

IV. Core Elements

➤ HABITAT

Habitat is Key

MANAGING URBAN STORMWATER TO PROTECT STREAMS

I. Current Situation: *Where are we now?*

Background

Studies show that streams, wetlands and estuaries are being degraded by urbanization. Land development changes the natural hydrologic cycle by stripping vegetation cover, removing and destroying native soil structure, modifying surface drainage patterns, and adding impervious and nearly impervious surfaces (e.g., roads, buildings, lawns and other compacted soils).

Challenges to Protection of Habitat

Development changes the natural hydrologic cycle. While some development activities and the hydrologic disturbances they cause may be reversible, e.g., replanting trees after a timber harvest, it may not be feasible to undo the loss of soil structure, and the creation of impervious surfaces, e.g., roads, residences, commercial buildings.

There is strong evidence that we cannot adequately protect high quality stream ecosystems from the impacts of development through “managed” or “engineered” solutions. Changes to both the form and function of stream systems, including degradation of a stream’s function as salmon habitat, appear to be inevitable unless we place limits on the geographic extent of urban development, restrict land use in rural areas, and adopt development methods that cause significantly less disruption of the hydrologic cycle.

A particularly difficult issue is how to reduce the extent of impervious surfaces. It is estimated that 65% of impervious surfaces are created to provide “car habitat.” Therefore to make appreciable progress in reducing impervious surfaces in a watershed, we must alter our road construction standards, reduce the density of our road systems, reduce surface parking, and rely more on transportation systems (rail, bicycles, walking) that do not require such extensive impervious surfaces.

Even if new site and road development standards are implemented, wherever runoff from new development and redevelopment occurs, it must be properly controlled and treated. Current technology-based and water quality based guidance developed by Ecology for new development and redevelopment in the Puget Sound Basin (as identified in [The](#)

IV. 113

Statewide Strategy to Recover Salmon – *Extinction is Not an Option*

Managing Urban Stormwater to Protect Streams

Stormwater Management Manual for the Puget Sound Basin, The Technical Manual) are insufficient to prevent significant degradation of the resource. Revisions of most aspects of the manual - treatment requirements, Best Management Practice (BMP) selection, erosion control, source control, and most notably, flow control – are sorely needed. Technology and water quality based guidance for areas outside of the Puget Sound Basin have not been established. Minor adjustments in the Puget Sound guidance may be necessary for areas of western Washington outside of the Puget Sound Basin. Significant adjustments may be necessary for eastern Washington areas because of differences in precipitation patterns, vegetation, soils/geological conditions, and other critical factors affecting stream morphology and biology.

The process of converting land from being undeveloped to a developed condition involves exposing considerable amounts of soil to the weather. Tremendous loss of soil from construction sites to downstream waterways has historically caused smothering of many salmonid spawning beds and other receiving water impacts. Though standard, technology-based procedures intended to minimize loss of sediment have been applied in some areas, most notably Puget Sound, they have clearly not been consistently applied nor have they been adequately successful when applied.

At present, the management tools we have to mitigate the hydrologic changes induced by creation of impervious surfaces are not completely effective. In addition, we are not confident that we know what limited amount of development can occur without causing more subtle, but nonetheless stressful, changes that reduce the ability of the ecosystem to support the same level of salmon populations. We also do not have evidence that we can rehabilitate severely degraded habitats to levels that will support viable, self-sustaining salmon populations, nor can we guarantee full restoration of even mildly degraded habitats. Therefore it is vital that we aggressively pursue maintenance of the high quality salmon habitat that remains.

In consideration of all of the ecosystem impacts mentioned above, a strategy to protect streams and wetlands must include:

- Adoption of adequate riparian buffers using best available science,
- Retention of the natural soils and vegetation cover, primarily forest, in the tributary watershed,
- Control of peak flows and flow duration of streams through stormwater management,
- Improved construction-site erosion control measures, and
- Application of water quality treatment BMPs.

Challenges to Restoration and Rehabilitation of Habitat

The vast majority of existing development has occurred without or with grossly inadequate stormwater controls. Our ability to restore the habitat that existed prior to any

IV. 114

urbanization decreases dramatically with increasing urbanization. Restoring a stream or wetland system to its pristine condition is probably not feasible for most urban watersheds. However, rehabilitation of highly urbanized streams to provide some valuable functions is feasible. For example, it may be possible to rehabilitate some highly urbanized watersheds to provide adequate cutthroat trout habitat and for small or artificially sustained populations of other salmon species. However, it may not be possible to restore sustainable coho populations to that same highly urbanized watershed. Consequently, our goals for reclaiming salmon habitat and types of salmon species in urbanized areas need to be commensurate with our ability to effect sufficient habitat improvements.

We need to ensure that urban streams maintain sufficient form and function that they fit into an overall watershed strategy. High quality habitat may exist in upstream reaches of a stream, but if refuge or spawning habitat in the downstream reach or estuary is insufficient or widely scattered, the salmon populations may not be sustainable. Maintaining adequate habitat to allow spawning escapement and successful juvenile passage are minimum requirements for systems that provide sufficient habitat for other salmon life stages in other parts of the watershed. In some streams, that may be all we can realistically accomplish. Therefore we need to plan habitat restoration/rehabilitation at multiple scales (stream, reach, sub-basin, basin, watershed, state, region) to achieve consistent, coordinated, and effective efforts.

We also need to acknowledge and accommodate the important role urban streams can have in gaining the support of urban residents in the overall salmon recovery effort. Although the resource value of the salmon populations in these streams may be small, their value in galvanizing the public to support restoration and protection efforts elsewhere is large. (Urban residents have just as much right to healthy streams as do their more rural counterparts.) We need to maintain sufficient aesthetically pleasing and biologically healthy (though maybe not with significant salmon resources) streams and riparian areas in urban areas that those who live there appreciate them, and that they are seen as a desirable neighborhood feature.

The scale of the rehabilitation efforts and the timing of them also must be considered. The literature is rife with examples of poorly planned and expensive habitat restoration projects that had limited life and resource benefits. Fixing one or more aspects of stream structure is not effective, without first controlling the causes of the degradation – typically the altered hydrologic regime and the degraded riparian habitat.

In regard to retrofitting existing stormwater discharges with adequate best management practices, we have not yet developed any guidance concerning treatment and flow control. There is a particular need to identify measures to minimize the potential for sediment contamination in urban areas. Finally, there isn't yet any definitive guidance on other aspects of stormwater management: e.g., operation and maintenance of stormwater facilities, operation and maintenance of roads, public use of landscape chemicals.

IV. 115

Current Applicable Policies and Programs

The principal tools currently used by the state and local governments to prevent or mitigate the negative impacts of urban stormwater on salmon habitat are either not fulfilling their goals to protect and preserve habitat or are not fully implemented. These tools are:

- The Growth Management Act (GMA) and Shoreline Management Act (SMA) are broadly applied but have not been focused on stormwater management as a priority. Therefore, they have not yet been sufficiently effective in preventing stormwater impacts from new development by controlling the geographic extent, location, and intensity of development that degrades streams, wetlands and estuaries.
- The Puget Sound Water Quality Management Plan (PSWQMP) stormwater provisions apply only to Puget Sound and are essentially voluntary. As of July 1999, fully four years after the deadline adopted in the PSWQMP, only 38% of more than 120 affected local governments had fully complied with the requirement to adopt a basic stormwater program. Adoption of the basic PSWQMP stormwater program by jurisdictions within Puget Sound was due in 1995. Full and accurate information concerning the level of implementation of basic program requirements is not available. As further described in the PSWQMP, basic stormwater programs are intended to only address how to prevent new development from increasing stormwater problems.

Comprehensive programs as currently provided for in the PSWQMP are intended to solve some aspects of problems caused by existing development. About half of the municipalities called on to develop comprehensive programs are on schedule to do so as of July 1999.

- The National Pollutant Discharge Elimination System (NPDES) stormwater permit program is a regulatory tool under the Clean Water Act for urbanized areas to achieve both water quality and salmon habitat objectives. The NPDES stormwater permit program requirements currently apply to only six local governments: (Seattle, Tacoma and the unincorporated areas of Snohomish, King, Pierce and Clark counties) and to Washington State Department of Transportation (WSDOT) facilities within the legal boundaries of those jurisdictions. The requirements do not apply to all storm drainage systems within those areas. The permits require development and implementation of stormwater management programs that are very similar to the comprehensive stormwater program requirements in the PSWQMP.

The US Environmental Protection Agency (EPA) has proposed new NPDES stormwater regulations (i.e. Phase II permits) that would require stormwater management programs for municipalities in urbanized areas (as defined by the U.S. Census Bureau), and in some cities above 10,000 population in rural areas. If the federal rule is adopted as proposed, an additional 92 municipalities may need NPDES

IV. 116

permits for their stormwater discharges. Additionally, large industrial operations are required to have NDPES permits for their stormwater discharges and a general NDPES permit applies stormwater controls to construction sites of five acres or more.

- The Hydraulic Project Approval (HPA) permit program reviews and approves development projects that change, alter, or affect the natural bed or flows of waters of the state. However, the program has not been effective in monitoring and preventing cumulative impacts to salmon habitat.

Financial and technical assistance is provided through many state and federal programs as an incentive for watershed management and habitat protection and restoration. Although some technical and financial assistance for development of stormwater management programs has been available from the state, particularly for jurisdictions within Puget Sound, direct state or federal financial assistance has generally not been provided to local governments to actually implement and enforce stormwater management programs.

II. Goals and Objectives: *Where do we want to be?*

Goals:

- Prevent negative impacts on salmon habitat and water quality caused by urban land development and changes in stormwater flow.
- Mitigate impacts of urban stormwater and restore habitat where impacts occur.

Objectives:

- Prevent urban stormwater impacts on salmon habitat by preserving remaining high quality habitat, based on a priority system for streams, wetlands and estuaries in urban and urbanizing areas.
- Use growth management planning tools to control where and to what extent development is allowed.
- Encourage and support all cities and counties within the Puget Sound region, and in other areas of the state where urban stormwater contributes to the decline of salmon, to adopt and implement stormwater management programs.
- Research, demonstrate and implement improved designs for new land development and redevelopment that will prevent urban stormwater impacts on salmon habitat.
- Retrofit stormwater controls for existing development and rehabilitate streams in priority areas as needed to reduce stormwater impacts on critical salmon habitat.

III. Solutions: *What is the route to success?*

Integrating Urban Stormwater Strategies into Watershed Planning

There are a variety of new local watershed management processes that are underway, including processes established by the Watershed Management Act (ESHB 2514) and the Salmon Recovery Planning Act (ESHB 2496). Other equivalent processes are

IV. 117

Statewide Strategy to Recover Salmon – *Extinction is Not an Option*

Managing Urban Stormwater to Protect Streams

also resulting in watershed management, salmon recovery planning and related land use planning. All these efforts create an opportunity to assess and monitor watershed conditions, to establish goals and objectives, and to set priorities for salmon habitat protection and restoration.

Setting clear priorities for watersheds is a critical part of dealing with the effects of urban stormwater. Degradation of habitat from urbanization can be prevented or minimized by preserving high quality habitat or restricting where development occurs. Stormwater management programs and practices are able to only partially mitigate the degradation of salmon habitat caused by new development or redevelopment. Retrofitting existing developments to add or upgrade stormwater management facilities will be needed on a priority basis to rehabilitate degraded salmon habitat in urban areas. Such retrofitting can be very expensive, take years to implement, and in most cases will not fully restore the habitat that existed prior to development. Preventing urban stormwater impacts on habitat by preserving habitat or restricting development, or mitigating impacts of new development and redevelopment by implementing stormwater management practices will generally be more effective and less expensive than retrofitting existing development.

Local watershed management processes are in various stages of development across the state. Setting priorities within watersheds for protection and restoration projects and activities is essential to ensure that limited funds are allocated to efforts that will provide maximum progress towards salmon recovery. Few watershed management processes have yet completed the process of setting priorities for the preservation or protection of remaining salmon habitat and the restoration or rehabilitation of degraded habitat.

When setting priorities for urban streams and estuaries it will be necessary to: 1.) identify the stormwater control problems that are most urgent to address in the context of protecting and restoring salmon habitat within the watershed; 2.) develop methods to consistently determine stormwater control priorities to protect and restore salmon habitat across watersheds and multiple jurisdictions; and 3.) provide flexibility for decision-makers within watersheds to allocate resources to the priority salmon recovery problems in their watersheds.

A potential model for setting stormwater management priorities within the context of local watershed management has been developed by the Washington State Department of Transportation (WSDOT). WSDOT has developed and is using this model as part of the Stormwater Control Enhancement Program established by 1996 legislation (2SHB 2031, Chapter 90.78.010 RCW), which authorized a stormwater management funding and implementation program to address state highway-related problems. This model has been successfully used by WSDOT to coordinate and leverage federal, state and local funding sources to facilitate construction of stormwater mitigation projects that integrated the needs of many partners within a watershed management context.

Assistance and Incentives for Voluntary Action

1. Habitat Assessment

Local watershed management and salmon recovery planning processes, with state financial and technical assistance, will identify high quality habitat for preservation or protection through a variety of means, such as purchase of development rights or conservation easements. Local watershed management and salmon recovery planning processes will also establish goals and priorities for habitat restoration.

2. Local Technical and Financial Assistance

The Department of Community, Trade and Economic Development (CTED), the Department of Ecology (Ecology), and the Puget Sound Action Team (PSAT) will use financial incentives and technical assistance to promote local governments' adoption and implementation of the stormwater program elements of the Puget Sound Water Quality Management Plan (PSWQMP). Programs which maximize salmon habitat protection and restoration, and which are consistent with local watershed management and salmon recovery planning priorities, will have funds directed to them from existing grants and loans.

3. Funding

Substantial funding needs related to local stormwater management are not yet addressed or are only partially addressed. These needs include the costs of: local land use and stormwater management planning; assuring implementation and enforcement of local stormwater management programs; researching and demonstrating new designs and methods for land development; and upgrading or retrofitting existing stormwater control facilities that are not adequate for mitigating impacts to salmon habitat. In addition, and most importantly, preventing impacts from urbanization through preservation of high quality habitat will require substantial funds for acquisition of property or development rights.

The state will work with federal and local governments to identify new funding for local governments as an incentive to implement and enforce local stormwater management programs and ordinances that are adopted and consistent with the PSWQMP.

4. Goals and Priority Decisions

The identification of specific funding needs and decisions to allocate funding will be done within the context of overall priorities for salmon recovery and the identification of priorities through local watershed management processes. A statewide science-based framework for setting priorities for salmon recovery across the state and among high priority areas will be developed through the Salmon Recovery Funding Board established by the 1999 Salmon Recovery Funding Act (2E2SSB 5595). The Watershed Management Act (ESHB 2514) and the Salmon Recovery Planning Act (ESHB 2496), or equivalent processes, will be used to make local decisions and set priorities for urban stormwater management within watersheds. These priority and funding allocation determinations must also be coordinated with land use objectives for urban and rural areas formulated by local governments under the Growth Management Act.

5. Mitigation of Transportation Projects

Transportation projects have a significant impact upon salmon habitat by increasing stormwater runoff and by creating barriers to fish passage. The current biennial transportation budget provides \$10.2 million from the Motor Vehicle Account for WSDOT to retrofit state projects to address stormwater runoff problems (\$5.1 million) and to correct fish passage barriers (\$5.1 million). The Transportation Improvement Board has also been provided \$5 million to fund upgraded stormwater controls associated with local transportation projects. Projects to correct stormwater or fish passage problems associated with city or county roads will be eligible for funding from the Salmon Recovery Account administered by the new Salmon Recovery Funding Board. Additionally, an estimated 5% of state and federal highway project funds are spent on stormwater conveyance and treatment systems and related items, such as land acquisition.

6. Action Incentives

Depending upon the availability of state or federal funding assistance, the principal incentives for increased local action to address urban stormwater impacts are the degree of local support for salmon recovery, the extent of local concern about potential liability under the ESA for harming listed salmon, and the potential that failure to act will trigger default actions by the state (see discussion of potential default actions).

7. Public Education/Stewardship

Conduct training workshops by agencies responsible for stormwater management (Ecology, PSAT, WSDOT, USEPA, and local governments) and land development (CTED and local governments), and support existing training offered by the University of Washington and others. Workshops can be implemented in the short-term by using existing educational materials, subject to availability of staff support and funding for other expenses. Support new or modified educational materials and programs/courses at state universities and colleges to educate the current and future professional planners, urban designers, and engineers. Develop public/private sponsorship for certification courses. Certification and linkage of certification to approval of project design or to project funding is a longer-term strategy.

8. Local Funding Options

To improve the ability of regional and local governments to fund the actions needed for effective stormwater management, legislation may be needed to expand current local authority and options for funding stormwater utilities and stormwater programs. For example, the statutory authority of regional and local jurisdictions to establish and fund multi-jurisdictional stormwater utilities and stormwater management activities needs to be clarified.

9. State Technical Assistance

Contingent upon additional funding for technical staff, Ecology will enhance technical assistance on stormwater management to local jurisdictions within the Puget Sound Basin and will start providing technical assistance outside Puget Sound.

IV. 120

10. Research and Demonstration

The state and local governments will collaborate to seek and coordinate federal, state and local funding to support research and demonstration of the effectiveness of best management practices for stormwater management and new building and site development practices to prevent impacts from stormwater.

State and Local Actions and Enforcement

1. Growth Management Act

The Department of Community, Trade and Economic Development (CTED) will develop additional guidance under the Growth Management Act on land development practices and growth constraints that are necessary to preserve salmon habitat and prevent stormwater impacts. (See Chapter IV.A.3. Linking Land Use Decisions to Salmon Recovery.) Local governments will be asked to implement this guidance through designation of urban growth areas and land development regulations. The state will consider filing appeals with Growth Management Hearings Boards if local governments do not implement this state guidance and thereby fail to protect critical salmon habitat.

2. Puget Sound Water Quality Management Plan

The PSAT will upgrade the description of local stormwater program characteristics in the PSWQMP. The amendments to the PSWQMP will also acknowledge and help address the need for stormwater standards and programs to encourage more dense development or redevelopment of previously developed areas. After the PSWQMP is amended in the year 2000, local governments in the Puget Sound Basin will have two years to make their stormwater programs consistent with the amended PSWQMP prior to evaluation of progress and consideration of default actions by the state.

3. Stormwater Manual

Ecology will improve and update the stormwater technical manual to include all known available and reasonable technology, particularly in regard to runoff quantity and flow controls. The scope of the manual will be expanded to include guidance for areas of the state outside the Puget Sound Basin. In revising the manual, Ecology will develop its standards and guidelines to provide incentives to redevelop or intensify development in areas that have already been developed, at least to the extent that such incentives are consistent with salmon recovery under the ESA and with Clean Water Act requirements. After the manual is updated in the year 2000, local governments will have two years to make their stormwater programs consistent with the manual prior to evaluation of progress and consideration of default actions by the state.

4. National Pollutant Discharge Elimination System Permits

Ecology will strengthen and enforce NPDES permit requirements for stormwater programs by: incorporating standards for new development consistent with amendments to the PSWQMP; requiring more explicit commitments to retrofitting in priority areas and to operation and maintenance of stormwater facilities; requiring increased attention to erosion and sediment control at construction sites; and implementing new federal

IV. 121

Statewide Strategy to Recover Salmon – *Extinction is Not an Option*

Managing Urban Stormwater to Protect Streams

requirements (i.e. Phase II permits) for stormwater management under the Clean Water Act.

5. Hydraulic Project Approvals

The Washington Department of Fish and Wildlife (WDFW) will improve the consistency of HPA reviews by using integrated stream bank protection guidelines and other stream corridor management guidelines that are to be developed. (See Chapter V. C. Permit Streamlining) The program's capability to monitor and prevent cumulative impacts from projects affecting stream flows will be increased.

6. Interim Regulatory Action

Regulatory discretion will be used to apply existing authority where stormwater programs are lacking or inadequate. Where the basic or comprehensive PSWQMP stormwater programs have not been adopted by local jurisdictions as scheduled in the PSWQMP, state agencies will consider which state authorities and regulatory tools should be applied and enforced to protect salmon habitat from urban stormwater impacts. Such tools that may be used include issuance and enforcement of HPA's or other permits involving state review or approval, and substantive review under the State Environmental Policy Act (SEPA).

7. Combined Sewer Overflow

Continue local implementation of the Combined Sewer Overflow (CSO) correction program with reconsideration of the correction schedule at 5-year intervals. Approaches to CSO correction should be consistent with strategies for water reuse. The schedule would not be accelerated unless specific CSOs are identified as high priority limiting factors for salmon recovery.

IV. Adaptive Management and Monitoring: *Are we making progress?*

Adoption and implementation of local stormwater programs consistent with or equivalent to the Puget Sound Water Quality Management Plan and compliance with National Pollutant Discharge Elimination System stormwater permits will be monitored. The effectiveness of stormwater management practices, particularly new practices, will also need to be monitored.

Monitoring of salmon populations and monitoring of habitat conditions, particularly monitoring of biological integrity of streams in urbanizing areas, will be used to evaluate progress over time and to make adaptive management decisions.

Potential Default Actions After 2002

The following default actions will be pursued as needed after evaluating progress in achieving urban stormwater objectives as of September 2002. The implementation of default actions will be done within the context of and to complement the watershed-level assessment and planning conducted under the Watershed Management Act (ESHB 2514), the limiting factors analysis done under the Salmon Recovery Planning

IV. 122

Act (ESHB 2496), as well as the statewide framework for identifying priorities for salmon recovery developed through the Salmon Recovery Funding Board.

- Make adoption and implementation of the basic PSWQMP stormwater program elements mandatory for those jurisdictions within Puget Sound that have not voluntarily adopted programs or are not implementing programs consistent with the PSWQMP. Also make the basic PSWQMP stormwater program elements mandatory for jurisdictions outside Puget Sound that have not voluntarily adopted and implemented an equivalent stormwater program and where urban stormwater is identified as a limiting factor for salmon recovery. These requirements will require new legislation.
- Expand NPDES stormwater permit requirements (i.e. Phase I or Phase II permits) to apply to any jurisdictions within Puget Sound that have not adopted or implemented a comprehensive (Phase I permits) or basic (Phase II permits) stormwater program consistent with PSWQMP comprehensive or basic stormwater program elements. Expand Phase I or Phase II NPDES stormwater permit requirements to also apply to jurisdictions outside Puget Sound that would be subject to the PSWQMP comprehensive (Phase I permits) or basic (Phase II permits) stormwater program (i.e. if they were within Puget Sound) that have not adopted or implemented a stormwater program equivalent to the PSWQMP comprehensive or basic stormwater program and impacts from urban stormwater have been identified as a limiting factor for salmon recovery.

The analytical methods and process that would identify where urban stormwater is a limiting factor for salmon recovery outside Puget Sound must be further developed as part of the limiting factor analyses called for under the Salmon Recovery Planning Act. Implementing these default actions will require substantial expenditures by the affected local jurisdictions and by the Department of Ecology.

The following are additional potential default actions that are more broadly related to land use, water quality and other salmon recovery issues. These additional default actions will be considered when progress in achieving urban stormwater and other salmon recovery objectives is evaluated as of September, 2002:

- Legislation amending the Shoreline Management Act (SMA) to extend the definition of shorelines to include upstream salmon habitat for jurisdictions that have not adopted and implemented stormwater management programs to protect salmon habitat.
- Further strengthen state water quality standards, as needed in the absence of progress in salmon recovery, to incorporate additional biological and physical criteria relevant to protection of salmon habitat.
- Amend the Washington Uniform Building Code to incorporate building and site design standards and road and parking lot construction specifications to minimize impervious surfaces and reduce stormwater impacts. These standards and specifications would be required where local governments have not voluntarily

IV. 123

implemented a stormwater program consistent with Growth Management Act guidelines and the Puget Sound Water Quality Management Plan.

ESA Compliance Strategy

Urban stormwater management programs are primarily implemented by county and city governments and the WSDOT. Program guidance is provided by the state through the PSWQMP and Ecology's stormwater technical manual. The NPDES permit program is a regulatory tool, administered by Ecology, that currently applies to the stormwater programs of the largest jurisdictions.

The key to an ESA compliance strategy for urban stormwater is to improve these state guidance and regulatory tools to the point they are accepted by the National Marine Fisheries Service and US Fish and Wildlife Service as measures of the adequacy of stormwater management programs in relation to salmon recovery and ESA requirements. Over the next year, the state will be working to amend the stormwater provisions of the PSWQMP, update and improve the stormwater technical manual, and strengthen NPDES provisions that will be applied as permits are reissued. This work will be done through processes that involve public review and collaboration with the federal agencies. Once this work is completed and the improved tools have been accepted by the federal agencies, a framework to enable stormwater management programs to be formally recognized under the ESA will be in place.

The urban stormwater strategy calls for improved local stormwater programs consistent with the amended PSWQMP and the revised technical manual to be adopted and begin implementation over the following two years (i.e. by September, 2002). Federal recognition under ESA of stormwater management programs that conform to this strategy could be accomplished through ESA Section 4(d) rule procedures. Alternatively, jurisdictions with conforming stormwater programs may seek even greater certainty under ESA by preparing Habitat Conservation Plans and obtaining Section 10, Incidental Take Permits.

Since there may be a potential for liability under ESA for take of listed salmon in many areas of the state prior to September, 2002, there is need for interim actions. The urgent need for action to recover salmon and the potential for legal liability are reasons to adopt and implement stormwater programs that are at least consistent with the current PSWQMP and the existing stormwater technical manual. Stronger implementation of existing programs and upgrading programs consistent with current science are interim steps that can be taken by jurisdictions responsible for managing urban stormwater. Such actions will contribute to salmon recovery and will help jurisdictions respond to any ESA liability issues that may be raised.