Simmons Mill		X	X		
207	Lake Park Drive SW		X	X		
208	Grant Court		X	X		
209	Pioneer Park	X	X	X	X	X
210	Cleveland Avenue		X	X		
211	Mega Foods Storm Pond		X	X		
212	Mottman Business Park		X	X		
301	Home Depot		X	X		
302	Westside Safeway		X	X		
303	Woodfield Estates	X	X	X		
304	Hanson Elementary		X	X		
305	Woodard Creek Inn		X	X		
306	Woodard Green		X	X		
307	Landis Pointe		X	X		
308	Mother Josephs		X	X		
309	Hughes RUE		X	X	X	X
311	Grass Lake Bungalows		X	X	X	X
312	Hawthorne RUE		X	X		
313	Yauger Medical Park - Phase III		X	X		

ID #	Project Name	Shoreline Jurisdiction	Wetland	Wetland Buffer	Stream	Stream Buffer
314	North Percival Stormwater Management Facility	X	X	X	X	X
315	South Puget Sound CC - Phase II				X	
316	Ashwood Downs		X	X		
317	Devon Place				X	X
318	St. Francis House		X	X		
319	Creekwood PRD		X	X	X	
320	Heritage Park	X	X	X		
321	Ashbury Heights		X	X	X	X
322	Barington Heights		X	X		
323	South Puget Sound CC - Mottman Pond		X	X		
324	Harrison Avenue Widening - Phase I	X	X	X	X	
401	Schorno - Large Lot		X	X		
402	J.B.T. - Deschutes - Large Lot	X			X	X
403	J.B.T. - Vail Cut-Off Road - Large Lot	X	X	X		
404	Richie Brothers - Parking Facility		X	X	X	
405	David Lapp - Large Lot				X	X
406	Springer Lake Trails - Phase 3		X	X	X	X
407	Black Lake Blvd Widening		X	X		
408	Yelm Highway Widening		X	X	X	X
409	Eldon Bell - Large Lot		X	X		
410	Hawks Prairie Road Widening		X	X		
411	Bigelow Park		X	X		

ID #	Project Name	Shoreline Jurisdiction	Wetland	Wetland Buffer	Stream	Stream Buffer
412	Tumwater Gardens		X	X		
413	Richie Brothers - Equipment Storage Yard	X	X	X	X	X
414	Chambers Creek				X	X
415	Rainier Road Widening		X	X	X	
416	South Bay Fire Station		X	X		
417	Brandt RUE		X	X		
418	Christy/Clauson RUE		X	X		
419	Jacobs RUE	X	X	X	X	X
420	Shipley RUE	X			X	X
421	Gerhard RUE		X	X	X	X
422	Sjodin RUE	X	X	X	X	X
423	Remington Ridge		X	X		
424	Black Hawk		X	X		
425	Deschutes Ridge Golf Club Estates - Phase I	X			X	X
426	Sergeant - Large Lot	X			X	X
427	The Farm at South Bay		X	X		
428	Kirby - Large Lot				X	X
429	North Fork Timber Company - Large Lot		X	X	X	X
430	Creekside Meadows - Division 1 & 2	X	X	X		
432	Holly Woods	X	X	X	X	X
433	Ski View Estates		X	X		
434	Cedrona		X	X		

ID #	Project Name	Shoreline Jurisdiction	Wetland	Wetland Buffer	Stream	Stream Buffer
435	Nisqually Bridge Replacement	X	X	X	X	X
436	McElfresh Road Bridge Replacement		X	X	X	X
439	Wheeler - Large Lot		X	X		
441	High Tech Farms		X	X		
443	Giacomini Ski Lake	X	X	X		
447	Woodard Place		X	X	X	X
450	ORV Park New Bridge		X	X	X	X
451	Indian Summer Golf and Country Club		X	X	X	
452	Bell - Large Lot		X	X		
454	McLane Point	X	X	X		
455	Swanson - Large Lot		X	X	X	
456	Kenneydell County Park	X	X	X	X	X
457	The Hamptons				X	X
458	Pleasant Glade Ranch		X	X	X	X
		Shoreline Jurisdiction	Wetland	Wetland Buffer	Stream	Stream Buffer
Totals:		25	89	89	38	31

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Report 6: Shoreline Environments

ID #	Project Name	Natural	Conservancy	Suburban	Rural	Urban	Special Area Management
102	Lake Hills		X				
108	Meadow Lake		X		X		
111	Ruddell Road Stormwater Treatment Facility		X				
117	Chehalis Western Trail - Phase I		X			X	
120	Nguyen RUE		X				
201	Lakeside Estates			X			
209	Pioneer Park		X		X		
303	Woodfield Estates		X				
314	North Percival Stormwater Management Facility						X
320	Heritage Park		X			X	
324	Harrison Avenue Widening - Phase I				X		
402	J.B.T. - Deschutes - Large Lot		X				
403	J.B.T. - Vail Cut-Off Road - Large Lot		X				
413	Richie Brothers - Equipment Storage Yard		X				
419	Jacobs RUE				X		
420	Shiplely RUE		X				
422	Sjodin RUE		X				
425	Deschutes Ridge Golf Club Estates - Phase I		X				
426	Sergeant - Large Lot		X				
430	Creekside Meadows - Division 1 & 2		X				
432	Holly Woods		X				

ID #	Project Name	Natural	Conservancy	Suburban	Rural	Urban	Special Area Management
435	Nisqually Bridge Replacement		X		X		
443	Giacomini Ski Lake		X				
454	McLane Point		X				
456	Kenneydell County Park		X				
Totals:		0	21	1	5	2	1

Report 7: Wetland Buffers

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
101	Willows Crossing	1/2	200	X					
		3	100	X					
102	Lake Hills	Unclassified		X	200				X
103	Martin Village	2	200		100		X	100	X
105	Rosewood	3	100	X					
106	Continental Crest	4	50				X	storm H2O	X

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
107	Meridian Campus Golf Course	3	50			X			
108	Meadow Lake	Unclassified			100		X		X
		Unclassified			50	X			
109	Woodland Creek - Stormwater Treatment Facility	NA			NA				
110	Washington Natural Gas Pipeline - Phase II	1	200	X					
		4	25	X					
		4	25	X					
		2	100	X					
		2	100	X					
111	Ruddell Road Stormwater Treatment Facility	2	100				X	fill	X

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
112	Hawks Prairie Planned Community Culvert	2	100	X					
		2	100	X					
114	Campus Green	2	200	X					
115	Ivy Hill	2	200	X					
116	Hawks Prairie Golf Course	4	25	X					X
		3	50	X					
		3	100		50		X	50	
		2/3	100	X					
		2	100	X					
117	Chehalis Western Trail - Phase I	2	100	X					
		1	200	X					
		4	25	X					
		4	25	X					
		2	100	X					

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
118	Woodland Creek Estates	3	100	X					
120	Nguyen RUE	2	200		160		X	40	X
201	Lakeside Estates	2	100				X	unknown	X
202	Silver Oaks	2	100	X					
203	Silver Ridge	3	100	X					

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
204	Southwood	2	100		75		X	25	X
205	Streamland Estates	2	100	X					X
206	Simmons Mill	2	200	X					
207	Lake Park Drive SW	2	100			X			X
208	Grant Court	3	50		43		X	13%	X

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
209	Pioneer Park	Unclassified		X	150				X
		Unclassified			0		X		
		Unclassified		X	100				
210	Cleveland Avenue	3	100		50		X	50	X
211	Mega Foods Storm Pond	2	200		100		X	100	
212	Mottman Business Park	3	100		20		X	80	X
		3	100	X					
301	Home Depot	2	200			X			

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
302	Westside Safeway	2	200			X			
303	Woodfield Estates	NA	100		60		X	40	
304	Hanson Elementary	3	100			X			X
		3	100	X					
305	Woodard Creek Inn	NA		X	100				
306	Woodard Green	NA		X	100				

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
307	Landis Pointe	NA		X	100				
308	Mother Josephs	NA		X	100				
309	Hughes RUE	3	100		80		X	20	
311	Grass Lake Bungalows	2	200		100		X	100	
312	Hawthorne RUE	2	200		50		X	150	

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
313	Yauger Medical Park - Phase III	NA	100		57.5		X	42.5	
314	North Percival Stormwater Management Facility	3	100		100		X	storm H2O	X
316	Ashwood Downs	4	50		25		X	25	X
318	St. Francis House	2	200	X					
319	Creekwood PRD	NA		X	50				

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
320	Heritage Park	3	100	X					X
		3	100	X					
		2	100		NA		X		
		3	100	X					
321	Ashbury Heights	3	100	X					
322	Barington Heights	NA	25	X					
323	South Puget Sound CC - Mottman Pond	3	100		0		X	100	X
324	Harrison Avenue Widening - Phase I	2	200		0		X	200	X
		2	200		0		X	200	

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
401	Schorno - Large Lot	2		X	100				
		3		X	50				
		3		X	50				
		3		X	50				
403	J.B.T. - Vail Cut-Off Road - Large Lot	2		X	100				
		3		X	50				
		3		X	50				
		2		X	100				
404	Richie Brothers - Parking Facility	2	100		75		X	25	X
406	Springer Lake Trails - Phase 3	1	200	X					
407	Black Lake Blvd Widening	Unclassified	NA						X

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
408	Yelm Highway Widening	Unclassified	NA						X
409	Eldon Bell - Large Lot	2		X	100				
		2		X	100				
		2		X	100				
		3		X	50				
		3		X	50				
410	Hawks Prairie Road Widening	2	200					fill	X
		3	100	X					
		3	100	X					
		3	100	X					
411	Bigelow Park	Unclassified		X	100				
412	Tumwater Gardens	3	100		50		X	50	X
		2	200		100		X	100	

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
413	Richie Brothers - Equipment Storage Yard	Unclassified	NA		0		X		X
415	Rainier Road Widening	2	200	X				fill	X
		2	200						
		2	200	X					
		2	200	X					
		3	100	X					
416	South Bay Fire Station	3	100		50		X	50	X
417	Brandt RUE	2	100		33		X	67	
418	Christy/Clauson RUE	2	100	X					

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
419	Jacobs RUE	3	100		50		X	50	
421	Gerhard RUE	2	100		10		X	90	
422	Sjodin RUE	2	200		10		X	190	X
		2	200		25		X	175	
423	Remington Ridge	2		X	100				
424	Black Hawk	Unclassified		X	100				X

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
427	The Farm at South Bay	3	100	X					
429	North Fork Timber Company - Large Lot	Unclassified		X	75				
430	Creekside Meadows - Division 1 & 2	Unclassified		X	100				
432	Holly Woods	Unclassified		X	100				
433	Ski View Estates	Unclassified		X	50				X

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
434	Cedrona	Unclassified		X	100				
435	Nisqually Bridge Replacement	2	100					fill	X
436	McElfresh Road Bridge Replacement	2	100					fill	X
439	Wheeler - Large Lot	Unclassified		X	100				X
		Unclassified		X	100				
		Unclassified		X	50				
		Unclassified		X	100				
441	High Tech Farms	Unclassified		X	100				

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
443	Giacomini Ski Lake	Unclassified			NA		X	fill	X
447	Woodard Place	Unclassified		X	50				
450	ORV Park New Bridge	2	200	X					
		2	200	X					
		3	100	X					
451	Indian Summer Golf and Country Club	Unclassified		X	100				X
		Unclassified		X	100				
		Unclassified		X	100				
452	Bell - Large Lot	Unclassified		X	200				X

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
454	McLane Point	2	100					fill	X
455	Swanson - Large Lot	Unclassified			NA				
456	Kenneydell County Park	2	100					storm H2O	X
458	Pleasant Glade Ranch	2	200		75 avg		X	125	X

ID #	Project name	Wetland Rating	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
		Rating = 1	Rating = 2	Rating = 3	Rating = 4	Rating = 5	Rating = NA	Rating = Unclassified	
Totals:		4	54	36	7	0	9	28	

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Report 8: Stream Buffers

ID #	Project name	Stream Class	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
104	Martin Way - Sewer Pump Station	Unclassified			NA				
112	Hawks Prairie Planned Community Culvert	5	50	X					
117	Chehalis Western Trail - Phase I	3	200	X					
209	Pioneer Park	Unclassified		X	200				
309	Hughes RUE	4	50	X					
311	Grass Lake Bungalows	5	NA						
314	North Percival Stormwater Management Facility	NA			NA				
315	South Puget Sound CC - Phase II	Unclassified			NA				
317	Devon Place	Unclassified		X	50				
319	Creekwood PRD	Unclassified			NA				
321	Ashbury Heights	4	50	X					

ID #	Project name	Stream Class	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
324	Harrison Avenue Widening - Phase I	NA			NA				X
402	J.B.T. - Deschutes - Large Lot	Unclassified		X	200				
404	Richie Brothers - Parking Facility	Unclassified			NA				
405	David Lapp - Large Lot	Unclassified		X	50				
406	Springer Lake Trails - Phase 3	Unclassified		X	50				
408	Yelm Highway Widening	Unclassified			NA				X
413	Richie Brothers - Equipment Storage Yard	Unclassified		X	100				X
414	Chambers Creek	3	100	X				crossing	X
415	Rainier Road Widening	3	NA		NA				
419	Jacobs RUE	1	100	X					
		5	25	X					
420	Shipley RUE	1	100		60		X	40	
421	Gerhard RUE	3	100		60		X	40	
		5	25			X			

ID #	Project name	Stream Class	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
422	Sjodin RUE	5	25	X					
425	Deschutes Ridge Golf Club Estates - Phase I	Unclassified		X	200				
426	Sergeant - Large Lot	5	50	X					
428	Kirby - Large Lot	5	25	X					
429	North Fork Timber Company - Large Lot	Unclassified		X	75				
432	Holly Woods	Unclassified			NA				
435	Nisqually Bridge Replacement	1	100		NA				X
436	McElfresh Road Bridge Replacement	NA	NA		NA				X
447	Woodard Place	Unclassified		X	50				
450	ORV Park New Bridge	3	100		25		X	75	X
451	Indian Summer Golf and Country Club	Unclassified			NA				
455	Swanson - Large Lot	Unclassified			NA				

ID #	Project name	Stream Class	Standard Buffer	Buffer Met Standard	Permitted Buffer	Buffer Averaged	Buffer Reduced	Buffer Reduction	Mitigation Required
456	Kenneydell County Park	3	100	X					
457	The Hamptons	3	100		50		X	50	X
458	Pleasant Glade Ranch	1	100	X					
Totals:		4	0	7	2	7	3	17	

Report 9: Wetland and Stream Buffer Protection Technique

ID #	Project Name	Wetland	Stream	CAO/Open Spac Tract	Property Easement	Deed Restriction	Permit Condition	Unknown	Other
101	Willows Crossing	X				X			
102	Lake Hills	X		X					
103	Martin Village	X					X		
104	Martin Way - Sewer Pump Station		X						Right of way
105	Rosewood	X		X					
106	Continental Crest	X							Drainage detention pond/open space
107	Meridian Campus Golf Course	X					X		
108	Meadow Lake	X		X	X				
109	Woodland Creek - Stormwater Treatment Facility	X							Created wetland for stormwater treatment before entering stream.
110	Washington Natural Gas Pipeline - Phase II	X							Right-of-way
111	Ruddell Road Stormwater Treatment Facility	X							City purchase of one neighboring lot.
112	Hawks Prairie Planned Community Culvert	X	X	X	X				
114	Campus Green	X					X		

ID #	Project Name	Wetland	Stream	CAO/Open Spac Tract	Property Easement	Deed Restriction	Permit Condition	Unknown	Other
115	Ivy Hill	X		X					
116	Hawks Prairie Golf Course	X				X			
117	Chehalis Western Trail - Phase I	X	X	X					Right-of-way
118	Woodland Creek Estates	X		X					
120	Nguyen RUE	X			X				
201	Lakeside Estates	X		X	X				
202	Silver Oaks	X			X				
203	Silver Ridge	X		X					
204	Southwood	X		X	X				
205	Streamland Estates	X		X					
206	Simmons Mill	X		X					
207	Lake Park Drive SW	X			X				
208	Grant Court	X			X				
209	Pioneer Park	X	X				X		
210	Cleveland Avenue	X						X	

ID #	Project Name	Wetland	Stream	CAO/Open Spac Tract	Property Easement	Deed Restriction	Permit Condition	Unknown	Other
211	Mega Foods Storm Pond	X			X				
212	Mottman Business Park	X		X	X				
301	Home Depot	X					X		
302	Westside Safeway	X					X		
303	Woodfield Estates	X		X					
304	Hanson Elementary	X					X		
305	Woodard Creek Inn	X					X		
306	Woodard Green	X		X					
307	Landis Pointe	X					X		
308	Mother Josephs	X					X		
309	Hughes RUE	X	X				X		
311	Grass Lake Bungalows	X	X	X					
312	Hawthorne RUE	X					X		
313	Yauger Medical Park - Phase III	X					X		
314	North Percival Stormwater Management Facility	X	X	X			X		

ID #	Project Name	Wetland	Stream	CAO/Open Spac Tract	Property Easement	Deed Restriction	Permit Condition	Unknown	Other
315	South Puget Sound CC - Phase II		X					X	
316	Ashwood Downs	X					X		
317	Devon Place		X	X					Fence on Private lot
318	St. Francis House	X		X					
319	Creekwood PRD	X	X	X					
320	Heritage Park	X		X			X		
321	Ashbury Heights	X	X	X					
322	Barington Heights	X		X					
323	South Puget Sound CC - Mottman Pond	X					X		
324	Harrison Avenue Widening - Phase I	X							
401	Schorno - Large Lot	X					X		
402	J.B.T. - Deschutes - Large Lot		X				X		
403	J.B.T. - Vail Cut-Off Road - Large Lot	X					X		
404	Richie Brothers - Parking Facility	X	X					X	
405	David Lapp - Large Lot		X				X		

ID #	Project Name	Wetland	Stream	CAO/Open Spac Tract	Property Easement	Deed Restriction	Permit Condition	Unknown	Other
406	Springer Lake Trails - Phase 3	X	X					X	
407	Black Lake Blvd Widening	X						X	
408	Yelm Highway Widening	X	X					X	
409	Eldon Bell - Large Lot	X					X		
410	Hawks Prairie Road Widening	X						X	
411	Bigelow Park	X		X					
412	Tumwater Gardens	X						X	
413	Richie Brothers - Equipment Storage Yard	X	X					X	
414	Chambers Creek		X	X					
415	Rainier Road Widening	X	X					X	
416	South Bay Fire Station	X		X					
417	Brandt RUE	X					X		
418	Christy/Clauson RUE	X				X			
419	Jacobs RUE	X	X				X		
420	Shipley RUE		X				X		

ID #	Project Name	Wetland	Stream	CAO/Open Spac Tract	Property Easement	Deed Restriction	Permit Condition	Unknown	Other
421	Gerhard RUE	X	X				X		
422	Sjodin RUE	X	X				X		
423	Remington Ridge	X		X					
424	Black Hawk	X		X					
425	Deschutes Ridge Golf Club Estates - Phase I		X	X					
426	Sergeant - Large Lot		X				X		
427	The Farm at South Bay	X		X			X		
428	Kirby - Large Lot		X					X	
429	North Fork Timber Company - Large Lot	X	X				X		
430	Creekside Meadows - Division 1 & 2	X		X			X		
432	Holly Woods	X	X	X			X		Adjacent wetland purchased as County Park.
433	Ski View Estates	X		X					
434	Cedrona	X		X					
435	Nisqually Bridge Replacement	X	X					X	Government
436	McElfresh Road Bridge Replacement	X	X		X				

ID #	Project Name	Wetland	Stream	CAO/Open Spac Tract	Property Easement	Deed Restriction	Permit Condition	Unknown	Other
439	Wheeler - Large Lot	X					X		
441	High Tech Farms	X					X		
443	Giacomini Ski Lake	X							
447	Woodard Place	X	X				X		
450	ORV Park New Bridge	X	X					X	
451	Indian Summer Golf and Country Club	X	X						
452	Bell - Large Lot	X					X		
454	McLane Point	X						X	
455	Swanson - Large Lot	X	X						
456	Kenneydell County Park	X	X						County Park
457	The Hamptons		X	X					
458	Pleasant Glade Ranch	X	X		X			X	
Totals:				35	11	3	36	15	10

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Report 10: Wetland and Stream Buffer Managers

ID #	Project name	Wetland	Stream	Property Owner	Homeowners Association	Land Trust	Government	Other
101	Willows Crossing	X						Unclear
102	Lake Hills	X		X			X	
103	Martin Village	X		X				
104	Martin Way - Sewer Pump Station		X				X	
105	Rosewood	X		X			X	
106	Continental Crest	X			X			
107	Meridian Campus Golf Course	X		X				
108	Meadow Lake	X		X			X	
109	Woodland Creek - Stormwater Treatment Facility	X						Created wetland for stormwater treatment before
110	Washington Natural Gas Pipeline - Phase II	X					X	
111	Ruddell Road Stormwater Treatment Facility	X					X	
112	Hawks Prairie Planned Community Culvert	X	X					Developer
114	Campus Green	X		X				
115	Ivy Hill	X		X	X		X	
116	Hawks Prairie Golf Course	X		X				
117	Chehalis Western Trail - Phase I	X	X				X	
118	Woodland Creek Estates	X						Unknown at this time
120	Nguyen RUE	X		X				
201	Lakeside Estates	X		X	X			

ID #	Project name	Wetland	Stream	Property Owner	Homeowners Association	Land Trust	Government	Other
202	Silver Oaks	X			X			
203	Silver Ridge	X			X			
204	Southwood	X		X	X			
205	Streamland Estates	X			X			
206	Simmons Mill	X			X			
207	Lake Park Drive SW	X		X				
208	Grant Court	X		X				
209	Pioneer Park	X	X				X	
210	Cleveland Avenue	X		X				
211	Mega Foods Storm Pond	X		X				
212	Mottman Business Park	X			X			
301	Home Depot	X		X				
302	Westside Safeway	X		X				
303	Woodfield Estates	X			X			
304	Hanson Elementary	X		X				
305	Woodard Creek Inn	X		X				
306	Woodard Green	X			X			
307	Landis Pointe	X		X				
308	Mother Josephs	X		X				
309	Hughes RUE	X	X	X				Project located within buffer
311	Grass Lake Bungalows	X	X	X				

ID #	Project name	Wetland	Stream	Property Owner	Homeowners Association	Land Trust	Government	Other
312	Hawthorne RUE	X		X				Project located within buffer
313	Yauger Medical Park - Phase III	X		X				
314	North Percival Stormwater Management Facility	X	X				X	
315	South Puget Sound CC - Phase II		X					
316	Ashwood Downs	X		X				
317	Devon Place		X	X	X			
318	St. Francis House	X		X				
319	Creekwood PRD	X	X		X			
320	Heritage Park	X		X				
321	Ashbury Heights	X	X		X			
322	Barington Heights	X			X			
323	South Puget Sound CC - Mottman Pond	X		X				
324	Harrison Avenue Widening - Phase I	X					X	
401	Schorno - Large Lot	X		X				
402	J.B.T. - Deschutes - Large Lot		X		X			
403	J.B.T. - Vail Cut-Off Road - Large Lot	X		X				
404	Richie Brothers - Parking Facility	X	X					
405	David Lapp - Large Lot		X	X				
406	Springer Lake Trails - Phase 3	X	X					
407	Black Lake Blvd Widening	X						
408	Yelm Highway Widening	X	X					

ID #	Project name	Wetland	Stream	Property Owner	Homeowners Association	Land Trust	Government	Other
409	Eldon Bell - Large Lot	X		X				
410	Hawks Prairie Road Widening	X						
411	Bigelow Park	X			X			
412	Tumwater Gardens	X						
413	Richie Brothers - Equipment Storage Yard	X	X					
414	Chambers Creek		X		X			
415	Rainier Road Widening	X	X				X	
416	South Bay Fire Station	X					X	
417	Brandt RUE	X		X				
418	Christy/Clauson RUE	X			X			
419	Jacobs RUE	X	X	X				
420	ShipleY RUE		X	X				
421	Gerhard RUE	X	X	X				
422	Sjodin RUE	X	X	X				
423	Remington Ridge	X			X			
424	Black Hawk	X			X			
425	Deschutes Ridge Golf Club Estates - Phase I		X	X				
426	Sergeant - Large Lot		X	X				
427	The Farm at South Bay	X		X	X			
428	Kirby - Large Lot		X	X				
429	North Fork Timber Company - Large Lot	X	X	X				

ID #	Project name	Wetland	Stream	Property Owner	Homeowners Association	Land Trust	Government	Other
430	Creekside Meadows - Division 1 & 2	X		X	X			
432	Holly Woods	X	X	X	X			
433	Ski View Estates	X			X			
434	Cedrona	X						Government or consevation group
435	Nisqually Bridge Replacement	X	X				X	
436	McElfresh Road Bridge Replacement	X	X				X	
439	Wheeler - Large Lot	X		X				
441	High Tech Farms	X		X				
443	Giacomini Ski Lake	X						
447	Woodard Place	X	X	X				
450	ORV Park New Bridge	X	X				X	
451	Indian Summer Golf and Country Club	X	X	X	X			
452	Bell - Large Lot	X		X				
454	McLane Point	X						
455	Swanson - Large Lot	X	X					
456	Kenneydell County Park	X	X				X	
457	The Hamptons		X		X			
458	Pleasant Glade Ranch	X	X	X				USDA Wetlands Reserve Prog, if approved
Totals:				51	27	0	17	8

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Report 11: Mitigation and Site Characteristics

ID #	Project name	Wetland	Stream	Enhancement	Creation	Mitigation Area in acres	On-site	Off-site <1/4 mile	Off-site <1 mile	Off-site other
102	Lake Hills	X		X			X			
106	Continental Crest	X		X			X			
108	Meadow Lake	X		X			X			
111	Ruddell Road Stormwater Treatment Facility	X		X	X	0.63 acre	X			
116	Hawks Prairie Golf Course	X		X	X	1.26 acre	X			
120	Nguyen RUE	X		X		0.16 acre	X			
201	Lakeside Estates	X		X			X			
204	Southwood	X		X						
205	Streamland Estates	X		X			X			
207	Lake Park Drive SW	X		X			X			
208	Grant Court	X		X			X			
209	Pioneer Park	X	X	X	X		X			
210	Cleveland Avenue	X		X		0.53 acre				X
212	Mottman Business Park	X		X	X	0.65 acre	X			
304	Hanson Elementary	X			X	0.77 acre	X			
314	North Percival Stormwater Management Facility	X	X	X	X	15 acre	X			
316	Ashwood Downs	X		X						
320	Heritage Park	X		X	X	9.83 acre			X	
323	South Puget Sound CC - Mottman Pond	X			X	0.30 acre	X			

ID #	Project name	Wetland	Stream	Enhancement	Creation	Mitigation Area in acres	On-site	Off-site <1/4 mile	Off-site <1 mile	Off-site other
324	Harrison Avenue Widening - Phase I	X		X	X	0.5 acre	X			
404	Richie Brothers - Parking Facility	X	X	X			X			
407	Black Lake Blvd Widening	X		X		0.5 acre	X			
408	Yelm Highway Widening	X	X	X			X			
410	Hawks Prairie Road Widening	X			X	0.93 acre		X		
412	Tumwater Gardens	X			X	0.16 acre				
413	Richie Brothers - Equipment Storage Yard	X	X	X		2.75 acre				
414	Chambers Creek		X	X			X			
415	Rainier Road Widening	X	X	X		1.87 acre	X			
416	South Bay Fire Station	X		X			X			
422	Sjodin RUE	X	X	X		0.27 acre	X			
433	Ski View Estates	X		X	X		X			
435	Nisqually Bridge Replacement	X	X	X	X	0.34 acre	X			
436	McElfresh Road Bridge Replacement	X	X	X		0.4 acre	X			
439	Wheeler - Large Lot	X		X			X			
443	Giacomini Ski Lake	X			X	1 acre	X			
450	ORV Park New Bridge	X	X	X			X			
451	Indian Summer Golf and Country Club	X	X	X			X			
452	Bell - Large Lot	X		X			X			
454	McLane Point	X		X			X			
456	Kenneydell County Park	X	X	X		0.47 acre	X			

ID #	Project name	Wetland	Stream	Enhancement	Creation	Mitigation Area in acres	On-site	Off-site <1/4 mile	Off-site <1 mile	Off-site other
457	The Hamptons		X	X			X			
458	Pleasant Glade Ranch	X	X	X			X			
				Enhancement	Creation		On-site	Off-site <1/4 mile	Off-site <1 mile	Off-site other
Totals:				37	14		35	1	1	1

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Report 12: On-Site Protection Techniques

ID #	Project name	Wetland	Stream	Fence	Sign	Other
101	Willows Crossing	X		X	X	
103	Martin Village	X		X		Stormwater treatment
104	Martin Way - Sewer Pump Station		X			Security system in case of failure
105	Rosewood	X		X	X	
106	Continental Crest	X		X	X	
107	Meridian Campus Golf Course	X			X	
110	Washington Natural Gas Pipeline - Phase II	X			X	Restore after disturbance
112	Hawks Prairie Planned Community Culvert	X	X		X	
115	Ivy Hill	X		X	X	
116	Hawks Prairie Golf Course	X			X	
117	Chehalis Western Trail - Phase I	X	X	X	X	No formal mitigation required
201	Lakeside Estates	X		X	X	
204	Southwood	X			X	
205	Streamland Estates	X		X	X	
208	Grant Court	X		X	X	
212	Mottman Business Park	X			X	
301	Home Depot	X		X		12' wide groved access road
302	Westside Safeway	X		X		Landscaping disturbed areas, fence along buffer.
311	Grass Lake Bungalows	X	X	X	X	Extraordinary Storm Water Measures
317	Devon Place		X	X		

ID #	Project name	Wetland	Stream	Fence	Sign	Other
318	St. Francis House	X			X	Wetland boundary to be shown on all site, grading
408	Yelm Highway Widening	X	X	X		
409	Eldon Bell - Large Lot	X				Unknown
410	Hawks Prairie Road Widening	X		X		
413	Richie Brothers - Equipment Storage Yard	X	X			Enhance stream riparian zone
415	Rainier Road Widening	X	X	X		enhance stream riparian
416	South Bay Fire Station	X		X		
418	Christy/Clauson RUE	X		X		
419	Jacobs RUE	X	X			Letter of Credit for 120% \$ of mitigation
422	Sjodin RUE	X	X	X	X	Remove slash and noxious weeds
424	Black Hawk	X				Unknown
430	Creekside Meadows - Division 1 & 2	X			X	
432	Holly Woods	X	X			Swales and vegetation drainage
436	McElfresh Road Bridge Replacement	X	X	X		
439	Wheeler - Large Lot	X				Remove structures in buffer
450	ORV Park New Bridge	X	X		X	
454	McLane Point	X				If road is not improved, no mitigation
456	Kenneydell County Park	X	X			Route stormwater away from w/l & remove blgs from
457	The Hamptons		X		X	
458	Pleasant Glade Ranch	X	X		X	May in the future be in the USDA Wetlands Reserve Program.
				Fence	Sign	Other
Totals:				20	21	19

Report 13: Buffer and Mitigation Site Inspection

ID #	Project Name	Not a Permit Requirement	Cannot be Determined	During Construction	Immediately after Construction	Within First Year	Annual Inspection	Enforcement Action
101	Willows Crossing	X						
102	Lake Hills	X						
103	Martin Village			X				X
104	Martin Way - Sewer Pump Station	X						
105	Rosewood	X						
106	Continental Crest						X	
107	Meridian Campus Golf Course	X						
108	Meadow Lake	X						
109	Woodland Creek - Stormwater Treatment Facility	X						
110	Washington Natural Gas Pipeline - Phase II			X	X			X
111	Ruddell Road Stormwater Treatment Facility						X	
112	Hawks Prairie Planned Community Culvert	X						
114	Campus Green	X						
115	Ivy Hill	X						
116	Hawks Prairie Golf Course			X	X		X	
117	Chehalis Western Trail - Phase I	X						
118	Woodland Creek Estates	X						
120	Nguyen RUE							
201	Lakeside Estates			X				
202	Silver Oaks	X						
203	Silver Ridge	X						
204	Southwood			X				

ID #	Project Name	Not a Permit Requirement	Cannot be Determined	During Construction	Immediately after Construction	Within First Year	Annual Inspection	Enforcement Action
205	Streamland Estates			X				
206	Simmons Mill	X						
207	Lake Park Drive SW			X	X		X	
208	Grant Court	X						
209	Pioneer Park		X					
210	Cleveland Avenue						X	
211	Mega Foods Storm Pond	X						
212	Mottman Business Park				X		X	
301	Home Depot				X			
302	Westside Safeway	X						
303	Woodfield Estates	X						
304	Hanson Elementary		X					
305	Woodard Creek Inn	X						
306	Woodard Green	X						
307	Landis Pointe	X						
308	Mother Josephs	X						
309	Hughes RUE	X						
311	Grass Lake Bungalows	X						
312	Hawthorne RUE	X						
313	Yauger Medical Park - Phase III	X						
314	North Percival Stormwater Management Facility			X	X	X	X	
316	Ashwood Downs	X						
317	Devon Place	X						
318	St. Francis House	X						

ID #	Project Name	Not a Permit Requirement	Cannot be Determined	During Construction	Immediately after Construction	Within First Year	Annual Inspection	Enforcement Action
319	Creekwood PRD	X						
320	Heritage Park							
321	Ashbury Heights	X						X
322	Barington Heights	X						
323	South Puget Sound CC - Mottman Pond	X						
324	Harrison Avenue Widening - Phase I							
401	Schorno - Large Lot	X						
402	J.B.T. - Deschutes - Large Lot	X						
403	J.B.T. - Vail Cut-Off Road - Large Lot	X						
404	Richie Brothers - Parking Facility						X	
405	David Lapp - Large Lot	X						
406	Springer Lake Trails - Phase 3	X						
407	Black Lake Blvd Widening						X	
408	Yelm Highway Widening						X	
409	Eldon Bell - Large Lot	X						
410	Hawks Prairie Road Widening				X	X	X	
411	Bigelow Park	X						
412	Tumwater Gardens						X	
413	Richie Brothers - Equipment Storage Yard			X			X	
414	Chambers Creek				X		X	
415	Rainier Road Widening						X	
416	South Bay Fire Station						X	
417	Brandt RUE	X						
418	Christy/Clauson RUE	X						

ID #	Project Name	Not a Permit Requirement	Cannot be Determined	During Construction	Immediately after Construction	Within First Year	Annual Inspection	Enforcement Action
419	Jacobs RUE	X						
420	ShipleY RUE	X						
421	Gerhard RUE	X						
422	Sjodin RUE							
423	Remington Ridge	X						
424	Black Hawk				X		X	
425	Deschutes Ridge Golf Club Estates - Phase I	X						
426	Sergeant - Large Lot	X						
427	The Farm at South Bay	X						
428	Kirby - Large Lot	X						
429	North Fork Timber Company - Large Lot	X						
430	Creekside Meadows - Division 1 & 2	X						
432	Holly Woods	X						
433	Ski View Estates			X	X		X	
434	Cedrona	X						
435	Nisqually Bridge Replacement						X	
436	McElfresh Road Bridge Replacement						X	
439	Wheeler - Large Lot						X	
441	High Tech Farms	X						
443	Giacomini Ski Lake				X		X	
447	Woodard Place	X						
450	ORV Park New Bridge					X	X	
451	Indian Summer Golf and Country Club		X					
452	Bell - Large Lot	X						

ID #	Project Name	Not a Permit Requirement	Cannot be Determined	During Construction	Immediately after Construction	Within First Year	Annual Inspection	Enforcement Action
454	McLane Point			X	X		X	
455	Swanson - Large Lot	X						
456	Kenneydell County Park					X	X	
457	The Hamptons						X	
458	Pleasant Glade Ranch				X		X	
Totals:		60	3	11	13	4	27	3

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Report 14: Post Development Monitoring

ID #	Project Name	Report Required	Report Submitted	Report Prepared by:	Report Reviewed by:			Other
					Local	State	Federal	
110	Washington Natural Gas Pipeline - Phase	X	X	Local Government	City of Lacey			
116	Hawks Prairie Golf Course	X		Consultant	City of Lacey			Involved Resource Agencies
207	Lake Park Drive SW	X		Consultant	Appropriate Regulator			Consultant/Developer.
210	Cleveland Avenue	X		Consultant	City of Tumwater			
212	Mottman Business Park	X		Consultant	City of Tumwater			Applicant
304	Hanson Elementary	X						
314	North Percival Stormwater Management	X	X	Local Government	SDP	401	Army Corps 404	
320	Heritage Park	X		Consultant	City of Olympia- SDP	Ecology - 401	Army Corps 404	
324	Harrison Avenue Widening - Phase I	X		Consultant	City of Olympia			
404	Richie Brothers - Parking Facility	X	X					
407	Black Lake Blvd Widening	X	X	Local Government			Army Corps of Engine	
408	Yelm Highway Widening	X	X	Local Government	Local Government			
410	Hawks Prairie Road Widening	X	X	Consultant	Thurston County			
413	Richie Brothers - Equipment Storage Yar	X			Hearing Examiner			
414	Chambers Creek	X			Appropriate Regulator			Applicant

ID #	Project Name	Report Required	Report Submitted	Report Prepared by:	Report Reviewed by:			Other
					Local	State	Federal	
415	Rainier Road Widening	X	X	Local Government	Local Government			
433	Ski View Estates	X		Consultant	City of Olympia	Ecology		Homeowners
435	Nisqually Bridge Replacement	X	X	Local Government				
436	McElfresh Road Bridge Replacement	X	X	Local Government	Local Government			
439	Wheeler - Large Lot	X						
443	Giacomini Ski Lake	X			Thurston County	Ecology		Applicant
450	ORV Park New Bridge	X						
454	McLane Point	X		Consultant	Thurston County			
456	Kenneydell County Park	X		Thurston County P	Local Agencies			
457	The Hamptons	X						
Totals:		25	9					

Report 15: Reasonable Use Exemption

ID #	Project name	Jurisdiction	Review Standard	Wetland	Stream	Wetland Mitigation Required	Stream Mitigation Required
120	Nguyen RUE	Lacey	CAO	X		X	
309	Hughes RUE	Olympia	CAO	X	X		
312	Hawthorne RUE	Olympia	CAO	X			
417	Brandt RUE	Thurston County	CAO	X			
418	Christy/Clauson RUE	Thurston County	CAO	X			
419	Jacobs RUE	Thurston County	CAO	X	X		
420	ShipleY RUE	Thurston County	CAO		X		
421	Gerhard RUE	Thurston County	CAO	X	X		
422	Sjodin RUE	Thurston County	CAO	X	X	X	

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Report 16: Site Visit - Buffer Information

ID #	Project name	Wetland	Stream	Buffer width looks similar to permit		Present on Site			Wildlife observed on site
				Yes	No	Sign	Fence	Buffer	
101	Willows Crossing	X		X		X	X	X	
107	Meridian Campus Golf Course	X		X		X		X	
108	Meadow Lake	X		X		X		X	Doe & fawn
109	Woodland Creek - Stormwater Treatment Facility	X		X			X	X	
114	Campus Green	X		X		X	X	X	
116	Hawks Prairie Golf Course	X		X				X	grouse or quail, are where deer had been bedding
120	Nguyen RUE	X			X				
203	Silver Ridge	X		X		X	X	X	
204	Southwood	X		X		X		X	
205	Streamland Estates	X		X		X		X	
208	Grant Court	X		X		X		X	
306	Woodard Green	X		X				X	

ID #	Project name	Wetland	Stream	Buffer width looks similar to permit		Present on Site			Wildlife observed on site
				Yes	No	Sign	Fence	Buffer	
311	Grass Lake Bungalows	X	X	X			X	X	
312	Hawthorne RUE	X		X				X	
314	North Percival Stormwater Management Facility	X	X	X				X	
317	Devon Place		X	X			X	X	
318	St. Francis House	X		X		X		X	
322	Barington Heights	X		X				X	
324	Harrison Avenue Widening - Phase I	X		X		X	X	X	
403	J.B.T. - Vail Cut-Off Road - Large Lot	X		X				X	
404	Richie Brothers - Parking Facility	X	X	X				X	
414	Chambers Creek		X	X				X	Frog in ditch.
420	ShipleY RUE		X		X				
422	Sjodin RUE	X	X	X				X	
423	Remington Ridge	X		X				X	

ID #	Project name	Wetland	Stream	Buffer width looks similar to permit		Present on Site			Wildlife observed on site
				Yes	No	Sign	Fence	Buffer	
424	Black Hawk	X		X				X	
425	Deschutes Ridge Golf Club Estates - Phase I		X	X				X	
428	Kirby - Large Lot		X	X				X	
432	Holly Woods	X	X	X				X	
433	Ski View Estates	X		X				X	
435	Nisqually Bridge Replacement	X	X	X				X	
441	High Tech Farms	X		X				X	
450	ORV Park New Bridge	X	X	X				X	
452	Bell - Large Lot	X		X				X	
458	Pleasant Glade Ranch	X	X	X				X	

Buffer width looks similar to permit		Present on Site		
Yes	No	Sign	Fence	Buffer
33	2	10	7	33

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Report 17: Site Visit - Buffer Disturbance

ID #	Project name	Wetland	Stream	Impact	Buffer Disturbance			
					Paths	Mowing	Lawn Clippings	Other
101	Willows Crossing	X		Some	X			old sod
Disturbance comments:								
107	Meridian Campus Golf Course	X		Some				
Disturbance comments: Golfers retrieve balls from wetland area.								
108	Meadow Lake	X		Some		X	X	some dumping
Disturbance comments: Children use area. Homeowners self-police tree removal. Most of area fenced outside buffer. Mowing occurs in non-fenced areas.								
109	Woodland Creek - Stormwater Treatment Facility	X		Some	X			
Disturbance comments: Project is within stream buffer.								
114	Campus Green	X		Some	X			
Disturbance comments: Little bit (one instance noted) of tossing of materials over fence from subdivision side.								
116	Hawks Prairie Golf Course	X		Some		X	X	
Disturbance comments: Mowing of scott broom at edge of buffer, some grass clippings.								
120	Nguyen RUE	X		High				Approx. 10,600 sq ft of illegal fill and tree removal.
Disturbance comments: An additional 35' x 200' of buffer area was fill to expand yard and driveway.								

ID #	Project name	Wetland	Stream	Impact	Buffer Disturbance			
					Paths	Mowing	Lawn Clippings	Other
203	Silver Ridge	X		Some	X			
Disturbance comments:								
204	Southwood	X		Moderate			X	
Disturbance comments:		Approx. 50' x 50' area that received dumping of lawn clippings and landscape materials.						
205	Streamland Estates	X		Some	X		X	Edge of access road in buffer, this was prior to dev.
Disturbance comments:		Buffer was prior agricultural land, some lawn clipping dumping on the end of public access area from development to buffer.						
208	Grant Court	X		Some				
Disturbance comments:		Maybe kids playing.						
306	Woodard Green	X		Some				
Disturbance comments:		Some dumping, Children play.						
311	Grass Lake Bungalows	X	X	Some	X			
Disturbance comments:		Homeowners maintain trail and buffer. Stone animal decorations.						
312	Hawthorne RUE	X		Moderate				Dumping
Disturbance comments:		Illegal dumping done by neighboring construction.						
314	North Percival Stormwater Management Facility	X	X	Moderate	X			
Disturbance comments:		Paths & bird watching sites have been created.						

ID #	Project name	Wetland	Stream	Impact	Buffer Disturbance			
					Paths	Mowing	Lawn Clippings	Other
317	Devon Place		X	Some				
Disturbance comments:		Some dumping.						
318	St. Francis House	X		Some			X	
Disturbance comments:		Some lawn clippings.						
322	Barington Heights	X		N/A				
Disturbance comments:		Project not complete Possible wetland encroachment during construction.						
324	Harrison Avenue Widening - Phase I	X		Some				Dumping/garbage from road and Safeway.
Disturbance comments:		Shopping cart.						
403	J.B.T. - Vail Cut-Off Road - Large Lot	X		None				
Disturbance comments:		land undeveloped.						
404	Richie Brothers - Parking Facility	X	X	Some				few cut trees
Disturbance comments:								
414	Chambers Creek		X	Some	X		X	
Disturbance comments:		Paths, construction stormwater retention still in place, some dumping.						
420	Shipleigh RUE		X	High				Clearing of native trees & shrubs.
Disturbance comments:		20-30% of the original vegetation. One exempt structure within the buffer. "What can you do" Area has been mostly cleared.						

ID #	Project name	Wetland	Stream	Impact	Buffer Disturbance			
					Paths	Mowing	Lawn Clippings	Other
422	Sjodin RUE	X	X	None				
Disturbance comments:		Nature paths are in future plans. Adding more native species to site and removing blackberries.						
423	Remington Ridge	X		Some				
Disturbance comments:		Possible mowing along edge of stream buffer. Wetland buffer looks good. Homes on top of ridge well above wetland and buffer.						
424	Black Hawk	X		Some	X			
Disturbance comments:								
425	Deschutes Ridge Golf Club Estates - Phase I		X	N/A				
Disturbance comments:		Couldn't get close up to buffer from road, although it appears to be undisturbed. Must cross ag. Land to get to buffer. Hayfield next to river is historic agriculture use. Pre-date the subdivision.						
428	Kirby - Large Lot		X	Moderate				A bit of tree removal within buffer.
Disturbance comments:		According to owner (subdivider) the hired logger used bad practices. Trees most likely been taken from buffer. Culver intact but not well placed.						
432	Holly Woods	X	X	Some		X		
Disturbance comments:		Edge of buffer may be mowed grass.						
433	Ski View Estates	X		N/A				
Disturbance comments:		May be mowing. Appears relatively undisturbed from air photos.						
435	Nisqually Bridge Replacement	X	X	Some				fishing refuse.
Disturbance comments:		Created buffer is ripwrap. Public fishing area. Fishing gear and other garbage left behind.						

ID #	Project name	Wetland	Stream	Impact	Buffer Disturbance			
					Paths	Mowing	Lawn Clippings	Other
441	High Tech Farms	X		N/A				
Disturbance comments: Appears to be almost no disturbance, but access was not possible. Homes keep to front of lot and leave rest vegetated.								
450	ORV Park New Bridge	X	X	None				
Disturbance comments:								
452	Bell - Large Lot	X		Some	X			
Disturbance comments: pretty undisturbed.								
458	Pleasant Glade Ranch	X	X	Moderate				Fence that was allowing cow to graze within buffer.
Disturbance comments: Rail fence on two lots still extend into buffer (although buffer no longer enclosed). Well heads are on the buffer edge. Buffer has historically grazed, it was compromised even before the houses were built.								

Buffer Disturbance			
Paths	Mowing	Lawn Clippings	Other
10	3	6	11

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