

# **Percival Creek Comprehensive Drainage Basin Plan**

**May 1993**

Prepared by the City of Olympia Public Works Department in conjunction with the City of Tumwater and Thurston County. Financial support provided by Washington Department of Ecology Grant TAX90102.

## **ACKNOWLEDGEMENTS**

Special thanks to the those listed below as well as others who have assisted with this document.

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## 1.0 INTRODUCTION

The Percival Creek Comprehensive Drainage Basin Plan has been developed in response to growing concerns over the impacts of urban development on natural resources of the basin. The plan provides a means to resolve current and potential surface water problems in the creek system and surrounding drainage area. These problems include flooding, erosion, and diminishing water quality and aquatic and wildlife habitat.

A regional basin management effort was initiated in 1987 as part of an investigation of flood flows in Percival, Woodard, and Woodland Creeks. Flows in Percival Creek were monitored and a highly sophisticated hydrologic computer model was developed to predict future flows under a variety of land use scenarios.

The Percival Creek basin planning effort was initiated in early 1990 with funding from a Washington State Department of Ecology (WDOE) Centennial Clean Water Grant (TAX90102). Basin plans are also underway for the Woodland/Woodard basin in Lacey, Thurston County, and Olympia; the Indian/Moxlie basin in Olympia and Thurston County; and the Chamber/Ward/Hewitt Lakes basin in Lacey, Olympia, and Thurston County.

The Percival Creek basin encompasses urban portions of Olympia as well as developing areas of Tumwater and Thurston County. Map 1 in Appendix 1 illustrates the location of the basin.

The basin includes the rapidly developing west side of Olympia. Approximately 8.3 square miles or roughly 5,300 acres are contained within its borders. Approximately half of the land in the basin is currently developed. A substantial amount of the region's new commercial and high density residential development is being constructed within the basin. Because Percival Creek is one of the largest and most biologically important streams in the urbanizing area of north Thurston County, it is vital that it be protected from further degradation.

The basin planning effort has identified both basin specific and regional solutions to a variety of problems within the Percival Creek basin. Basin specific projects are primarily capital improvements needed to solve or prevent problems. Regional programs are aimed at correcting problems common to all basins in the north Thurston County area.

Comprehensive Public Involvement and Education (PIE) activities were offered during the planning process. Activities included a citizen advisory committee, three public workshops, two public hearings, and Stream Team training and field activities. The draft basin plan was completed in January 1992. Approximately 175 copies of the plan were distributed to local staff, neighborhood associations, business organizations, and the



interested public. Public involvement was a continuous and important aspect of plan development and adoption.

This plan is arranged into 14 chapters:

1. Introduction
2. Goals and Objectives
3. Authority of the Basin Plan
4. Basin Characterization
5. Percival Creek Characteristics
6. Basin Problem Analysis
7. Management Alternatives
8. Evaluation of Alternatives
9. Preferred Alternative and Recommendations
10. Optimum Alternative and Recommendations
11. Regional Management Program
12. Implementation Costs
13. Funding Alternatives
14. Implementation Strategy

The content of the chapters is as follows:

- The goals and objectives established by the jurisdictions for north Thurston County basin plans are presented in Chapter 2, as well as projected use of the plan.
- Chapter 3, "Authority of the Basin Plan" examines the various legislation and plans which support or direct surface water planning and management.
- "Basin Characterization," Chapter 4, provides a description of the topography, soils, critical areas, land cover, and other physical traits of the basin. A discussion of existing stormwater systems within the basin is also presented in this chapter.
- A detailed discussion of the physical traits of Percival Creek, its wildlife habitat, and water quality are discussed in Chapter 5, "Percival Creek Characteristics."
- Problems identified during the basin planning process are described and analyzed in Chapter 6, "Basin Problem Analysis."
- Three levels of service, existing, enhanced, and optimal are discussed in Chapter 7, "Management Alternatives." These alternatives have been evaluated according to five criteria: effectiveness, sustainability, cost, feasibility, and goals and objectives.

- A description of the evaluation criteria and the results are included in Chapter 8, "Evaluation of Alternatives."
- Chapter 9, "Preferred Alternative and Recommendations" presents a detailed description of Alternative II recommendations, benefits, and costs. The optimal level of service, Alternative III, is described in Chapter 10.
- Chapter 11 contains a collection of regional recommendations that are intended to be implemented throughout the north Thurston region.
- Implementation costs, funding alternatives, and an implementation strategy are discussed in Chapters 12 through 14.

## **2.0 GOALS AND OBJECTIVES**

At the outset of the planning process, a set of goals and objectives was established for all basin plans undertaken in Thurston County. These were developed by the Storm and Surface Water Technical Advisory Committee consisting of staff representatives from Olympia, Tumwater, Lacey, and Thurston County.

### **2.1 Goals**

The Technical Advisory Committee established the following goals and objectives for comprehensive drainage basin plans:

- Preserve and/or enhance water quality, stream morphology, wetlands, groundwater, fisheries/wildlife habitat, and aesthetic amenities.
- Promote environmentally sustainable development within each basin.
- Promote public interest and involvement in water resource management.
- Establish long-term solutions to existing and future stormwater quality and quantity problems.
- Promote a cooperative approach for financing, ownership, and operation/maintenance of storm and surface water facilities and programs.

### **2.2 Objectives**

Drainage basin plans will provide:

A basis for making decisions about capital expenditures, financing options, land use regulation, source reductions, and stormwater facility location, design, and maintenance. Decision-making information and tools generated by the basin plan will include:

- Data base on water quality, hydrology, and habitat.
- Data base on existing and potential pollution sources.
- Predictive hydrologic model for testing effects of alternate decisions.
- Recommended development controls (regulations/incentives).
- Recommended program for continued monitoring of facility performance and resource conditions.

- Ongoing public involvement in stream restoration, enhancement, and education activities addressing problems identified in the plan.
- Understanding and support of the basin plan recommendations by the public.
- A common implementation and financing strategy by jurisdictions responsible for the drainage basin including:
  - Schedule for implementing recommended projects.
  - Revenue sources and methods of financing.
  - Cost allocations.
  - Responsibility for owning and operating capital facilities.
  - Enforcement of development controls and other regulations.
  - Ongoing coordination of plan implementation.
  - Ongoing coordination of public involvement and education activities.

### **2.3 Use of the Plan**

Government entities are expected to use the Percival Creek Drainage Basin Plan through:

- Administration of city and county programs and services that affect the Percival Creek basin.
- Review of other plans and policies that affect the Percival Creek basin.
- Coordination with other governments and groups interested in the Percival Creek basin.
- Preparation of city and county capital improvement project lists and annual operation and maintenance budgets.
- Response to development proposals in the Percival Creek basin.
- Planning and development of future public involvement and education opportunities in the Percival basin.

Others interested in the plan or proposing new development in the basin are anticipated to use the plan by:

- Understanding the community's vision and hopes for the Percival Creek basin.

- Designing projects so that they are consistent with the recommendations and visions outlined in the plan.
- Initiating projects and activities that protect or enhance the Percival Creek basin's natural and developed systems.

### **3.0 AUTHORITY OF THE BASIN PLAN**

Each jurisdiction in Washington is required by the Revised Code of Washington (RCW) to prepare a comprehensive plan. These plans are intended to facilitate orderly development and include a broad spectrum of planning issues. Comprehensive plans are required to contain a land use element that provides for:

- Review of drainage, flooding, and stormwater runoff in the area and nearby jurisdictions (RCW 36.70.330).
- Guidance for corrective actions to mitigate or cleanse those discharges that pollute Puget Sound or waters entering Puget Sound (RCW 36.70.330).
- Protection of the quality and quantity of ground water used for public water supplies (RCW 36.70.330).

The RCW allows key aspects of the comprehensive plan to be "amplified and augmented in scope by progressively including more completely planned areas consisting of distinctive geographic areas or other types of districts having unified interests within the total area of the county" (RCW 36.70.340).

Further authority for basin planning is encouraged by a comprehensive planning option to include "a conservation element for the conservation, development, and utilization of natural resources, including water and its hydraulic force, forests, watersheds, soils, rivers and other waters, harbors, fisheries, wildlife, and other natural resources" (RCW 36.70.350).

The comprehensive plans for jurisdictions within the Percival Creek Basin support stormwater management and therefore the development of basin plans.

- City of Olympia Comprehensive Plan: The City of Olympia updated its comprehensive plan in 1988 through the Planning Enabling Act (Chapter 36.70 RCW). The comprehensive plan provides a legally recognized framework for making decisions about land use in the city. The Percival Creek basin includes a large portion of the developed and developing west side of Olympia. The City of Olympia Comprehensive Plan (Chapter 4, Goals 5, 6, and 7; Chapter 7, Goal 13) establishes the following goals related to stormwater management:
  - Local jurisdictions should join in planning, funding, and implementing a stormwater utility.

- New development should not increase peak runoff and should minimize total runoff and erosion.
  - Lakes, ponds, wetlands, and stream corridors should be retained substantially in their natural condition.
  - New development should meet the requirements of the City of Olympia Flood Plain Management Ordinance.
  - Shoreline development should be managed at a level beyond that provided by the Shoreline Master Program.
  - Fish-bearing streams must be protected from high flows and water quality degradation.
  - Development should preserve the natural vegetation of the site.
- Thurston County Comprehensive Plan: The comprehensive plan for Thurston County was updated in 1988. Many of the concerns expressed in the City of Olympia Comprehensive Plan are also emphasized in the county's plan. Thurston County has jurisdiction in the outlying areas of the basin. Basin planning is an integral part of Thurston County's stormwater management program.

According to the Thurston County Comprehensive Plan (Chapter 2, Objective B), the protection of water resources within the County's jurisdiction is to be accomplished by:

- Viewing wetlands, streams, lakes, and ponds as systems rather than isolated units.
- Requiring that development does not degrade fish-bearing streams or result in the loss of natural functions. Efforts to accomplish this goal include avoiding excessive flows, protection of riparian habitat and streambank integrity, and avoiding water quality degradation.
- Restoring degraded systems when possible.
- Retaining water systems in their natural condition.
- Managing water resources for multiple uses.

- Increasing evaluation of the natural resources within the county and enacting programs or updating existing programs to correct existing and potential degradation.
- City of Tumwater Comprehensive Plan: Tumwater adopted a comprehensive plan in 1977 which was updated in 1984. The plan supports the management of stormwater through the development of detention facilities and conveyance systems.

In addition to the comprehensive plan, stormwater issues are addressed in the *City of Tumwater Stormwater Comprehensive Plan* (1986) and the *Tumwater Hill Stormwater Drainage Master Plan* (1989). According to the strategy of the drainage master plan, stormwater management will focus on the construction of regional detention and treatment facilities on the north and south sides of Tumwater Hill. The City is currently implementing these plans.

Adoption of the Percival Creek Drainage Basin Plan by the Olympia and Tumwater City Councils and Thurston County Commissioners would give the plan authority equivalent to the comprehensive plans of each jurisdiction.

Basin planning is also supported by the requirements included in the State Growth Management Act (SHB 2929). The Washington State Legislature passed SHB 2929 in 1990. The intent of SHB 2929 is to promote comprehensive land use planning in order to:

- Protect the environment.
- Enhance economic development.
- Protect the quality of life in Washington State.

SHB 2929 comprises new chapters in the RCW. All jurisdictions are required by SHB 2929 to adopt regulations to protect critical areas including:

- Wetlands.
- Frequently flooded areas.
- Critical aquifer recharge areas.
- Fish and wildlife habitat.

The central focus of SHB 2929 legislation is on the interjurisdictional character of natural resources. A number of the requirements placed upon jurisdictions by SHB 2929 can be effectively met through the basin planning process. These requirements include, but are not limited to:



- Working cooperatively to achieve cohesive land use policies on issues such as stormwater that do not recognize jurisdictional boundaries.
- Identifying capital stormwater facilities and planning for future capital improvements.
- Identifying innovative land use solutions for land management problems.

Other programs, both federal and state, have guidelines and requirements specific to the kinds of information and recommendations generated by basin plans.

- The National Pollutant Discharge Elimination System (NPDES): In 1987 the Federal Clean Water Act and associated NPDES program was amended to address stormwater discharges. Administered by the Washington Department of Ecology, NPDES has begun to regulate large- and medium-sized municipal storm sewer systems that discharge stormwater to receiving waters of the state. Requirements for permitting include prohibition of non-stormwater discharges into the storm system and controls to reduce discharge of pollutants to the maximum extent practicable. Although local jurisdictions in Thurston County currently have populations under the permitting requirements, EPA will be determining how to regulate smaller municipalities in the near future. The potential water quality improvements gained from basin plan recommendations will be instrumental in the future permitting process.
- Washington Department of Ecology (WDOE ) Stormwater Management Guidelines: Minimum stormwater management guidelines are being developed by WDOE with the aim of protecting the Puget Sound Basin from stormwater contamination. The stormwater programs required for local governments include measures to address stormwater treatment and volume control, maintenance, development regulations, and erosion control.

A stormwater management manual presenting minimum guidelines will be made available to local entities for adoption. The manual establishes requirements for the components of urban stormwater programs within the Puget Sound basin. It is expected that jurisdictions will adopt the WDOE manual or develop a similar one.

- Washington Department of Fisheries (WDF): Guidelines for the protection of streams and fish habitat have been developed by WDF. A specific set of guidelines focusing on stormwater issues and fisheries protection were developed in 1990.

- *Drainage Design and Erosion Control Manual for the Thurston Region, Washington:* Basin plan recommendations addressing stormwater management requirements would supersede any overlapping regulations included in the regional drainage manual.

In addition, various grant and loan programs require the completion of a basin plan or flood management plan before a jurisdiction is eligible for funding assistance. The programs include the following:

- WDOE Flood Control Assistance Account Program (FCAAP).
- Centennial Clean Water Program.
- Department of Community Development's Public Works Trust Fund Loan Program.

The grant program requirements lend authority to the plan by enabling the Cities of Olympia and Tumwater, and Thurston County to pursue additional outside funding sources. Further descriptions of established regulations, policies, and plans are summarized in Appendix 9.

Upcoming and past studies and plans also support the issues addressed by the Percival Creek Basin plan. These studies include:

- *North Thurston County Groundwater Management Plan - Preliminary Draft (GWMP):* The GWMP provides a mechanism for comprehensive management of groundwater in north Thurston County. The preliminary draft of the GWMP recognizes the potential impacts of stormwater on groundwater and supports the current management efforts of the jurisdictions. However, because of the importance of stormwater management on groundwater quality, the plan includes numerous recommendations in support of existing programs as well as for additional work. Specific recommendations address public education, technical assistance, increased enforcement, facility maintenance, modification of the regional drainage manual, and other recommendations that have been addressed within this plan.
- *Joint Plan for the Olympia Westside Joint Planning Area -Draft (Joint Plan):* Shaping the patterns of growth on Olympia's westside is the primary focus of the Joint Plan. It includes a vision of future city neighborhoods that utilize good development techniques, respect the limitations of the environment, and reduce urban/suburban sprawl. Development patterns are envisioned to be more compact and organized within an inter-connected network of streets. The plan also proposes a new mixed-use urban village zone that includes a mix of residential uses, locally-focused businesses, civic uses, town greens, and

work places in close proximity to each other. The plan includes recommendations and policies for reduced urban growth management boundaries, cluster housing, stormwater management techniques such as minimizing the amount of impervious cover constructed during future development, and use of innovative stormwater management strategies. Similar recommendations have also been made in this basin plan.

- Environmentally Sensitive Areas Ordinances (SAO): Both Olympia and Thurston County are currently revising their environmentally sensitive areas ordinances in order to comply with the *Puget Sound Water Quality Management Plan* and SHB 2929. These regulations apply to developments within or near wetlands, unstable slopes, streams, flood plains, significant wildlife habitat areas, and special management areas. Basin plan recommendations concern the protection of the same types of areas addressed by the SAOs.
- Shoreline Master Program for the Thurston Region, 1990 (SMP): The shoreline program provides for regulation of shoreline development. It requires that each locally adopted management program contain policies and regulations which define permitted uses and activities. The program also requires permits for certain types of development or use. The Percival Creek canyon and Black Lake drainage ditch are regulated by the Thurston Region SMP.
- Percival Creek Corridor Plan (1985): The Thurston Regional Planning Commission designed the Percival Creek Corridor Plan to be used as an instrument for guiding land use decisions along the creek. The plan was intended to balance the long-term protection of the creek ecosystem, while providing for economic growth and vitality. The document was reviewed and adopted by Thurston County, Olympia, and Tumwater as a local amendment to the Shoreline Master Program. As such, it carries the equivalent planning authority of a comprehensive plan.
- Stream Corridor Management Plan for the Deschutes River (1984): This plan was prepared by the Thurston County Conservation District as a part of the *Capitol Lake Restoration Analysis*. The document details the sedimentation and erosion issues within the Percival Creek drainage basin. The report concludes that stormwater runoff from new development must be addressed to reduce negative impacts to the stream system.

- *An Engineering Study of the Percival Creek Drainage Basin (1973)*: This study was intended to be an approach for solving existing and future problems within the basin. The study analyzed a number of alternatives and selected a combination of two which were adopted. The alternatives included projects such as: construction of a storm system sized for future development, creation of several retention basins within Yauger Park, restriction of flow into Black Lake ditch during 100-year storms, construction of a new storm sewer line along Burlington Northern Railroad Line into Capitol Lake, and control of flows from Ken Lake.