An Assessment of Statewide Watershed Management Approaches

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OREGON SUMMARY

Background/Description

Oregon's Department of Environmental Quality (DEQ) is authorized to administer the NPDES permit program for industrial, municipal, and federal facilities. DEQ regulates approximately 600 municipal wastewater treatment plants and 223 industrial dischargers through individual permits. In addition, general permits cover discharges for over 1,300 facilities and stormwater management for over 1,400 facilities. Wetlands permits (under CWA section 404) are handled by the federal government with the Oregon State Lands Division implementing state sponsored wetlands laws. The state currently faces the fourth largest backlog of permits in the nation.

According to the states's 1998 305(b) water quality inventory, 74% of Oregon's rivers had good water quality that fully supported aquatic life uses, while 13,687 river miles and 30 lakes did not meet water quality standards. The 1998 approved 303(d) list contains 1,183 listed waters with 1,769 impairments covering 14,849 stream/creek/river/coastal miles and 239,381 acres. Temperature is the leading impairment, followed by habitat modification, bacteria, sedimentation, and others. The primary issue facing Oregon is the protection and restoration of native salmon stocks, which has caused the Endangered Species Act (ESA) to play a prominent role in the management of natural resources. Suspected causes of water quality and habitat degradation threatening salmon include poorly managed forestry practices, agricultural runoff, and hydromodification. These sources often manifest as higher stream temperatures causing listing under the CWA 303(d) process. Stormwater issues in urbanizing areas have also become a major threat to the restoration of estuarine areas. The complexities and differences across the two major federal laws influencing actions in the state, the Clean Water Act and the Endangered Species Act, have led to difficulties in coordinating watershed projects and accounting for results. Oregon also has vast expanses of federal lands further complicating management approaches.

B. Description of Statewide Watershed Management Approach

State Overview

Although unique watershed approaches are evident in nearly all state programs and local efforts, it is difficult to characterize exactly how Oregon implements the watershed approach. This section will provide a brief overview of the roles of each agency, as well as the primary drivers of action to protect and restore watersheds. It can safely be said that Oregon employs a multi-layered, multi-agency approach utilizing a combination of voluntary and regulatory methods aimed first and foremost at one resource - salmon.

Oregon Plan for Salmon and Watersheds.

The overall principles for watershed management are contained in the Oregon Plan for Salmon and Watersheds adopted in March 1997 by the state legislature. The Oregon Plan formulated by the Governor helps lay the groundwork for cooperation between agencies and local watershed councils. It provides the umbrella for a statewide organizational structure based on the local watershed councils. The Oregon Plan serves as a beacon bringing people and agencies together, increasing awareness, and providing the vision statements for watershed work across agencies, local governments, industries and citizens. Each agency, including DEQ, works with individual watershed councils. The Plan, does not, however, represent a universally agreed to, coherent framework for a well defined watershed approach in Oregon because some agency roles remain ill-defined and decisions are frequently made for reasons having little to do with the Oregon Plan. Some say the Oregon Plan was designed to avoid the listing of salmonoid species under ESA, but even though listing has occurred for some species, the Plan has nonetheless served to increase coordination and begin the process of accounting for results. There have been several iterations of the Oregon Plan, but fundamentally it is a series of documents of which the primary elements are: 1) state agency measures that specify activities that go above and beyond business as usual; 2) a commitment to enforcing existing environmental laws; 3) a commitment to monitor the implementation and effectiveness of all activities needed for restoration. Implementation was viewed as a means to comply with the CWA and ESA, and although some salmon species have been listed, the state generally views the Plan as a success. The outreach team for the Oregon Plan has been struggling with how to
timescales of improvements. The current outreach strategy is thought by some to lack coherence. For more information on the Oregon Plan, see www.oregon-plan.org

Governor's Watershed Enhancement Board (GWEB)

The Governor's Office has taken the lead on promoting and tracking the many concurrent Oregon efforts to address watershed management. Originally, OWEB was called the Governor's Watershed Enhancement Board (GWEB), which served as a forum for discussion of natural resource issues across jurisdictional lines. GWEB was created to facilitate discussion among agencies and as a forum to talk about issues on a watershed scale. Today OWEB has two primary functions: to 1) provide infrastructure, support, and funding for watershed councils and projects that will improve watershed conditions, and 2) provide guidance through technical assistance such as watershed assessment methodology, and monitoring protocols. First and foremost, OWEB is a grant-making agency with about $21 million in funds per year. OWEB provides funds for riparian restoration through a cooperative effort with the USDA (CREP). OWEB works cooperatively to fill natural resource data gaps not covered by other agencies or efforts. Current efforts include completing stream networks at 1:24,000 statewide and identifying anadromous fish distribution data at that scale. In Oregon, most agencies including OWEB, DEQ, and ODA operate as equals with similar powers bestowed by the Oregon legislature. Thus, long standing agencies are compelled to work with OWEB to implement their programs and support the Oregon Plan. In 1997, the formal passage of the Oregon Plan not only enhanced the credibility and prominence of local watershed councils, it also increased the expectation of accountability for agencies whose programs protect and restore salmon and watersheds. Many councils now work directly with local governments on issues such as land use and park planning as well as with Oregon state agencies to implement their programs (e.g., TMDLs). OWEB is attempting to use the Oregon Plan (and thus the CWA and ESA) as drivers

to spur citizen action. The often conflicting Acts, however, do not establish clear thresholds for stream health. OWEB has adopted a strategy of developing watershed plans from watershed assessments completed at a local level. The councils themselves do not have any regulatory or taxing authority, so their activities are based on voluntary participation of members. However, some of the participating agencies do have regulatory authority and use the council as a forum for their programs (e.g., TMDLs). For more information OWEB, see: www.oweb.state.or.us

Overview of DEQ Programs and the Watershed Approach

Although many agencies in Oregon, including DEQ and ODA, have formally adopted watershed approaches, each has its own view of how to manage such approaches. For example, ODA does not use actual watershed boundaries, but they rely heavily on the themes of the watershed approach in working directly with landowners. In DEQ, TMDLs are driving efforts to align programs around watersheds primarily due to the authority inherent in the plans. Everyone is trying to organize state agencies and local governments around watersheds. The fact that nearly all of the state agencies philosophically manage water resources around the theme of watersheds is important, though implementation is different within each. State agencies still have different jurisdictional areas and differing mandates, so the information sharing and consensus building aspects of watershed approaches are helping people to see the differences and similarities between their jurisdictions, roles and responsibilities. Within DEQ, the watershed approach is most evident within the TMDL program. TMDLs are serving as the means to integrate other programs in watersheds, but permits, 319 funding, monitoring, and others are not fully integrated presently. There remains some resistance to reorienting programs, especially permitting, on a watershed basis. The DEQ regions are decentralized so it has taken time to work through the buy in to the watershed approach for permitting. TMDLs are also most often identified as the most positive example of a watershed-based program, while NPDES permits and cross-agency coordination still create barriers to an integrated watershed approach. Overall, DEQ staff characterized the watershed approach as partly successful, having become totally integrated into TMDL development, but remaining less of a driver for other major water programs. The foremost benefit to date has been improved communication and information sharing across programs increasing the likelihood that all programs will be fully integrated with TMDL schedule in the future. The state has not aligned its monitoring or permitting schedules using a rotating basin approach, however, TMDLs are expected to take programs in that direction. DEQ believes that the TMDL watershed approach has improved the quality of NPDES permits by ensuring that up to date and accurate water quality data is available to permit writers. TMDLs are beginning to include all water quality programs, but currently the TMDL program does not represent a fully integrated rotating basin approach to watershed management.

Funding sources for statewide and local watershed efforts are widespread and include the Department of Fish and Wildlife, National Marine Fisheries Service (NMFS), Bonneville Power, Oregon Watershed Enhancement Board (OWEB), DEQ (through 319 and SRF) and the Oregon Department of Agriculture (ODA). Individual landowners and local governments play a large role in implementation with local councils (sponsored and funded through OWEB) setting the priorities and employing voluntary resources. Each individual council seeks their own funding; there is no coordination of funding allocations at the OWEB level. Local watershed

councils and water conservation districts lack base funding for coordinators and directors, and for evaluating the success or failure of their efforts.

The following table, organized by the general themes of the watershed approach, attempts to categorize the primary contributions of various agencies, councils, and others.

Watershed Theme
Lead Agencies
Methods
Education and
Awareness
OWEB
Publications, grants, Oregon Plan coordination
Partnerships and Coordination
OWEB
All state agencies
Publications, grants, Oregon Plan coordination
Increasing efforts to coordinate and integrate programs
Monitoring and Assessment
Northwest Forest Plan

Planning and Prioritization (Lead)
Overseeing the Oregon Plan
TMDLs species recovery plans
Lead Agencies
Funding and
Technical Assistance
All agencies
Watershed Council support
Limited funding for program-oriented activities
Implementation
Oregon Department of Agriculture (ODA)
Department of Forestry
Land Conservation and Development
Department of Transportation
Regulating operations including CAFOs
Regulating harvest and road building through permits
NPDES, SRF, 319
Regulating land use
Wetlands mitigation Evaluation
Oregon Plan
All agencies
Annual progress reports
Limited objective evaluations

Different agencies, and local stakeholders work at different watershed levels. TMDLs, for

example, are generally being completed at the sub-basin or 8 digit HUC level, while watershed councils typically operate on somewhat smaller scales ranging from the sub-basin level down to the 11 or 14 digit HUC scale. To further complicate matters, other efforts such as the Northwest Forest Plan and NEPs encompass multiple watershed units.

Conceptual Diagram of Agency Relationships

Implementation Status of Oregon Watershed Approaches

It is a time of transition for watershed management in Oregon. The state's approach is unique, comprehensive and challenging to all. Ensuring that all agencies manage their programs using the same geographic boundaries might help this transition. Without a doubt, the plight of salmon represents the rallying cry for taking action and the natural resource most often mentioned as the focal point of restoration and protection efforts. Most interviewees consider the Oregon Plan to be the key strategic driver of watershed activities within the state. The Oregon Plan serves as an umbrella for the various agencies and citizen-led efforts to support natural resources management on a watershed basis. EPA's policy and funding issues have led toward watershed approach in the program. DEQ's TMDL program includes ODA's SB 1010 program (to implement NPS control measures for agriculture) and is beginning to link to other action-oriented programs such as those of ODF. The efforts of DEQ, ODA and other state agencies coupled together with local watershed council input are the start of a well coordinated state/local/citizen water quality program for addressing watershed protection and restoration

In the introduction to the annual progress report (2001) for the Oregon Plan, the authors admit that, “There is no simple standard by which to measure progress. No state has ever an effort as comprehensive as the Oregon Plan. Implementation efforts are benefitting from increased spending and enhanced agency coordination, but many major programs, including TMDLs, are only beginning to have plans approved, so implementation may be many years away. DEQ personnel also noted that their agency lacks the methods to implement many of the restoration and protection efforts needed to improve water quality on a watershed basis. DEQ will rely heavily on other agencies (ODA, Forestry) and the changed behavior of Oregon's citizens. Since the development of TMDLs has just begun for DEQ, the next 10 years will reveal the success or failure of the TMDL program to drive the desired behaviors of other DEQ programs, of other agencies, and of citizens living in the watersheds.

II. Findings on State's Watershed Management Approach

A. Benefits, Successes and Accomplishments

TMDLs

From a DEQ perspective, the prominence of TMDLs and the anticipation of improved collaboration amongst both other DEQ programs and other state agency programs was the most often mentioned success. The foremost benefit to date has been improved communication and information sharing across programs increasing the likelihood that all programs will be fully integrated with the TMDL schedule in the future. Most state personnel believe TMDLs are a positive driver of the watershed approach, but that the future holds the most promising gains in

efficiency from better program integration and the implementation efforts of local watershed groups and other agencies. Currently, the primary aspect of that supports the watershed approach is that Oregon clusters its pollutants and impaired segments into basins for purposes of creating comprehensive TMDLs. This holistic approach is viewed as an internal success because it is not always accepted by other agencies or local stakeholders, but it is helping to integrate DEQ programs in watersheds. Holistic, interagency approaches work in some sub-basins, but not really in all of Oregon's (8 digit) watersheds. As far as implementation is concerned on large-scales, DEQ is concerned about not having the necessary resources and not being able to evaluate against the appropriate benchmarks. Watershed-based TMDLs are the most logical approach available according to DEQ staff because they consider much more than the specific reach that is listed by analyzing all pollutant sources in sub-basins. In summary, TMDLs embody geographically centered planning in Oregon, but as yet lack convincing evidence supporting improved coordination and integration across DEQ and other agency programs. The TMDL program is nearly synonymous with the watershed approach for DEQ. The strengths of the program include its locally-driven orientation, strong technology, load allocations based on land uses, and multi-parameter assessments.

Local Engagement:
Watershed councils and other local groups are making connections that state agencies, including DEQ, have been unable to tackle in the past. In many ways this is a huge educational process that produces great strides toward a better understanding of the issues at all levels of government, though some watershed councils are struggling with the issues and not doing as well as others. State agencies are committed to engaging local stakeholders and effecting appropriate local policy changes, but resources and time remain major constraints. OWEB has certainly set up a structure (the over 90 local watershed councils) that is useful for agencies as an effective tool for outreach and education. Since watershed councils are organized around specific geographic boundaries, agency programs and efforts to include local watershed stakeholders are benefitting from an alignment in those same watersheds. The councils are perceived by some as the primary driver of agency efforts to align by watersheds.

Coordination:
Coordination between DEQ and other state agencies has undoubtedly improved due to the widespread emphasis on watersheds. Through extensive coordination a more holistic vision for watershed management is becoming clear. The Governor's Office deserves much of the credit for the cooperative working relationship in the State. The state's emphasis on watershed approaches has forced agencies to work with citizens and each other in the implementation of their programs. DEQ, for example, feels that their foresight to avoid stepping on the toes of other agencies and reducing duplicative or contradictory work is improving. Using a watershed approach is also seen as a positive for ODA where districts have been able to link landowner actions to water quality objectives without requiring landowners and others to develop a thorough understanding of water quality law and programs. The multiple watershed approaches in use seem to provide a translation from policies to actions taken by those working on the ground.

Permits:
Issuing permits following the creation of watershed-based TMDLs has, and is expected to,

continue to improve the consistency among permits within a basin, the quality of individual permits, and allow for permit limits that better reflect conditions within basin. These improvements can be attributed to the more comprehensive assessments being performed as part process.

B. Issues, Challenges, and Barriers

Most staff interviewed tended to agree that Oregon has not adopted an ideal model for watershed management.

There is a tremendous amount of watershed activity, but much of it remains program or agency oriented, duplicative across multiple watershed levels, and disconnected from the desired environmental outcomes.

A leading advantage in the state is the high level support from the Governor's Office, OWEB and the watershed councils. This top down driver (which employs citizen-led councils) has encouraged many agencies to direct attention toward watersheds, yet the water quality agency, is lagging in its efforts to integrate all of its programs in watersheds. The factors inhibiting integration include the priority to complete TMDLs, conflicting guidance from EPA itself, a permit backlog, and the extensive amount of coordination required amongst agencies, business and citizens before actions can be taken.

Lack of Coordinated Implementation / Excessive Planning:

The public gets confused about why there are so many planning activities (e.g., TMDLs, SB 1010, ESA Recovery Planning, Local Initiatives). Most citizens want to see action. In order to demonstrate that restoration activities are happening, more funding is being given for on the ground projects, but evaluation of success is sparse as is the connection to the root causes of watershed impairments. Because of timelines, DEQ and ODA have been very focused on getting plans done and not on reflective integration of elements. Local restoration strategies based on coordinated assessments are also few and far between. Stakeholders have increasingly waited to take restoration activities while waiting for TMDLs to be completed. In summary, management approaches (at state agencies) are not addressing the root causes of watershed impairments causing programmatic spending to remain disconnected from the sources of watershed impairments. Restoration is occurring, but concurrent degradation of the same watershed may be happening at an even faster rate. In summary, restoration actions are prevalent throughout the state, but continuing management changes are needed to better address and prevent the root causes of degradation.

Differing Goals and Objectives:
Much of the recent integration and coordination between and amongst agencies has been orchestrated by the Governor's Office, however, major federal laws (CWA and ESA especially) have different goals. Water quality planning is leading to TMDLs that describe necessary actions to achieve standards, while ESA seeks to achieve population levels (for salmon) in the same rivers. Oregon must determine the suite of actions that will lead to the achievement of both goals while maximizing the use of scarce resources. The suite of actions must address land

use and behavioral change if prevention efforts and restoration actions are to ultimately be successful.

Land use:
Staff from all agencies hinted at disconnects between land use planning and watershed efforts, both those sponsored by OWEB and those carried out within agency programs. The Oregon Departments of Agriculture and Forestry and the State Lands Division were identified as having the most direct influence over land use practices (in addition to local and regional governments), but other agencies lack effective oversight. There seems to be a disconnect between the preventative strategies implicit to land use planning and the remedial strategies of the OWEB or DEQ. OWEB funds restoration projects fixing problems that have already occurred and DEQ focuses much of its efforts on water quality impairments, while the root causes of Oregon's watershed health issues are primarily habitat-oriented. OWEB funded councils are often focused on restoration activities, such as the development of TMDLs, rather than on the improvement of local zoning ordinances that could prevent future damages. Oregon may need to consider a more comprehensive land use approach to natural resource protection that is an integral part of its watershed strategies.

Behavior:
Oregon has a sophisticated technical assessment capability with sound scientific methods which is used to train watershed practitioners and to provide other technical assistance. The main issue preventing implementation is often local landowners not wanting to change their practices and not wanting to deal with legacy problems (such as riparian zones felled years ago or sediment already choking streambeds at their own expense. The collective personal choices of all citizens can also impede implementation of effective and lasting solutions. EPA might be able to help in this regard by providing financial incentives or directives to facilitate needed changes. Oregon, for example, could use EPA support to investigate the impacts of property rights on TMDL implementation. Too much measurement is required to determine the contribution of a particular landowner's problem to water quality degradation and to prove them responsible for implementation. Concern over the cost and implementation feasibility (for TMDLs) is high at the local level though not often considered within agencies.

Other issues:
Political landscape: A significant barrier in the state is the polarized political environment, which stems from many different socio-political and environmental issues (e.g., command and control aspects of ESA and CWA). The Healthy Stream Partnership (see "Other Programs" section below) advisory group, for example, has become very politicized. Political lobbyists have started to take control of the HSP advisory group. On the ground, rural landowners continue to fear federal command and control. They are scared of the ESA and CWA. Some believe the only way that OWEB and the Governor can effectively implement the priority actions identified by the CWA and ESA is through voluntary, incentive-driven measures (as opposed to further regulation).

Enforcement: The authority to enforce the rules is not always with DEQ (the Agency must go elsewhere, such as to the Department of State Lands (DSL), ODA, and ODF, which have the power to enforce. This is seen as a potential weakness of the TMDL program. The Oregon

Legislature has empowered agencies other than DEQ to enforce actions in watersheds.

Duplication of Efforts: Experience in Oregon has revealed that the decisions that work the best are those made by people who know each other sitting around the table. Since watershed groups often start from scratch, many groups unintentionally reinvent the watershed approach. OWEB attempts to bring their councils up to speed quickly, but all stakeholders need to understand how agencies and local governments operate and to work from the same set of assumptions. There has thus been some duplication of efforts. Watershed councils and (Soil and Water) Conservation Districts may, for example, grapple with the same issue independently.

Coordinated Funding: Locals clamor for it (more transparent grants), agencies resist it for a number of reasons. One stop shopping for grants and funding is problematic from a human and political standpoint as it reduces the odds of having all needed governmental staff at the table when decisions are being made. 319 money, for example, is one of the only carrots DEQ has to use with landowners. The grants help ensure that DEQ can build trusting relationships with landowners affected by DEQ programs. If all funding came from one source, individual agencies may lose their ties to landowners, businesses, and municipalities. There are also ongoing concerns about whether TMDLs are workable because of the need for implementation and its associated cost.

Holistic vs. Piecemeal: The issue of doing watershed management requirement-by-requirement, thus fixing single issues everywhere needs to be corrected. Watershed health has not been the ultimate goal of individual programs. The ESA program has made headway by looking at hydrology, water quality, and then biology, but limited connections exist between water quality and water quantity and habitat and land uses. NPDES: A major barrier in the NPDES program (4th worst backlog in the nation) was that the Oregon legislature did not approve requests for increases in wastewater resources or FTEs (to deal with the backlog and develop better permits). Another issue is the fact that the most environmentally important permit isn't always dealt with first, but rather eliminating the backlog is emphasized without regard to environmental risks. Some see the watershed approach (driven by TMDLs) as an enabler of better permits, while others feel that if permits are only revised based on the TMDL schedule, avoidable impairments will persist longer than necessary. In the past, complaints about the backlog have caused the knee jerk reactions to throw resources at eliminating the backlog. It is hoped that the TMDL driven watershed approach will serve to guide permit review and reissuance in a more balanced fashion going forward.

EPA staff support: EPA Region 10 has lost many key technical staff which has hindered the region's ability to review TMDLs expeditiously.

C. Coordination Across Programs and State Agencies

Improved coordination across programs and state agencies is hailed as a success in Oregon while recognition of limitations remain. Coordination is necessary and becoming more successful, but time-consuming in its initial stages. TMDLs are driving most of DEQ's internal water quality connections; the Oregon Plan is driving the rest. Some examples of improved coordination include: ODA is looking at SB1010 plans and how to revise them to meet TMDL requirements through communication with agricultural constituents. BLM and the Department

of Federal Lands work with DEQ to make sure their restoration plans fit with water quality plans. DEQ works with counties and cities to address urban NPS problems, including NPDES stormwater permits. The Department of Transportation is taking efforts to protect ESA threatened species and getting recognition for their riparian plans in TMDLs. For point sources, the plan is to complete the TMDL and then integrate wasteload allocations into NPDES permits one year after the TMDL is completed. Although Oregon has technically advanced and comprehensive monitoring and assessment programs, more coordination in this arena is necessary to avoid the duplication of monitoring efforts. Within ODA, duplication of effort with the existence of both OWEB watershed councils and Conservation Districts remains an issue. Because there isn't enough money to spend for Councils and Districts to do the same thing, members must work together to solve the problems faced by the agricultural community. They must also work out arrangement to communicate and coordinate with DEQ. DEQ's relationship with the Department of Forestry is improving after the signing of an MOU to assist each other and work together, as there is now an agreement with Forestry to determine how forest practices will need to be changed as a result of the TMDL process. The Forest Practices Act is thus seen as benefitting from the TMDL program.

1. Accountability

Accountability is thought to be a major flaw of Oregon's watershed approaches (no one is ultimately accountable for environmental results). In the most recent session of the legislature a bill was introduced to provide OWEB with additional resources for monitoring and reporting of watershed council results, but currently agencies are only responsible for their respective pieces of the watershed approach which creates incredible difficulties in assessing the effectiveness of watershed councils, interagency coordination, and overall structure of the watershed approach in Oregon. A possible solution suggested could be the formation of a coordinated evaluation method including all agencies (e.g., DEQ, ODA, OWEB, and others) using the Oregon Plan as the central framework. There is a great deal of common understanding that the watershed scale is most effective way of restoring ecosystems, but there is difficulty translating the concepts into on the ground work and evaluation.

D. State-Local Coordination and Public Involvement

Voluntary watershed councils, primary comprised of local citizens, have been the key factor influencing tighter agency coordination and collaboration in watersheds. The statewide approaches (e.g., Oregon Plan, Northwest Forest Plan), however, have often failed to include in a meaningful way cities and counties (and thus land use planning). Therefore, local governments may remain disconnected from some watershed planning efforts causing inefficiencies in carrying out the required activities. Aligning all state agencies in the same geographic area may be the key to overcoming this disconnect. DEQ is attempting to improve its outreach and implementation assistance by funding basin coordinators who are regional employees hired to facilitate the development and implementation of TMDLs.

The state sponsored watershed management process is based on local watershed councils. Most statewide and federal agency operations are not set up to participate / collaborate on a broadly based local watershed level (too taxing of their resources). So, for example, some watershed councils are involved in TMDL development, while others are not. The same can be said of council involvement in other agency programs (e.g., ODA's 1010 plans). Oregon has

undertaken an extensive outreach and education campaign regarding the plight of salmon and the health of the state's waters. Portland, for example, has put out a substantial amount of public communication through TV and radio outlets and information publications. This has resulted in a fairly sophisticated level of public awareness and interest in watershed efforts. Engaging the public in watershed management is largely handled by OWEB.

In summary, the level of public awareness and involvement seems extremely high in Oregon, but some interviewees remain skeptical about the coordination between local governments and state agencies. Capable and dynamic local leadership has been the key to successful watershed councils.

E. EPA Impacts, Barriers, and State Needs

Federal Statute Inconsistencies:
Oregon has struggled with the conflicting methods employed under the CWA and ESA to protect and restore watersheds and species. The Acts require separate planning processes (TMDLs and Species Recovery Plans), different tool sets (TMDLs, permits, and Habitat Conservation Plans) and different ecological endpoints (water quality and salmon). Interviewees suggested that a major improvement would require participation of several federal agencies to facilitate policy integration that would allow the OWEB watershed councils to become the focal point for one-stop shopping for water quality, environmental restoration, species recovery, and general watershed management. This would involve single grant source application and reporting (common timing, format, and information). There is also widespread recognition that fundamental changes in individual behavior and land use are required regardless of the federal statutes used in management.

There are some institutional problems as well. There are logical connections between the CWA and ESA, but the mechanisms for achieving clean water and ESA requirements are in different universes and in different time scales, which gives the impression of doing two separate things. Oregon is struggling with a method to pull together the objectives for the public to understand that the mechanisms are different and have different logics but overall the objectives are related. The integration (or reconciliation) of these programs is critical for reducing confusion and presenting more coherent plans for watersheds.

TMDLs:
A major barrier to managing by watersheds and for Oregon's TMDL plan development process is how EPA handles listing by segments rather than by basins. Oregon has created a different framework that has larger units. Each sub basin TMDL contains many parameters and stream reaches. For example, there may be over 100 TMDLs in one document. This allows load allocations that are not by segment so the TMDL makes more sense and addresses all segments within a basin. Externally there have been problems explaining this approach to EPA (both the regions and headquarters) in such as way that EPA accepts watershed-based TMDLs as readily as segment/pollutant based TMDLs. EPA could also help in writing specific TMDL implementation plans (technical assistance) and continue to support improved coordination between OR DEQ and OR ODA as the latter moves forward with implementing their 10-10 plans. Supporting implementation of plans to address NPS pollution will be critical to the

success of the TMDL program.

Monitoring / Assessment:
A mechanism for improving coordination and expansion of monitoring and assessment programs would benefit all DEQ programs. For example, there is limited coordination between Oregon's National Estuary monitoring sites (approximately 80) and other DEQ monitoring programs. Monitoring and assessment data that is not collected in a coordinated, standardized manner will create difficulties in decision-making and ultimately limit the integration of watershed-related government programs.

III. Findings on Program Specific Experience

Monitoring
DEQ-sponsored monitoring utilizes a fixed station network to support ambient trend data, special projects, and most importantly the analytical underpinnings for TMDLs. The state has not yet altered their 305(b) report to reflect a watershed organization. Such a change may occur in a future report. Since the monitoring program is not yet structured on a watershed basis, it has not caused any difficulty with preparing 305(b) reports to date. Data collection is critically important for establishing TMDLs and working at a watershed scale has brought that value to the TMDLs. DEQ's technology is at the cutting edge and through the development of watershed-based TMDLs links to other programs (e.g., Land restoration, Dept of Forestry, etc.) have been improving. Extensive monitoring, assessment, and reporting have also served to educate Oregon's citizens, however, analysis (of watershed impairments) is way ahead of the implementation aspects. Thus DEQ monitoring is supporting TMDL development, but not the evaluation of actions taken to reduce loadings and improve watershed health. Other agencies besides DEQ have their own monitoring programs. For example, OWEB is in the process of creating a monitoring team and GIS capabilities based on language adopted by the 2001 Legislature. These new tools will allow watershed councils to continue and improve diagnostic monitoring, while DEQ and ODA perform trend monitoring. Diagnostic monitoring gives a sense of restoration priorities on smaller scales while trend monitoring provides general information about species health and specific pollutant levels. Additionally, Oregon conducts a statewide stream flow assessment to support development of a restoration strategy and extensive forest riparian zone monitoring as part of the Northwest Forest Plan. Most staff seemed to feel that monitoring, information collection, and assessment are becoming more complete and coordinated.

Water quality standards
Oregon standards have been revised twice in the last 10 years (1991 and 1996). The state is currently in the midst of a triennial review. State standards are formatted to accommodate watershed criteria, but they are not reviewed based on a rotating basin or other watershed schedule. Many basin-specific criteria are applicable state-wide. As TMDLs are issued, it is likely that the need for more sub-basin or watershed-specific criteria will increase. At present, many of Oregon's triennial review issues derive from the need to respond to the federal Endangered Species Act rather than from the watershed approach. Any criteria related to aquatic life must go through ESA consultation.

Staff reported that little appreciation exists for the difficulty with and complexities of water quality standards. For example, watershed practitioners are not certain whether it is possible for some waterbodies to maintain or improve on current conditions. The statewide numeric criteria for temperature (64 degrees F) is a leading issue. Some stakeholders do not believe that standard can ever be met. This could potentially cause much money to be spent to try to achieve the unachievable. Furthermore, lawsuits that are involved in the setting or exceeding of standards and the creation of TMDLs cause slowdowns and problems.

Since TMDLs are driving most DEQ work, TMDL staff is coordinating closely with the standards group so that TMDL data and analysis will feed into the setting of (new/revised) standards. TMDL staff also work closely with permit folks to determine how waste loads fit into permits. The foundation for all TMDLs is WQSs, so the triennial review of WQSs will benefit from TMDL assessments and TMDLs will benefit from enforceable and reasonable standards. Currently, however, the standards review process remains separate from other DEQ programs. Most water quality reports have been linked together and the listing process (for 303(d)) seems to be functioning smoothly.

C. TMDLs

TMDLs are the driving force for integrating and coordinating DEQ's other programs. The TMDL approach was designed at a geographic scale (sub-basin) in line with the Oregon Plan priorities. DEQ basin coordinators are regional staff working in each TMDL sub-basin to ensure stakeholder understanding and involvement (mainly via watershed councils), review agency documents, collect data, and discuss TMDLs. It could thus be said that the DEQ TMDL program is using the OWEB watershed councils as the forum for public involvement for TMDLs. The DEQ role is to provide statewide support for the program primarily in the technical capacity. DEQ staff do believe that their holistic approach to TMDLs has achieved a reduction of work by orders of magnitude. This has occurred by using surrogates to translate the TMDL into a model that means something for implementation. The way Oregon approached multi-parameter issues takes into account interactions of biology and chemistry using ecosystem models that account for the interactions of multiple pollutants, habitat, and other factors. Because these analyses are connected to a watershed council, there is a mechanism for discussion of implementation. This approach doesn't eliminate debate and delays, but seems to effectively distribute resources and resolve issues. The current plan for completing TMDLs in Oregon is part of the schedule under a court ordered settlement. By 2007 all TMDLs for waterbodies listed on the state's 1998 303(d) list will be complete. The first completed TMDL, for the Willamette River, was fast-tracked with support from the Oregon legislature due to the large number of water quality problems and the high percentage of Oregon's population in the watershed. Watershed councils that are strong are used to assist with the TMDLs so as to avoid the duplication of effort.

Implementation of TMDLs will largely be driven by pollutants causing the impairments and the sources of those pollutants. So, for agricultural lands, ODA will form a committee of landowners whose purpose is to write a restoration plan for their area. DEQ's relationship is to work with the agricultural plan that has been created (the SB1010) and to integrate it with the TMDL. DEQ's TMDLs do not replace existing or new agricultural plans, but instead determine the connections between the methodologies in the agricultural plan and the TMDL to determine

how to alter the agricultural plan to meet the requirements of the TMDL. There are no true models for changing SB1010 plans to fill gaps. It is up to ODA to maintain active involvement in the implementation phase of SB10101 plans to meet TMDL requirements after TMDLs are completed. Adaptive management described in TMDLs lays out a stepwise approach. DEQ tends to move on after TMDL (plans) are complete leaving implementation activities up to the locals and councils. EPA has recently funded some positions (i.e., basin coordinators) to keep a DEQ staff person in the area of the TMDL that can conduct outreach and assist with implementation. Oregon had hoped that EPA would adopt the regulations that were been proposed which required implementation plans along with TMDLs. Leaving the plans to the state lowers the bar and takes teeth out of the TMDL and water quality standards. EPA can support Oregon's TMDL program by continuing to support TMDL implementation, supporting Oregon's implementation plans, continuing 319 funding for implementation, and continuing funding for TMDL basin coordinators.

D. NPDES Permitting

NPDES permit reviews/reissuance is hanging on the TMDL schedule. Since TMDLs are being developed by watershed, it is hoped that the permitting process will become more watershed-oriented in the future. Thus, permits have not been as watershed-oriented as TMDL plans, but consideration as to how to incorporate waste loads into permits is underway. The plan for upcoming reviews/reissuance is pegged to the TMDL timeline. Even (older) approved TMDLs have yet to be incorporated into renewed permits. The goal is to have all permits for TMDL approved watersheds issued within the year following approval of the TMDL. This will cause changes to the established five year permit cycle by moving up reissuance for some permits and delaying reviews for others. The permit program has been talking about the watershed approach on a scheduling level not a functional level. Formerly scheduled based on application date, expiration date, and other political pressures, the schedule now is based on the TMDL schedule. It's been a year and a half since the schedule was developed, but following it has been spotty. Since there aren't many TMDLs done yet, and there are many permits up for review that are not on the TMDL schedule, some permits are up for renewal in watersheds where TMDLs will not be completed soon. There has been some frustration from the (regional) permit writers that they are not included in the TMDL process. At the request of the basin coordinators there will now be some statewide meetings to coordinate folks. People in the regions are farther out and feel a bit more cut off. Working at the local level with the folks on the ground can slow the process though it is valuable.

E. Non-point source

There has not been a strong effort to prioritize 319 projects within a watershed approach in the past. Criteria are under development for the next fiscal year's grants. Oregon has a great deal of watershed-based activities, but the establishment of trust between programs is needed before everyone leverages their resources and prioritizes on a watershed level. The NPS program is more in sync with OWEB than with other DEQ programs. The program does not have a formal watershed priority setting strategy. The program does try to target TMDL watersheds. Criteria for selecting projects does use the TMDL process to prioritize applicant proposals, but what the state would like to fund doesn't always match the proposals submitted. DEQ can, however, fund projects that are not covered by the proposals received. 319 dollars go towards specific implementation projects and are often used in cooperation with ODA whose funds provide for

more general activities. Currently Conservation Districts apply individually for their own 319 funds, but there is a desire to make the grants program more efficient through enhanced coordination between DEQ and ODA. ODA, for example, is seeking a block grant so that they could in effect determine which specific individual projects to fund by using their broad network of players with connections and implementation frameworks. ODA argues that DEQ is not effectively integrating 319 dollars into watershed projects. Eliminating the need for individual Districts to apply separately for 319 grants would improve efficiency. ODA would like to fund implementation in the same areas where EPA is working on its own programs like TMDLs and ESA activities.

DEQ is also very slow in getting the 319 money to ODA. ODA claims that their proposal to funnel all 319 funding through their main office to the Districts (and thus to SB1010 plans) would reduce administrative burdens on the DEQ, lessen the time it takes for funds to hit the ground for implementation, and focus the monies on areas of critical concern for both agencies.

F. Drinking Water

Oregon uses a voluntary source water protection program although the state legislature has attempted to make it a mandatory program. A well-accepted guidance manual outlines the program that protects source waters in the state. After the new Safe Drinking Water Act Amendments were signed, surface waters were included in the program. January 2003 is the deadline for all source water assessments. The assessments identify watershed boundaries, show intakes, and list sensitive areas in the watershed. Assisting watershed groups with source water assessments so that they understand what a watershed is and where their water is coming from has helped locals see the issues. EPA insisted on using the whole watershed as the delineation for the intakes which created great support for the program. DEQ assessed the surface water, while Oregon Health Department does the delineations for groundwater. When the delineations are completed DEQ completes the inventories. There is very little involvement across the rest of the agency, but there is an emerging relationship with TMDLs. The implementation plan for source water assessments was scheduled to coincide with the TMDL program. The parameters of concern are different between source water and TMDLs so there is not a lot of overlap. For example, most impaired waters are listed for temperature or dissolved oxygen, but there are limited efforts to evaluate more human health parameters such as bacteria levels. Impairments such as sediments affect both drinking water treatment and aquatic life and thus lend themselves to solutions that address both ecological and human health. Positive aspects of the drinking water program include: the sharing of GIS data/expertise with other programs, improved linkages to web resources by watershed has helped provide data to the process, improved linkages to local watershed councils, many of whom have not focused on drinking water issues.

Negative aspects include: confusion over the need for drinking water assessments when a TMDL is developed for a watershed. There is a serious disconnect between CWA and the SDWA. SB1010, TMDLs, or other plans do not address drinking water. The beneficial use barely gets mentioned at all. The 303(d) report is not focused on public water supply protection, they don't sample for things that are relevant to human health. Out of 575 intakes supplying 142 community systems from surface waters 64 are listed on the 303(d) list. Of the parameters listed: 81% are temperature, 38% are fecal coliforms, 22% pH, 1% DO. This demonstrates that

there is very little focus on drinking water, there would be more focus if the data was there. Temperature could be linked to habitat and thereby sediments that would have an effect on drinking water.

Other

OWEB: (See above)
OWEB has two primary functions: to 1) provide infrastructure, support, and funding for 93 watershed councils and their projects that will improve watershed conditions, and 2) provide guidance through technical assistance such as watershed assessment methodology, and monitoring protocols. First and foremost, OWEB is a grant-making agency with about $21 million in funds per year.

Healthy Streams Partnership Advisory Group:
The function of the advisory group is to oversee the implementation of Clean Water Act (CWA) and Endangered Species Act (ESA) programs, to examine the programs and make recommendations for improvements. The citizen group is staffed jointly under the Governor's Natural Resource Office and the Oregon Watershed Enhancement Board (OWEB). Alongside these departmental staff, other members of the citizens group include key lobby groups, local soil and water districts, and other participants. Governor Kitzhaber wants to securely institutionalize the Oregon Plan before he leaves and saw the advisory group as a way of ensuring this would happen.

Wetlands:
Division of State Lands deals with most wetlands issues, but there are different aspects of wetlands management that are carved into discrete chunks handled by State Lands, DEQ, and the Water Resources Department where supply and rights are concerned. DEQ personnel seemed to feel disconnected from wetlands programs.

SRF:
SRF loans are not being prioritized on a watershed approach, but instead based on receiving waters and pollution from effluent (usually in the most sensitive systems). A great deal of SRF funding goes to impaired waters that are under the TMDL program, but there is no direct prioritization of the monies toward those waterbodies. The monies are often received by the big cities and are thus not distributed across the state. SRF funded projects are often renewed year to year and thus few new areas are addressed.

Enforcement:
The authority to enforce the rules is not always with DEQ; the Agency must go elsewhere, such as to the Department of State Lands (DSL), ODA, and ODF, which have the power to enforce. This is seen as a potential weakness of the TMDL program.

Oregon's Department of Agriculture's approach is a three-legged stool with Soil and Water Conservation Districts (Districts), Natural Resources Conservation Service and ODA.
Districts: Program works with National Resource Conservation Service (NRCS), NRCS provides technical support, ODA provides administrative support, and Districts provide on the

ground activities, they are ODA's watershed approach. Although they are not on the watershed boundaries (they are on county boundaries) they provide assistance to local landowners to do conservation activities on a watershed scale.

SB1010 Committees: Attempt to deal with agricultural non-point source (NPS) problems. This bill was established in the state as a compliment to the Forest Practice Act, the approach was originally proposed to be like the Forest Practice Act in that it created Agricultural Practice Rules for agricultural purposes. The agricultural community was very uncomfortable with that, instead they agreed to develop basin agriculture plans to deal with water quality that would be a programmatic approach with detailed descriptions of voluntary activities, but has a regulatory basis. It looks directly at what condition is trying to be addressed: bare soil, stream bank erosion, and riparian corridor restoration.

ODA: The SB1010 program directs ODA to be the lead agency in addressing water quality issues from agricultural lands and activities. It was passed to provide a means to address agricultural pollution and thus supports TMDL implementation. The Districts do monitoring for NRCS, but not in support of TMDLs. TMDLs are developed by DEQ, the SB 1010 plan is the implementation plan for agricultural NPS component of a TMDL. The development and implementation of the 1010 plan falls into the TMDL process though not directly. DEQ develops the loads and other components, the Forest Practice Act and SB1010 have been recognized as the implementation plans for the non-point pollution associated with those activities (i.e. forestry and agriculture). That way the landowners don't feel like they are under the TMDL process, but still accomplishing the goals of pollution prevention.

ODA is responsible for the CAFO program (fourth leg of the stool) the responsibility was with DEQ but it was completely transferred to ODA in 1995. Legislation passed in June 2001 allows ODA to develop rules in sync with the federal rules. With the current watershed approach ODA believes it would be able to address all the issues in CAFO under the existing SB1010 program. EPA, however, is not comfortable with that approach, so it will be delivered through a separate CAFO program. ODA will deal with the regulatory parts, notices etc., the Districts will serve as the conduit to the local landowners to provide outreach and assistance. The CAFO program focuses on permitting, while SB1010 plans promote NPS controls.

NW Forest Plan:
Covering over 25 million acres, the Northwest Forest Plan (NFP) provides riparian zone monitoring in 50 Oregon watersheds per year. Originally designed in response to the northern spotted owl listing, the NFP presents a vision for a sustainable future for Federal natural resources and for local timber dependent communities. The plan brings the resources of BLM and the Forest Service together with state practitioners to perform ecosystem analyses, carry out restoration activities, decommission roads, educate resources users.

Other major players, often viewed as separate from government environmental agencies, include Bonneville Power and their NW Power Planning Council and tribal groups. Bonneville Power has spent 100s of millions to enhance salmon habitat on the Columbia through the use of rolling reviews. However, they are accountable to no one. There is beginning to be more pressure in OR (from OWEB and the legislature) to be more directive in terms of accounting

for results.

Tribal partnerships are also important, especially in relation to land and water rights and rights to fish. However, very little was mentioned by DEQ or other interviewees regarding the role that tribal governments are playing in carrying out Oregon's watershed management approaches.

IV. Conclusions (1 page)

In 1997, led by its Governor, Oregon decided to focus the management of natural resources around watersheds. Oregon's DEQ was not a barrier to this transition, nor was it the primary driver. The drivers were the salmon issue and the Governor's Office itself. DEQ has been supportive of and begun to implement watershed-based management approaches, especially within its TMDL program. Overall, the state continues to struggle with federal agencies over the tension between water quality (EPA related issues) and species/habitat (ESA related issues). FWS and NMFS have tremendous authority to impact decisions made by other agencies and offices, and thus Oregon faces the prospect of having to improve its relationships with these two organizations. Oregon must also deal with the root causes of environmental degradation manifest at local scales in land use decisions, zoning ordinances, and personal choices. Interviewees suggested a number of steps summarized below that could serve to increase the effectiveness and efficiency of the myriad watershed approaches underway within Oregon.

More cohesive overall framework:

The Oregon Plan serves as the current umbrella to most agency and local actions to manage watersheds, but it lacks focus and the needed emphasis on environmental results. Stricter guidelines within the plan and more coordination of agency and local activities would improve the state's ability to carry out restoration activities and account for the progress being made. The framework must also reduce public confusion over all of the agencies and drivers addressed through the watershed councils (e.g., SB1010 plans, TMDLs, ESA plans, OWEB). The agencies need to work together to develop a unified message and coherent strategy that integrates many of the requirements and issues to be addressed by the watershed councils. This strategy must explain how land use affects watershed health and include appropriate mechanisms to improve decisions regrading land use in the context of watershed health. Most importantly a new framework must maximize the use of resources across agencies and levels of government by eliminating duplication of efforts.

Coordination:

Within a more structured framework, a key area to emphasize at the federal-state interface is improving the coordination between the FWS and EPA. Without a more transparent approach to identifying, prioritizing, funding, and evaluating necessary actions to achieve compliance with both ESA and CWA duplicative efforts are occurring resulting in stakeholder confusion and wasted agency resources.

Utilize Pilot Projects:

Oregon should try new or unique arrangements, such as bundled funding available to local restoration efforts, as a means to evaluate their success or failure on a small scale before rolling out new ideas or policies statewide. There are undoubtedly many positive aspects to Oregon's

current approaches, but determining the root causes of success or failure is overwhelming given the number of stakeholders and overlapping programs.

Ensure that agency efforts are aligned with local needs and concerns: Eliminating duplication at the local level is the surest way to spend resources wisely in areas that deserve attention. Determining the best methods to engage, train, and involve landowners will be a critical element to improving water quality and habitat. Many agency personnel expressed support for programs that are closer to the ground where more implementation will occur.

Increase the evaluation of results: While ensuring that all the planning efforts are documented, Oregon must begin to provide compelling information (e.g., trend data, salmon populations, reduced pollutant loadings) about the watershed approach as a success. OWEB has not conducted a program review or compiled a lessons learned from their successes and failures. There is a need to document the successes, failures, and limitations of OWEB's program and those of other agencies. In addition, there is a need for a need for continued refinement of Oregon's monitoring and assessment programs such that a comprehensive statewide report can serve as report card of progress.