



King County

Water and Land Resources Division

Department of Natural Resources and Parks

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March 31, 2003

Megan White, Manager
Water Quality Program
Washington State Department of Ecology
PO Box 47600
Olympia, WA 98504-7600

RE: Annual Report for NPDES Permits WASM13001, WASM23001, and WASM33001

Dear Ms. White:

I am writing to report to you on the status of our stormwater management program (SWMP) as required under condition S10 of our Municipal Stormwater General Permits (numbers WASM13001, WASM23001, and WASM 33001), which were issued on July 5, 1995. The focus of this report is on compliance activities for calendar year 2002. I have included a narrative piece that briefly addresses the report elements enumerated in the permits. I have also included a variety of reporting tables and other information to provide more detail on the programs described in our Stormwater Management Program (SWMP). As a whole, our program continues very much as it was described in the SWMP submitted for your approval in March 1997.

Our report for calendar year 1998 included information on the incorporation or annexation of a substantial portion of the urban areas in the Lake Sammamish Basin along with a request that in recognition of this changed circumstance and of County programs in the remaining unincorporated areas, Ecology no longer withhold its approval of the Lake Sammamish component of King County's SWMP. Last year, we sent you a map showing the current status of annexations and incorporations in the Lake Sammamish Basin, unchanged for this year, so that you could see how little of the urban area remains in the County's jurisdiction. Additionally, you will find, from reading the first section of our report, that the water quality of Lake Sammamish has been well within the goals set in the Lake Sammamish Water Quality Management Plan. Accordingly, our request for full approval of the Lake Sammamish portion of our SWMP still stands, still awaiting an Ecology response.

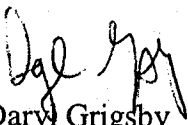
We have been corresponding for some time now on the subject of the equivalency of the Ecology and King County stormwater design manuals. Your letter of November 8, 1999, among other

items, accepted ordinance changes affecting runoff that my staff had proposed as part of a new Site Alterations Ordinance that had been in process for some time. We expected that the ordinance would be adopted by June of 2000, and your acceptance of the changes was contingent on their implementation by July of 2000. Unfortunately, the timeline for the adoption of these changes has slipped considerably. As they are considered to be part of the changes required by the County's Endangered Species Act (ESA) response, they have been packaged with other ordinances for the King County Council's consideration. In 2001, those ordinances were remanded to the Department of Development and Environmental Services for a substantial rewrite. That rewrite was completed in 2002 and a first public review was completed in the first quarter of this year. Edits are currently being developed in response to comments and the ordinance package is scheduled for submittal to the Council in the third quarter of this year. These edits also include changes to the County's drainage code, KCC 9.04, that are the first step towards updates to our Surface Water Design Manual that will make us equivalent to Ecology's new Stormwater Manual for Western Washington.

I certify under penalty of law, that this document (the report enclosed) and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for willful violations.

Please do not hesitate to call Luanne Coachman, Water and Land Resources Division NPDES Municipal Stormwater Permit Coordinator, at (206) 296-8381 to discuss this report and the appended materials.

Sincerely,


Daryl Grigsby
Division Director

DG:inB86

Enclosures

cc: Ed O'Brien, Washington State Department of Ecology
Stephanie Warden, Director, Department of Development and Environmental Services
Pam Bissonnette, Director, Department of Natural Resources and Parks
Luanne Coachman, NPDES Coordinator, Water and Land Resources Division

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MUNICIPAL STORMWATER PERMIT PROGRAM ANNUAL REPORT FOR CALENDAR YEAR 2002

King County
March 31, 2003

PROGRESS ON ADDRESSING EXCEPTIONS TO SWMP APPROVAL

A Washington State Department of Ecology letter of August 1, 1997, partially approved King County's stormwater management program (SWMP). Exceptions to the approval included the County's proposed revised Surface Water Design Manual (SWDM) and the County's actions to control phosphorous in Lake Sammamish.

Lake Sammamish (the Lake)

Water Quality

Water quality goals for Lake Sammamish continue to be based on the assumption that the Lake is phosphorus limited and control of phosphorus loading to the lake will control primary productivity and water clarity. All of the water quality control activities currently being carried out in this watershed address external phosphorus loading from the watershed to varying degrees. Control of external phosphorus loading also results in many secondary benefits to the watershed, such as the control of erosion and sedimentation, and preservation of fish habitat, forest, and riparian cover.

An empiric goal of 22 $\mu\text{g/L}$ mean annual volume-weighted total phosphorus (VWTP) is used to meet the mean summer chlorophyll-*a* goal of 2.8 mg/m^3 . Concentrations of chlorophyll-*a* $\leq 2.8 \text{ mg/m}^3$ historically resulted in summer average Secchi dish transparency of ≥ 4.0 meters. Summer epilimnion VWTP, which is approximately the photic zone of the lake and more directly involved in phytoplankton dynamics during the stratified period, is being evaluated as a management tool for maintaining the summer chlorophyll-*a* and Secchi goals for the Lake. Concentrations of summer epilimnion VWTP goal would have to be significantly lower than the whole lake mean annual VWTP goal to achieve the similar levels of lake protection. Preliminary analysis shows total phosphorus concentrations of $\leq 10 \mu\text{g/L}$ in the epilimnion may achieve summer chlorophyll-*a* concentrations of $\leq 2.8 \text{ mg/m}^3$ and Secchi disk transparencies of ≥ 4.0 meters.

The water quality for Lake Sammamish in 1998, 1999, 2000, 2001, and 2002 has been very good. Phosphorus concentrations in the past four years are as low as has been measured during the last twenty years. At the south mid-lake sampling station (0612) the annual mean VWTP for 1998, 1999, and 2000 was 12 $\mu\text{g/L}$, and was 13 $\mu\text{g/L}$ for both 2001 and 2002, substantially lower than the 22 $\mu\text{g/L}$ goal (Figure 1). The low VWTP in the last four years is much better than the increasing trend toward the 22 $\mu\text{g/L}$ goal of the last ten to fifteen years. Annual mean VWTP at

the north mid-lake sampling station (0611) has been similarly low at 13 $\mu\text{g/L}$, 14 $\mu\text{g/L}$, 13 $\mu\text{g/L}$, 15 $\mu\text{g/L}$, and 13 $\mu\text{g/L}$ for 1998, 1999, 2000, 2001, and 2002, respectively. A combination of weather and stream inflow patterns as well as decreased loading from the watershed may be the reason for the lower VWTP concentrations in recent years.

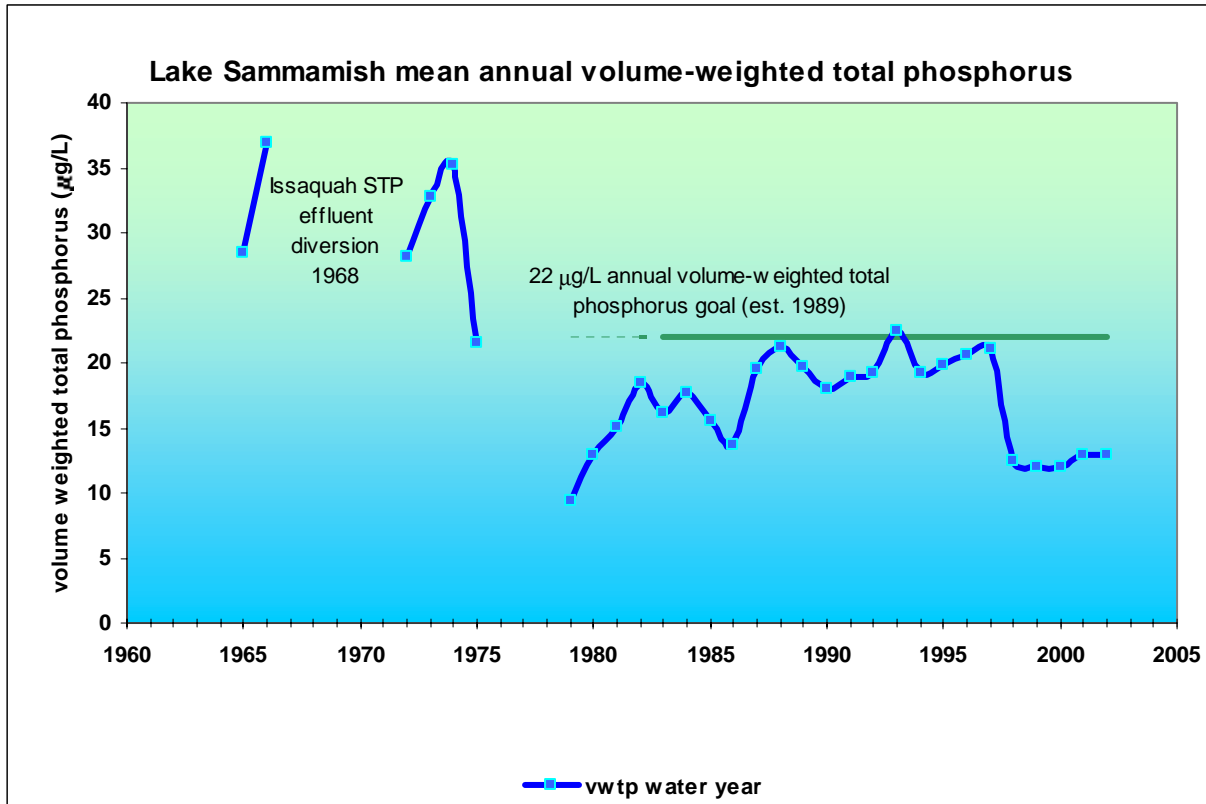


Figure 1. Mean annual volume weighted total phosphorus (VWTP) concentrations at the south mid-lake sampling station (0612).

For a decrease in the whole lake mean annual VWTP to result in decreased phytoplankton productivity and increased water clarity, the concentrations of phosphorus in the photic zone (that part of the lake where sunlight and nutrients interact and support phytoplankton growth) also need to decrease. The more direct relationship between nutrient concentrations in the epilimnion (which approximates the photic zone), phytoplankton productivity, and lake transparency are reasons for looking at VWTP in this part of the lake. Figure 2 illustrates the epilimnion 12 month running means as well as the summer monthly epilimnion VWTP.

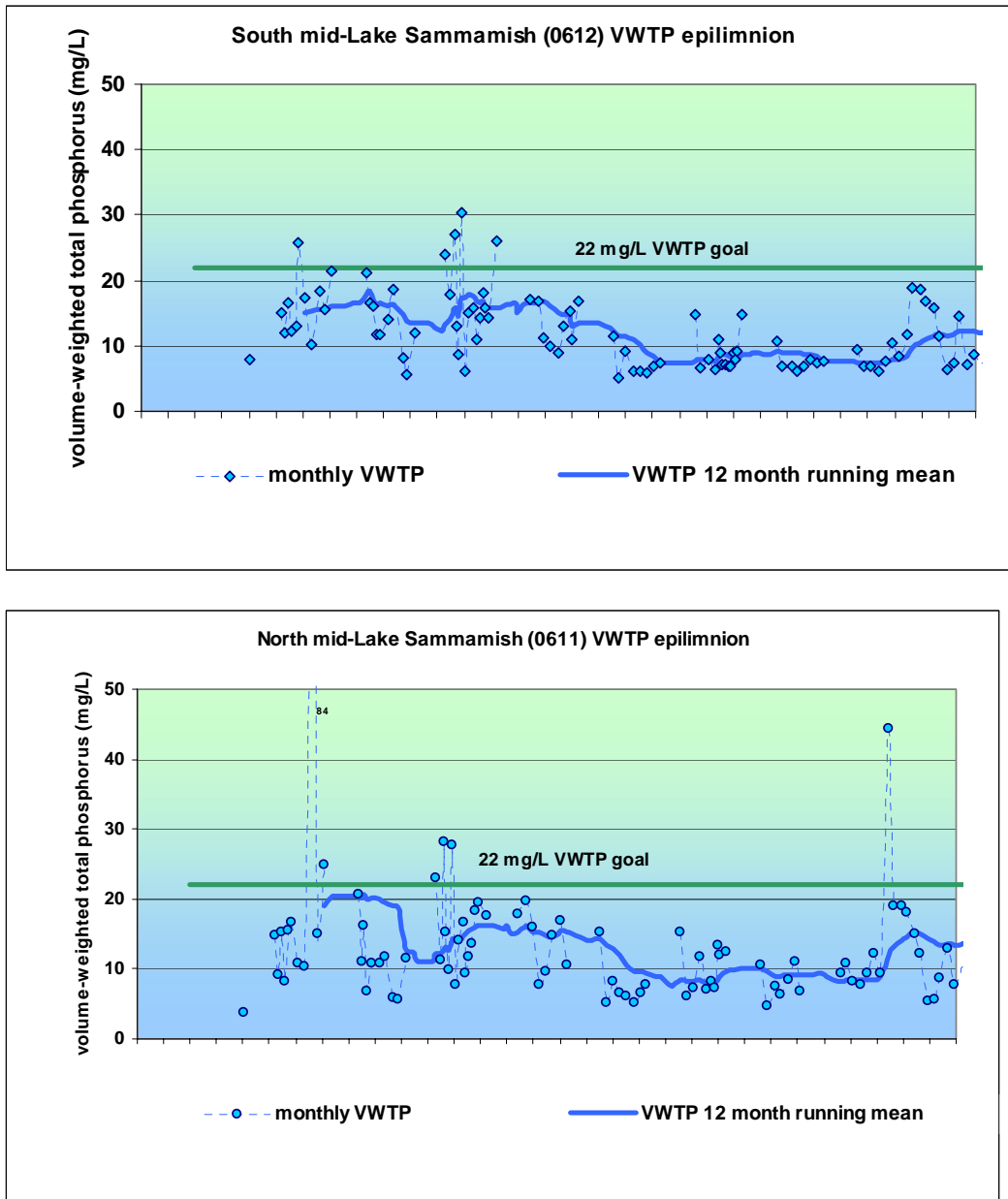


Figure 2. The dashed lines indicate monthly epilimnion VWTP concentrations for north and south lake for 0612 (diamonds) and 0611 (circles). No epilimnion data is shown for the winter period when the lake is not stratified. The solid line is a 12-month VWTP running mean for the epilimnion. A running mean deseasonalizes data to show long-term trends. During winter mixed conditions, data from the top 15 meters was used to generate this mean.

Epilimnion VWTP in both the north and south ends of Lake Sammamish remains near 10 $\mu\text{g/L}$, and the whole lake annual VWTP is below the 22 $\mu\text{g/L}$ goal. Based on the models used to

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monitor Lake Sammamish, chlorophyll-*a* and Secchi disk transparency should both meet or exceed the water quality goals as well (VWTP $\leq 22 \mu\text{g/L}$ and Secchi $\geq 4.0\text{m}$). The north and south average summer mean chlorophyll-*a* concentrations for 1998 and 2001 were less than the chlorophyll-*a* goal 2.8 mg/m^3 , while in 1999, 2000, and 2002 the summer mean chlorophyll-*a* concentrations slightly exceeded the goals (Table 1). Secchi disk transparency for all three years was at or better than the water quality goal of 4.0 m.

Table 1. Lake Sammamish chlorophyll-*a* and Secchi disk transparency and summer means (June-September) collected at the north mid-lake station (0611) and the south mid-lake station (0612).

collect date	north mid-lake (0611)		south mid-lake (0612)	
	chlorophyll- <i>a</i> mg/m^3	Secchi depth meters	chlorophyll- <i>a</i> mg/m^3	Secchi depth meters
June 3, 1998	1.6	7.5	1.7	Not recorded
June 17, 1998	1.8	6.5	2.1	6.0
July 6, 1998	4.5	5.5	5.2	3.8
July 20, 1998	2.9	4.5	3.1	5.5
August 5, 1998	2.0	6.0	2.8	5.0
August 19, 1998	2.0	6.5	1.7	7.0
September 8, 1998	1.6	7.0	1.3	7.0
September 23, 1998	2.0	6.6	1.7	8.0
summer average	2.3	6.3	2.5	6.0
June 8, 1999	3.5	4.0	3.2	4.0
June 22, 1999	5.2	3.0	5.3	3.5
July 7, 1999	2.6	4.5	2.8	5.2
July 20, 1999	3.1	4.0	2.8	3.5
August 3, 1999	4.1	3.5	4.3	3.5
August 17, 1999	6.2	3.3	6.3	2.7
September 8, 1999	4.0	4.5	3.5	4.5
September 21, 1999	2.6	5.0	2.5	4.5
summer average	3.9	4.0	3.8	3.9
June 13, 2000	4.3	5.0	3.5	Not recorded
July 5, 2000	2.5	7.0	2.1	6.0
July 18, 2000	5.0	4.0	3.7	4.2
August 8, 2000	3.9	6.2	3.9	6.0
August 22, 2000	8.2	5.0	6.3	5.0
September 6, 2000	5.2	3.3	5.5	3.2
September 19, 2000	2.5	3.0	2.9	3.0
summer average	4.5	4.8	4.0	4.6

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June 19, 2001	5.5	4.5	5.2	4.0
July 2, 2001	3.2	4.0	2.8	6.0
July 17, 2001	3.0	6.5	2.2	6.0
August 7, 2001	1.7	5.5	2.0	6.5
August 21, 2001	1.7	6.2	1.4	7.0
September 5, 2001	2.1	7.5	1.9	8.0
September 18, 2001	1.7	9.0	2.0	8.5
summer average	2.7	6.2	2.5	6.6
June 4, 2002	5.82	4	6.45	4.6
June 18, 2002	2.92	5	2.13	5
July 1, 2002	3.06	5.4	2.26	6
July 16, 2002	3.2	4.3	2.98	4
August 7, 2002	2.34	4	2.8	4.5
August 19, 2002	1.6	3.3	1.8	3.5
September 7, 2002	2.78	5.5	2.5	5.2
September 19, 2002	2.67	5.5	2.8	6
summer average	3.1	4.6	3.0	4.9

The higher chlorophyll-*a* concentrations in 1999, 2000, and 2002 did not result in as great a loss of water clarity as expected from the model, or observed in the past. One reason may be a shift to more colonial forms of algae that concentrate chlorophyll-*a*, but because they are clumped do not decrease transparency to the same degree as unicellular algae. This phenomenon needs to be investigated in further detail. Lower chlorophyll-*a* in 2001 did result in higher summer water clarity, particularly in July and August. Transparency is also affected by factors other than algal growth, including suspended solids. Decreased inputs of suspended materials from streams due to the dry weather conditions have a positive influence on summer water clarity.

The relationship between the annual whole lake VWTP, and summer chlorophyll-*a* in Lake Sammamish is still functioning. The relationship between chlorophyll-*a* and secchi disk transparency also still works with the exception of periods where colonial phytoplankton predominate. The water quality goals that have been agreed upon for the Lake of 22 µg/L for mean annual VWTP, 2.8 mg/m³ for chlorophyll-*a*, and 4.0 m for Secchi disk transparency are still appropriate.

While summer water quality in Lake Sammamish has seen improvement, there are serious water quality issues in the fall. During the late summer and early fall of 1997, an extensive, toxic bloom of *Microcystis aeruginosa* covered much of the Lake. This bloom occurred even though the Lake met the water quality goals during this period. During the late summer of 1998, a bloom of *Microcystis aeruginosa* did not occur, however a sample was collected and analyzed for toxicity. Mouse bioassay tests indicated the cyanobacteria were not toxic. Subsequent strain

analysis done at the University of Washington indicated that while the cyanobacteria species was the same (i.e., *Microcystis aeruginosa*), the specific strain was different and non-toxic. In an effort to examine potential environmental factors that influence the production of toxins, a graduate student investigated this issue in Lake Sammamish with the support of King County, Seattle University, and the University of Washington.

In 1999, low concentrations of *Microcystis aeruginosa* were collected from the lake and tested positive for toxicity when analyzed using the ELISA test. While there was no bloom of toxic cyanobacteria in the lake during the fall of 1998 or 1999, the same strain of toxic algae, producing toxins at low levels, was present in the lake. It is apparent that the toxic strain of *Microcystis aeruginosa* is endemic in Lake Sammamish. If water quality conditions in Lake Sammamish deteriorate in the future and result in a cyanobacterial bloom, it would be expected that toxic *Microcystis aeruginosa* would be present. There were no blooms of toxic cyanobacteria recorded in Lake Sammamish in 2000, 2001, or 2002. In 2001, a preliminary survey for microcystins in lakes Washington, Sammamish and Union was initiated. Data from this survey was used to develop the Sampling Analysis Plan for Toxic Cyanobacteria in Lake Washington, Lake Sammamish, and Lake Union (2003). Sampling is scheduled to begin in May 2003.

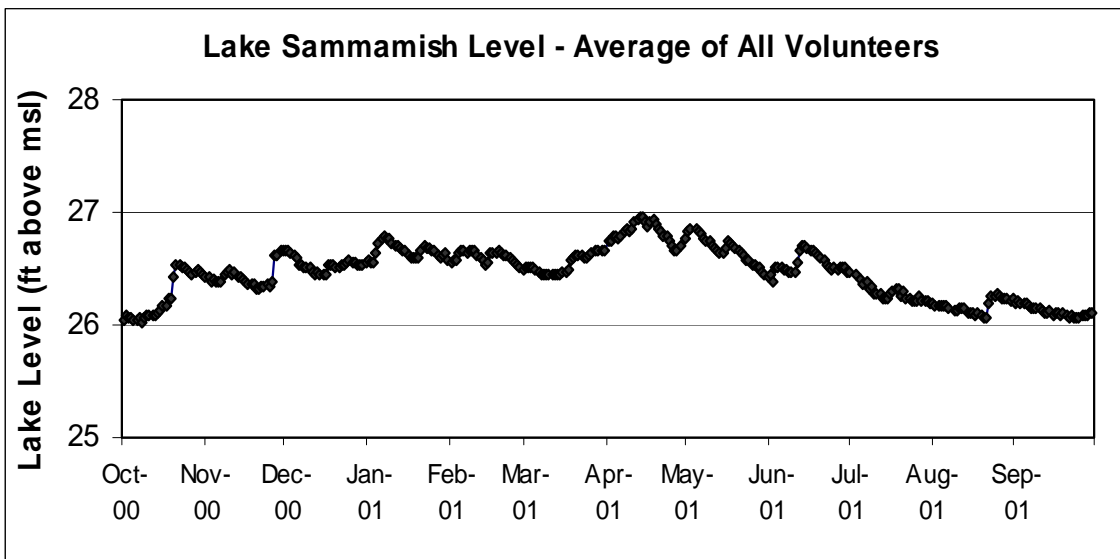
In 1998 it was hypothesized that *el Niño* was influential in the excellent summer water quality. Summer primary productivity is dependent on addition of phosphorus to the stable upper photic zone of the lake (i.e., epilimnion) by a combination of external loading during storm events and internal loading from the hypolimnion. The large toxic bloom observed in 1997 occurred after a significant late summer rainfall event that discharged into a very stable epilimnion. In comparison, during the summer of 1998, 1999, 2000, 2001, and 2002, there was less summer/fall rain and subsequently little external loading from the watershed or mechanism for mixing hypolimnetic water into the epilimnion and photic zone. These conditions likely resulted in the low VWTP measured in the lake and the corresponding low primary productivity and lack of a fall algal bloom. Interesting to note is that VWTP in Lake Washington was also reduced in these last five years as well.

Summer weather and stream inflow patterns have a significant influence on summer water quality, but other factors obviously influence the response of the lake. The lack of extreme winter storm events and the resultant erosion and sediment transport into the lake is a probable cause. Improved watershed management in the basin by citizens' groups and local governments may be another factor in this improvement. While neither citizens' groups nor County policies are responsible for the weather, the water quality improvements seen in the last five summers (1998 through 2002) show that limiting external phosphorus loading to the lake can result in improved water quality. All of the management policies in the Lake Sammamish watershed are designed to reduce external loading by controlling discharge of non-point source pollution to the Lake and associated streams. Assuming these policies are continued and successful, we should be able to meet the long-term water quality goals for Lake Sammamish.

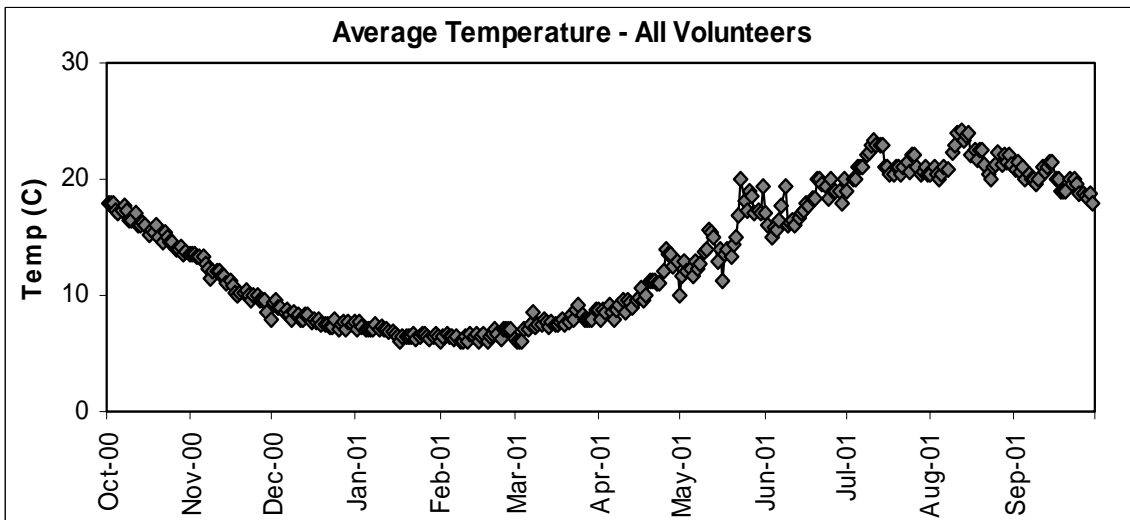
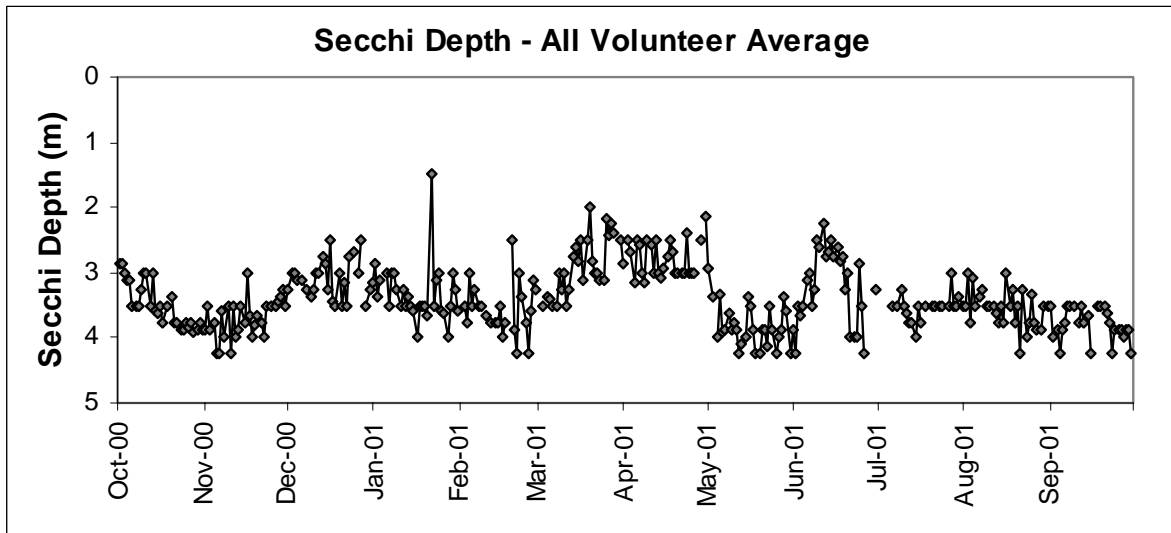
Volunteer Program Summary

To coordinate the activities of government and citizens in improving water quality and aquatic habitat in Lake Sammamish, King County and *Save Lake Sammamish* have joined in a partnership to train and use citizen volunteers in data collection. Most of these citizens live on the lakeshore and are collecting data on a much more frequent schedule than would be possible without their efforts. Increased training results in data that can be used directly in evaluation and management of the resources. It is hoped that this project will continue and be expanded.

In April of 1999, eleven citizen volunteers were trained by King County staff to collect physical data along the shoreline. This data augments data currently collected at seven sites on the Lake by the King County Environmental Lab. Parameters monitored by volunteers included daily lake level, daily rainfall, weekly Secchi disk measurements, weekly water color, and weekly temperature. The volunteers chose to monitor the weekly parameters from their dock or from their boat anchored approximately 100 meters offshore. Analysis of the 2002 volunteer data is not yet complete. Volunteers also collected lake use information including the presence of boats, swimmers, birds, wildlife, and algal blooms. They also collected suspicious water quality samples if noticed, and alerted King County staff when present. Monitoring data was submitted



on a quarterly basis. In WY 2002, King County's Minor Lakes Volunteer program began to offer increased support to Lake Sammamish volunteers by including them in annual training workshops and other educational workshops.



Implementation of Lake Sammamish Management Program

During 2000, King County implemented the Lake Sammamish Management Program as follows:

1. Forest Conservation Program – This program was integrated into the King County forestry program and will continue to be implemented by the County’s Department of Natural Resources, Resource Lands Section, and the Department of Development and Environmental Services. The regulatory (65 percent forest retention on all rural zoned lands) and incentive (both the current use taxation and education) elements of the program are being implemented by a King County forester.

2. Non-point Source Control Program – Education activities for the Lake Sammamish Basin are now developed and implemented through the WRIA 8 process. However, traditional planting events, workshops, and the Issaquah Salmon Days emphasis on the whys and wherefores of phosphorus as a pollutant have continued.
3. Regulatory Compliance and Enforcement –most of the developing land in the Lake Sammamish Basin has incorporated or been annexed, so King County’s role in protecting the lake from phosphorous inputs from construction sites is extremely limited. See page 16 of this report for details of the County’s Erosion and Sedimentation Control Program.
4. Enhanced Operations and Maintenance – no changes were made in maintenance practices for detention and water quality facilities in the basin in 2002.
5. Lake Protection Standards – 50 percent phosphorus removal standards for new development were adopted for the unincorporated parts of the basin in January 1998. These standards have been implemented since that time and were superceded by adoption of the 1998 King County Design Manual in 1998. In 1999, the County applied for and received a \$250,000 grant from the United States Environmental Protection Agency to evaluate the feasibility of implementing regional stormwater treatment in the Lake Sammamish Basin. The study was completed in 2002 and regional stormwater treatment was not deemed feasible for the Basin.
6. Public Ownership and Shoreline Access – King County has purchased and is developing the East Lake Sammamish Trail. Citizens, the King County Land Trust, and King County Parks are also evaluating possible shoreline parcel acquisitions in conjunction with the trail development. King County and the City of Issaquah are cooperating to develop a Waterways riparian corridor from Lake Sammamish State Park to the Taylor Mountain site purchased by the County in 1997 in upper Issaquah Creek (headwaters of Holder and Carey Creeks). The County is currently in the process of obtaining permits for construction of the trail.

The three short-term programmatic actions identified for King County action—an erosion control program, a source control program, and implementation of the 50 percent phosphorus standards for new development—have all been incorporated into the County's ongoing management of the Lake. Two of the eight capital projects identified as short term actions—Valley Growers Nursery and Weowna Creek, —were constructed or completed during 1997 or 1998. Two are now under the jurisdiction of the City of Issaquah (Kelly Ranch, and the Bianca Mine). [More detail available in the Lake Sammamish Initiative Table provided in the appendix.]

Implementation of Lake Sammamish Management Program

During 2000, King County implemented the Lake Sammamish Management Program as follows:

7. Forest Conservation Program – This program was integrated into the King County forestry program and will continue to be implemented by the County’s Department of Natural

Resources, Resource Lands Section, and the Department of Development and Environmental Services. The regulatory (65 percent forest retention on all rural zoned lands) and incentive (both the current use taxation and education) elements of the program are being implemented by a King County forester. In 2000, two workshops were held for forest owners to enroll in timber taxation programs. At this time, the total number of acres enrolled in the year 2000 is not available.

8. Non-point Source Control Program – Education activities for the Lake Sammamish Basin are now developed and implemented through the WRIA 8 process. However, traditional planting events, workshops, and the Issaquah Salmon Days emphasis on the whys and wherefores of phosphorus as a pollutant have continued.
9. Regulatory Compliance and Enforcement – the King County Erosion Control program continued with dedicated inspectors, however most of the developing land in the Lake Sammamish Basin has incorporated or been annexed, so King County’s role in protecting the lake from phosphorous inputs from construction sites is extremely limited. However, the cities of Issaquah and Sammamish also have erosion control inspectors.
10. Enhanced Operations and Maintenance – no changes were made in maintenance practices for detention and water quality facilities in the basin in 2001.
11. Lake Protection Standards – 50 percent phosphorus removal standards for new development were adopted for the unincorporated parts of the basin in January 1998. These standards have been implemented since that time and were superceded by adoption of the 1998 King County Design Manual in 1998. In 1999, the County applied for and received a \$250,000 grant from the United States Environmental Protection Agency to evaluate the feasibility of implementing regional stormwater treatment in the Lake Sammamish Basin. The contract for the study was awarded to *Gray and Osborne*, which was notified that it could begin work on September 10, 2001.

Work completed during the 4th Quarter of 2001 included a kick off meeting with the major consultants involved in the project. The meeting was held to determine roles, identify work items to be completed and project schedule. Two major treatment methods were identified in the meeting for initial review. The first is rehabilitation of the State Park wetlands. This rehabilitation will allow for the entrapment of suspended solids during high flow events prior to their entering the lake. The second methodology is the installation of treatment technologies, such as rapid sedimentation. Other treatment technologies, such as vault filter technology and vortex technology, were discussed. However, they will be given a lower priority in the analysis of regional treatment technologies as they are typically intended for smaller site development and smaller retrofit situations.

The majority of the effort in the fall quarter of 2001 was to identify data needs, data availability and to begin a literature review. Additionally, data analysis was completed that identified potential flow regimes for wetland treatment. Other work included the

development of a technology treatment rating criteria worksheet and the identification of permitting needs.

The first quarter of 2002 will be focused on continuing the literature review, reviewing data from selected pilot programs for rapid sedimentation technologies, completing of the rating criteria worksheet and refining the understanding of the lower Issaquah Creek hydraulics.

12. Public Ownership and Shoreline Access – King County has purchased and is developing the East Lake Sammamish Trail. Citizens, the King County Land Trust, and King County Parks are also evaluating possible shoreline parcel acquisitions in conjunction with the trail development. King County and the City of Issaquah are cooperating to develop a Waterways riparian corridor from Lake Sammamish State Park to the Taylor Mountain site purchased by the County in 1997 in upper Issaquah Creek (headwaters of Holder and Carey Creeks). During 2001, work continued towards acquiring additional parcels, with 33 acres of streamside properties being added to the waterways program.

The three short-term programmatic actions identified for King County action—an erosion control program, a source control program, and implementation of the 50 percent phosphorus standards for new development—have all been incorporated into the County's ongoing management of the Lake. Two of the eight capital projects identified as short term actions—Valley Growers Nursery and Weowna Creek, —were constructed or completed during 1997 or 1998. Three are now under the jurisdiction of the City of Issaquah (Kelly Ranch, and the Bianca and Interpace Mines). The Issaquah State Hatchery design project has been stopped and currently is in an alternative design review for a less expensive yet equally efficient form of phosphorous removal and public education at the site. No firm date has been set for future construction. [More detail available in the Lake Sammamish Initiative Table provided in the Appendix.]

Surface Water Design Manual (SWDM)

The publication of Ecology's *Stormwater Management Manual for Western Washington* in August of 2001 mooted the dialogue between the County and Ecology on the equivalency of the County's Surface Water Design Manual with Ecology's Stormwater Manual for the Puget Sound Basin. King County has begun the process of reviewing the SWDM for equivalency with Ecology's new manual for western Washington and plans to publish a full public review draft of proposed changes to the SWDM during the late summer of 2003. Proposed changes to Chapter 1 of the KCSWDM were published for public review on December 10, 2002 as part of proposed revisions to County code, including KCC 9.04. A new public review draft of Chapter 1/KCC 9.04 is planned for publication on May 15, 2003.

The following discussion focuses on the elements of the annual report required by the above referenced permits.

S10 (B) 1: STATUS OF IMPLEMENTING THE COMPONENTS OF THE SWMP

All the requisite components of a SWMP are in place in King County, with the exceptions noted above. Although there are some minor changes in the timing, magnitude, or name of some of our compliance activities, our program today continues to be substantially the same as that described in our approved SWMP.

S10 (B) 2: NOTIFICATION OF RECENT OR PROPOSED ANNEXATIONS OR INCORPORATIONS RESULTING IN A... DECREASE IN PERMIT COVERAGE AREA

From January 1, 2002 to December 31, 2002, King County's losses to annexation in terms of land area and revenue were negligible. Information about the specific annexations is shown on a map included in the Appendix.

No incorporations occurred in 2002 and none are expected in 2003.

S10 (B) 3 & 4: DIFFERENCES BETWEEN PLANNED AND ACTUAL EXPENDITURES FOR THE REPORTING PERIOD & REVISIONS TO THE REMAINING YEARS OF THE FISCAL ANALYSIS

King County's detailed fiscal analysis is included in the Appendix. In summary, the County's planned spending for NPDES stormwater related activities in 2002 was \$50,219,921. Actual spending for 2002 was \$49,386,963--a slight decrease of 3.04% from 2001 actuals. The adopted budget for 2003 by the County Council is \$52,477,432--an increase of 4.50% from the 2002 adopted budget.

S10 (B) 6: A SUMMARY DESCRIBING COMPLIANCE ACTIVITIES, INCLUDING THE NATURE AND NUMBER OF OFFICIAL ENFORCEMENT ACTIONS, INSPECTIONS, AND TYPES OF PUBLIC EDUCATION ACTIVITIES

Enforcements and Inspections

SWS Inspections and Enforcement Activities

Drainage facility inventory numbers have remained fairly constant--new facilities are keeping up with those lost to annexations and incorporations. The Stormwater Services Section (SWS) (the new name for the Drainage Services Section) of the Water and Land Resources Division continues to inventory commercial conveyance-only facilities, but does not inspect them.

SWS continues to be the initial investigator of drainage complaints. As shown, many facility complaints result in corrective work orders. Additionally SWS corrects drainage problems by designing small improvement projects through our Neighborhood Drainage Assistance program.¹ The 2-year maintenance/defect program continues to include quarterly inspections of new drainage systems. Maintenance programs have remained substantially unchanged in 2002.

SWS provided maintenance assessments and notification of maintenance needs to Commercial/Multi-Family property owners in unincorporated King County and to several Cities under contract. Property owner compliance increased from the previous Self-Assessment program. Additional program changes are in progress to enhance the Stormwater Management Program. SWS continues to explore the possibility of upgrading the complaint tracker program to include GIS/GPS capabilities to facilitate monitoring drainage complaints and using facility maps. The Maintenance Information System² is also being redeveloped to improve maintenance tracking and scheduling. Both will facilitate the use of historical data to address drainage problems.

Enforcement Actions & Inspections-- Flow Control and Water Quality facilities

The spreadsheet below identifies the total number of Flow Control (FC) inventories and assessment activities for 2002.

¹ The Neighborhood Drainage Assistance Program (NDAP) is a SWS program that addresses drainage problems not covered by other Flow Control or road maintenance programs. It builds small projects to remedy off right-of-way drainage problems, many of which are located on private property. NDAP projects quite often result from a SWS drainage complaint investigation that escalates to a drainage review. The projects are prioritized and then funded for construction on an annual basis. Contracted maintenance crews perform the work under the guidance of SWS engineers. NDAP has been a successful program for addressing problems neither referred to other agencies nor addressed by general maintenance programs within SWS.

² The SWS Maintenance Information System (MIS) enhances the Drainage Investigation and Inspection (DI&I) Unit's Facility inspection and maintenance programs. This computerized program is used to maintain a facility inventory, perform facility inspections, produce work authorizations or maintenance correction letters, and to track completion of work. The historical database contained in this program is used to do a "phased" analysis for inspection scheduling. This software is currently being redeveloped to better suit the redefined responsibilities of DI&I, and to fit many of the newer flow control facility features developed in the Design Manual.

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	INVENTORY TOTALS (as of 12/31/02)	WORK PROGRAM	INSPECTION TOTALS		
			2000	2001	2002
RESIDENTIAL					
<u>2-Year Bond</u>	130	2-Year M/D Bond Inspections	272	350	425
Residential R/D	1420	Inspections	986	950	929
		Special Use Permits	37	45	35
Total	1720	New Facilities Inventoried	68	45	54
COMMERCIAL					
<u>M/F Comm incl City</u>	1165	Inspections	1396	1130	1240
NPDES Facilities (conveyance-only)	468	NPDES Inventories	6	10	6
Total	1,633	New Facilities Inventoried	37	45	85

Enforcement Actions & Inspections--KCC 9.12 Activities (Including corrections to the information provided in the 1999 report for calendar year 1998.)

INVESTIGATION TYPE	CARRY OVER	NEW (in '02)	CLOSED (in '02)	OPEN
COMPLAINTS★ (quick response)	44	104	119	29
REVIEWS★ (more complex response)	254	63	40	277
SITE CONSULTATIONS★ (for businesses)	248	33	75	206
ENFORCEMENTS★ (violations issued)	35	15	9	41
INSPECTIONS ★(permit-driven inspections, not needing a full site consultation)	9	3	2	10

★**Complaints (quick response):** All water quality complaints that are received by WLR are reviewed by a Senior Engineer to see if an initial quick visit by a drainage investigator may be sufficient to solve the problem. If so, the investigator visits the site and collects all pertinent information. If the problem is a simple problem or one that can be resolved with a minor amount of information as required by the King County Water Quality Code or education by the investigator the complaint can then be closed. If the Senior Engineer determines the

complaint is more involved at the time of the initial review, an Engineer investigates the problem as a **Water Quality Review**. If the problem is identified as a potential violation that needs coordination with other agencies, a referral is made to the appropriate agency.

If a drainage investigator visits the site and finds more involved issues at the site, or if the individual or business where the complaint originates needs more detailed, technical information the complaint is “turned into” a **Water Quality Review**.

☆**Reviews:** (Handled by an Engineer II) These problems often require writing letters to the property or business owner where the water quality problem is occurring and explaining in more detail KCC code 9.12, or outlining additional ways to correct the water quality problem. A review often requires additional research to find the source, potential impacts, and severity of the water quality problem. A review also may require coordination with other agencies such as Ecology, KC Health, DDES, Washington State Patrol, Labor and Industries, EPA, Hazardous Waste, Solid Waste, Roads, or others.

☆**Site consultations:** An engineer II visits a business or commercial/residential property site with the owner/property manager. All BMPs that are required for the site to achieve compliance with KCC 9.12 are discussed and an implementation schedule is agreed upon. Once the owner/property manager feels that all BMPs are in place, the engineer revisits the site, and if the site is in compliance, the file is closed.

☆**Enforcements:** These cover a variety of problems. The first step in the process is a Notice of Violation that explains the specific violation and the steps necessary to correct the Violation. *IF the violation is an intentional or repeat violation or of an egregious nature, a formal Notice and Order with civil penalties and fines may be issued.* Once the violation is corrected, a Release of Violation letter is sent. The types of violations we see vary and involve both business and residential properties.

☆**Inspections:** The completion of a building permit triggers a site consultation. A quick inspection of the business and business practices was conducted and it was determined that the business does not have enough pollution-generating activities to require a full site consultation. These inspections may be reduced in the future (2003) as inspections of new and existing “accepted” commercial facilities will be determined on the number of facilities that are “turned over” from DDES. Due to new King County Stormwater regulations requiring all businesses to implement BMPS to qualify for Surface Water Management Fee reductions. Existing commercial facilities will be inspected for BMP implementation in addition to maintenance requirements prior to allowing for Surface Water Management Fee discounts. Therefore, inspections of new businesses based on building permits will be reduced. Site inspections based only on permits has been inadequate in capturing sites with high pollutant potential. This new procedure for water quality site inspections will capture many more pollution generating properties. As new facilities are added to our commercial inventory, business site audits will be completed assuring compliance with Ecology’s request to audit all new businesses that have pollution generating activities.

Erosion and Sedimentation Control

The Erosion Control Inspection & Enforcement Program (the Program) is based in the King County Department of Development and Environmental Services (DDES). In 2002, the separate program for permitted sites merged into the ongoing programs of the Building Inspection Section, Site Development Services Section and the Land Use Inspection section. An additional five (5) Site Development Specialists in the Code Enforcement Section have been assigned to non-permitted activities, especially those affecting ESA compliance. The Program continues to include enhanced inspections of permitted activities for Erosion/Sediment Control compliance (ESC) throughout the County. Additionally, the Small Works Program continues to operate for sites that remain non-compliant. The five erosion control contracts let in 2001 were replaced in 2002 by a single contract, saving limited funds and simplifying the processing of work orders. Under this program, the County notifies the developer that they are in default of their restoration financial guarantee agreement. Then the department prepares a work order under the erosion control contract. The cash portion of the restoration financial guarantee is used to pay the erosion and sedimentation control contractor. After the needed erosion control work is complete, the developer must restore the cash restoration financial guarantee to begin working again. The developer is also responsible for any additional charges in excess of the financial guarantee amount

The inspectors performing enhanced ESC inspections visit sites to observe whether appropriate ESC Best Management Practices (BMPs) are used. The inspectors are authorized not only to note violations, but also to provide on-site training in the proper use and installation of ESC BMPs. Enhanced ESC inspection areas include the Green River, Cedar River, Sammamish River, Bear Creek, and the Snoqualmie River Basins. [See the Appendix for a map showing enhanced ESC inspections performed during 2002.] With the incorporation of the City of Sammamish and annexations by Issaquah on the eastern side of the lake, and the annexation by Bellevue on the western side of the lake, the Program's services to the Lake Sammamish drainage area are limited to activities permitted by DDES prior to incorporation and annexation. The Program also implements that portion of the County's response to the Endangered Species Act (ESA) relating to the inspection of non-permitted sites. DDES provides 24 hour 7 days per week complaint response via the Road Maintenance Section's 24 hour 1-800 number. After hours and on weekends a staff person is always on standby to assure rapid response to complaints.

The enhanced ESC inspection program serves three main functions. First, it enhances ESC inspections on permitted activities, as described above. These include permitted activities from clearing and grading, short plats, subdivisions, commercial, and residential. The Appendix includes a map that shows the number of permitted sites with enhanced erosion inspections during 2002. For the year, a total of about 4129 separate inspections were conducted at construction sites. This is approximately the same number of inspections performed in 2001, though spread out over several inspectors and inspection sections. Some inspections resulted in violation notices and enforcement actions. Frequently, enforcement occurred *before* rain events,

which meant that the program was more successful in monitoring and preventing potential erosion problems.

The second of the program's three main functions involves the provision of technical assistance through guidance on the use of BMP's at specific construction sites. Many of the site visits focused builders' attention on better erosion control practices. In addition, the DDES web page offers additional information to builders at <http://www.metrokc.gov/ddes/esa/>.

The third main function of the enhanced ESC inspection program is the pursuit of enforcement actions for sites that are not permitted and are in violation of Appendices C & D of the 1998 King County Surface Water Design Manual, for other regulations as they apply to water quality, and for ESA compliance for both permitted and non-permitted activities.

Inspections & Consultations—Hazardous Waste

In the year 2002, the Hazardous Waste Management Program conducted over 3,200 on-site technical assistance visits to local businesses. The program helped local businesses stop producing over 15,000 pounds of hazardous- waste and further diverted over 16,000 pounds of waste from improper disposal, including 4100 pounds improperly disposed of in stormwater.

The Local Hazardous Waste Management Program Combined Field Unit helped the City of Issaquah with their "Sweep" of businesses, giving special attention to storm and surface water issues. The Teams covered all business areas in the city. The numbers of visits are included in the total numbers of businesses reported.

During 2002, the Interagency Regulatory Analysis Committee Troublesome Site Workgroup coordinated the "investigation" of six sites. Three sites were cleaned-up and the remaining three are still in the works.

Surface Water Engineering and Environmental Services

PROGRAM OVERVIEW

In 2002, as part of a reorganization, the Surface Water Engineering and Environmental Services Section was renamed the Capital Projects and Open Space Acquisitions Section (CPOSA). The primary role of CPOSA is to design and build capital projects in direct support of the Water and Land Resources (WLR) Division's capital needs. In addition, CPOSA provides a broad range of engineering and environmental support services. CPOSA "clients," both internal and external to King County government, include King County's Department of Natural Resources and Parks (DNRP), Wastewater Treatment Division (WTD), Solid Waste Division (SWD), and Department of Transportation (DOT). Other municipalities as well as County and State agencies also commonly request support.

Self-directed interdisciplinary teams within the CPOSA group are responsible for developing and implementing projects and providing innovative "state-of-the-art" expertise to its clients. These

teams offer technical direction and advice for a variety of challenging ecological and surface and storm water related problems and issues. CPOSA team members are comprised of ecologists, engineers, geologists, landscape architects, water quality specialists, and other technical support specialists. They produce multi-objective projects that address water quality problems, fish and wildlife habitat enhancement and restoration, localized flooding impacts, damage from erosion and sedimentation, hazards to human health and safety, and alterations to hydrology. Solutions to these problems include implementing a variety of traditional and non-traditional capital projects such as:

- ◆ Regional storm-water storage facilities that aid in flood damage reduction and improvements to water quality;
- ◆ Allowing access to upstream habitat by removing or replacing antiquated culverts that are barriers to fish migration;
- ◆ Restoring and enhancing stream, wetland, and floodplain habitats for fish and wildlife;
- ◆ Reducing sediment impacts from landslides and channel and streambank erosion.

PROGRAM ELEMENTS

Capital projects are received from a number of sources, but the majority of projects originate within the WLR Division. Sources include:

1. Basin plans and other reconnaissance efforts performed by the former Surface Water Management (SWM) Division or WLR and its partners have historically been the main source of large projects. Numerous projects identified by basin plans remain to be implemented; some remain in unincorporated King County while others have become the primary responsibility of cities as new areas are annexed or incorporated.
2. The WLR Division Storm Water Services Section recommends projects created in response to citizens' drainage complaints and requests from other agencies and municipalities.
3. The rural capital reconnaissance, begun in 2000, is developing into an important new source of projects to address long-standing drainage, sedimentation, and water quality problems in the expanded surface water area.
4. Future capital projects identified through Water Resources Inventory Area (WRIA) planning are expected to solve water quantity and quality problems while restoring degraded aquatic habitat.

A committee of project proponents and the ecologists and engineering staff who will ultimately do the design and permitting prioritizes projects in a two-step process. First, effectiveness and feasibility are used to rank projects. "Effectiveness" measures the overall value of a project on the basis of considerations such as the severity of the original problem, how thoroughly the proposed project would resolve the problem, project cost, durability of the design once built, and possible upstream and downstream impacts of the project. "Feasibility" reflects the

constructibility of the project by considering the issues such as physical access to the site, landowner willingness to participate in the project, and the likelihood of securing permits for the projects. Finally, project rankings are adjusted to reflect a number of secondary considerations such as the multiple benefits provided by some projects, public visibility or support for certain projects, and geographic equity among potential projects.

To efficiently manage the diversity of capital projects, the capital improvement program is divided into four principal areas: Large, Small, Emergency, and Opportunity.

LARGE CIP

The Large Project Capital Improvement Program includes capital projects identified in basin plans through special studies as well WRIA plans and other sources. Projects were prioritized through the CIP Master List process involving CIP and Basin Planning personnel. Large and small basin plan CIP projects are prioritized during preparation of the basin plans. Upon completion of the basin plan, CIP and Basin Planning personnel adjust priorities based on changing basin conditions, but strive to respect the basin plan's original ranking of projects and the intent of the basin plan's goals and objectives. Expenditures in this category represent a majority of the capital program.

SMALL CIP

The CPOSA Section constructs small capital improvement projects to resolve small habitat and localized flooding problems. These problems, individually, do not represent a significant threat to water resources or cause major property damage, but exhibit cumulative effects that may lead to the system-wide deterioration of valuable habitat and dissatisfaction on the part of King County residents. The Small CIP consists of three program elements:

Neighborhood Drainage Assistance Program (NDAP)

The CPOSA Section's NDAP addresses localized flooding, erosion and sedimentation problems that primarily affect private property, and are caused by nonexistent, inadequate or malfunctioning storm-water conveyance systems within the Surface Water Fee Service Area. The NDAP applies to both residential and commercial properties. Neighborhood drainage problems will be addressed through selected enforcement action, maintenance procedures, the construction of capital improvement projects, and through the provision of technical assistance for privately funded solutions. The goal of the NDAP is to provide customer service within the Surface Water Fee Service Area.

The NDAP gives CPOSA the authority, funding, and ability to manage surface water runoff outside of County maintained right-of-ways and tracts. The NDAP, along with existing CPOSA activities and coordination with the Roads Division, provides CPOSA the opportunity to more comprehensively manage storm water systems. Citizens will receive direct benefits from solving flooding and erosion problems that cause property damage, threaten health and safety, and degrade natural resources within their neighborhoods. The NDAP also gives CPOSA the opportunity to control surface and storm water runoff at their sources, therefore preventing degradation of our valuable streams, lakes, and wetlands. The NDAP will not immediately

address the entire off-road drainage system, rather, it will solve problems as they arise. In many cases the NDAP will accept regular maintenance responsibility for new facilities and those repaired by County crews.

CPOSA is notified of neighborhood drainage problems when citizens file a drainage complaint, usually after a storm event. Approximately 40-percent of the total complaints received by CPOSA each year is outside of County maintained roadways. NDAP field staff will investigate all problems in the off-road system to collect drainage-related information, and screen and prioritize the problems using impact criteria. The criteria include the type and number of items affected (home vs. yard), severity of impact on the items affected (yard eroded vs. minor yard flooding), potential to cause further damage, damage to natural resources, and the need to adjust expenditures and revenues in identified basins. NDAP staff then routes the problem to one of three solution groups: enforcement, maintenance, or capital construction. Staff will perform a cost/benefit analysis and solve as many problems as funding allows. The CPOSA Section staff also offers technical assistance and recommended solutions to all program participants.

Drainage and Habitat Improvement (DHI) Program

The DHI Program builds small capital projects that resolve minor drainage, erosion, and sedimentation problems, and/or improve water quality, and enhance wetlands and habitat in or along natural stream systems. The program focuses on projects that 1) are technically complex, requiring hydrologic modeling, backflow analysis, detailed plans, and/or extensive survey; 2) could have significant downstream impacts; or 3) require use of heavy equipment.

DHI projects are ranked and prioritized by the DHI Core Team using objective criteria such as 1) protection of public health, safety, and private property; 2) protection of beneficial uses such as aquatic, wetland or fish resources; 3) project cost, liability, and chance of success.

Small Habitat Restoration Program (SHRP)

The purpose and goal of the Small Habitat Restoration Program (SHRP) is to build effective and inexpensive small scale habitat restoration projects in stream corridors and wetlands that restore physical, chemical, and biological habitat forming processes for fish and wildlife. The program focuses on 1) developing habitat management plans; 2) providing technical assistance; and 3) constructing habitat restoration projects. These may include stabilizing eroding streambanks, installing livestock fencing, controlling invasive weeds, and planting native vegetation. In the Rural Service Area SHRP is focusing efforts on specific stream corridors in order to reduce or eliminate the "piecemealing" of projects among sites scattered throughout different basins. This stream corridor focus is a landscape-level approach to restoring habitat-forming processes and practicing adaptive management. SHRP projects originate from Basin Plans, County staff, and the general public and community groups.

SHRP also provides technical assistance to property owners and other agencies interested in pursuing their own habitat or enhancement projects.

EMERGENCY CIP PROJECTS

The emergency capital improvement program was designed to respond to emergencies or critical needs without drawing funds from other programs. Typical examples of emergencies are system failures, washouts, and erosive slides that threaten public health and safety, or property. For emergency responses to storm events, special funding appropriation will be sought to augment the emergency CIP fund when necessary. This category also includes critical projects, in advance of basin plan completion, that solve long-standing problems.

OPPORTUNITY CIP PROJECTS

These are generally large CIP projects that become a high priority for another jurisdiction or a developer, who in turn offers to participate in the funding. If the project fits into any CPOSA plans or objectives for the area or problem, an attempt is made to establish an arrangement to share funding and identify a participant's scope of responsibilities through an interlocal agreement.

OTHER PROGRAMS

The Ecological Services Unit (ESU) manages other programs that directly support the surface water CIP program. They include:

Native Plant Salvage Program

ESU continues to salvage, hold, and propagate native plants for use in surface water CIP and Roads CIP programs where re-establishing native vegetation is desirable or required. In conjunction with WLR's Public Involvement staff, ESU held six volunteer-staffed events throughout King County. Approximately 5,220 native plants were salvaged from development sites in 2002, of which approximately 5,000 plants were salvaged by landowners for re-establishing native vegetation and habitat in their yards. About 9,286 plants were replanted at project sites during the fall and winter dormant periods. These will include salvaged plants, plants propagated at the holding facility, and plants donated to the holding facility by the National Tree Trust, local vocational nursery programs, and private property owners. The program results in significant cost savings to the County and promotes the preservation of native plant gene pools through the extensive use of locally adapted plants.

Management of the Washington Conservation Corps Crew

ESU manages the Washington Conservation Corps (WCC) crew for use on numerous surface water and Roads CIP projects. Crews provide extensive construction support for stream and wetland restoration projects and for projects where work in sensitive areas requires the extensive use of hand labor. Besides offering a low impact method to construct projects in sensitive areas, the use of the WCC crew results in considerable cost savings to the County. In return, crew members receive training and job experience in the field of ecological restoration.

CIP Monitoring Program

ESU manages the CIP Monitoring Program. This program creates and implements project-monitoring plans in order to assess project performance and to meet regulatory monitoring requirements. In 2002, ESU monitored 16 previously constructed projects. Thirteen of these

projects required the preparation of yearly monitoring reports that were submitted to regulatory agencies (the King County Department of Development and Environmental Services, the Washington State Department of Fish and Wildlife, and the US Army Corps of Engineers) in compliance with permit conditions. Four reports were *final* reports.

In addition, the monitoring team designed and implemented water quality monitoring programs for projects under construction, where turbidity issues were of special concern to the Washington State Department of Ecology (DOE), the US Army Corps of Engineers, the US Fish and Wildlife Service, and the National Marine Fisheries Service. With the recent listings of bull trout and chinook salmon as threatened species under the Endangered Species Act, substantial water quality monitoring during construction is likely to become a standard requirement for many projects. ESU will also use this information to help DOE develop more realistic water quality thresholds for construction projects.

CIP HIGHLIGHTS

CPOSA constructed 14 capital projects during 2002, at a cost of 1.2 million dollars, and plans to construct 11 capital projects in 2003.

Road Maintenance Activities

The year 2001 saw continued efforts to improve the Road Maintenance Program to address salmonid impacts. A detailed report on these efforts is provided in the Appendix.

Public Involvement and Training Activities

Department of Natural Resources, Water and Land Resources Division

Public Involvement Program

The fate of Northwest salmon stocks remains a serious concern to professional resource managers, the media, and King County residents generally. Our public outreach messages and activities continue to emphasize the relationship between water quality and the health of the region's salmon and watersheds.

Volunteers Program

About 388 volunteers **planted 2240** plants along local streams and rivers to prevent erosion, improve water quality and protect salmon rearing beds along the Sammamish River and at three other sites. This year's restoration events emphasized maintaining existing plantings (removing invasives and other work) as well as planting new plants.

More than 379 people participated in four **native plant salvage** events, digging up a total of 5220 native plants (worth over \$28,710) from development sites to be used in future plantings.

In 2002, approximately 139 volunteers **stenciled 593 storm drains** with a water quality message "dump no waste/drains to stream", and eight charity car washes were held using **clean water carwash kits**.

Grants Program

The Water and Land Resources Division continued to award numerous grants to support improvements to water quality, including habitat. Approximately 1.1 million dollars in six grant programs were awarded to fifty-seven applicants.

Public Information and Education Programs

Classroom water quality presentations reached more than 4650 students at 61 schools in 16 districts. Staff presented an hour long, hands-on class about water quality, wastewater treatment and individual responsibility for a healthy environment.

Our **Groundwater Program** visited 1350 students plus an additional 2700 people at fairs and festivals. This program explains our connection to groundwater and how we can protect it.

120 volunteer **Beach Naturalists** made more than 20,000 contacts with public visitors to seven area beaches on low tide weekends from May 26 to July 22. This is an increase of more than 400% over the last four years for this cooperative project with The Seattle Aquarium.

In the fifth year of the **Cedar River Naturalist** program, 49 trained volunteers helped more than 5000 visitors spot spawning salmon along the Cedar River and understand the natural and human history of the watershed. Teams of naturalists were also present to deliver these messages on three summer Saturdays at the Ballard Locks; more than 15,000 people visited the Locks during that time.

A total of 260 people attended six **Naturescaping workshops** around the County. Attendees learned how and why to use native plants in their home landscapes, and how to shrink their lawns thereby keeping pesticides and fertilizers out of lakes, streams, rivers and marine waters.

King County's **Programs for Educators 2002-2003 School Year Edition** booklet was also published and distributed, both in hard copy and on the web. It continues to serve as a valuable resource for environmental educators with updated listings of action projects, classroom programs, curricula, field trips, grants, Internet resources, newsletters, teacher workshops and videos.

66 schools participated in the **Wheels to Water** environmental school bus program last year reaching 3392 students. This program provides free Metro bus transportation to water quality education sites throughout the County.

Two issues of "**Downstream News**" (24000 addresses) and four issues of the "**Lake Stewardship Newsletter**" (9200 addresses) were mailed to King County residences. These publications contain lots of tips and information on water quality and environmental issues

A new **King County Stormwater Website** was brought on line in the last half of 2002. The new site represents an increase of more than 300% in the web content previously available related to stormwater. Existing content was updated and integrated with the new content. The redesigned site includes information on municipal stormwater permit compliance as well as educational materials and resources related to stormwater. The URL for the site is:

<http://dnr.metrokc.gov/wlr/stormwater>.

Lake Stewardship Program

- ◆ In 2002, the Lake Stewardship Program trained and supported over 100 citizen lake monitors on 49 small lakes and Lake Sammamish for sampling and recording water quality and quantity information.
- ◆ Data quality was assessed and analyzed for production of the 2002 annual report. Two annual reports covering the 2000 and 2001 monitoring seasons were completed, and more than 100 copies of each were distributed.
- ◆ Two workshops were offered: a public workshop on bird species to be found on and near small lakes, with an emphasis on habitat enhancement, and an additional summer workshop for volunteers on how to classify and assess land use on lake shorelines.
- ◆ Technical assistance was provided in over 200 instances to lakeside residents and local jurisdictions, addressing water quality issues and protection activities.
- ◆ More than 11 presentations on lake ecology, water quality, and citizen involvement were made through the year upon request to community clubs, school groups, summer day camps, stewardship workshops and other gatherings.
- ◆ The quarterly Lake Steward newsletter was composed, published, and distributed to approximately 2,300 lakeside residents and interested citizens, providing information on a variety of water quality protection and enhancement activities, as well as up to date reports on water quality data.
- ◆ The regional milfoil survey report based on fieldwork done in 2001 was completed and made available for use by citizens and jurisdictions.
- ◆ The program to eradicate Hydrilla from Lakes Pipe and Lucerne was continued, managed by the Program through an agreement with the cities of Maple Valley and Covington, using a grant from the Washington Department of Ecology.
- ◆ The Program worked with citizens from Spring Lake to produce an Integrated Aquatic Plant Management Plan and to apply for grants to eradicate or control four different noxious weeds found in the lake and nearshore environments.
- ◆ Interim monitoring of Beaver Lake inlets was performed by agreement with the city of Sammamish during an LMD renewal phase, followed by the signing of an agreement to do the monitoring work over the life of the second LMD.
- ◆ A guide to recreation on the small lakes of King County was produced by an Art Institute of Seattle student under the guidance of the Program and made available to the public on the Program's Website.
- ◆ The Program's Website was updated to increase public access to the program's resources. View it at <http://dnr.metrokc.gov/wlr/waterres/smlakes/index.htm>.

Local Hazardous Waste Management Program

The Local Hazardous Waste Management Program (LHWMP) has several efforts that aim to protect water quality by reducing residents' use of pesticides and household hazardous materials through education and training.

The LHWMP has continued working with the Washington Association of Landscape Professionals (WALP) on an advanced horticultural management endorsement. Landscapers who pass a field test in environmentally friendly lawn care practices will be certified by WALP and promoted by King County and the City of Seattle. The Associated Landscape Contractors of America, has approved the advanced endorsement, which makes the program a national model that may be adopted elsewhere in the United States.

The following summarizes the diversity of the LHWMP programs:

Green Gardening

Reached 800 people in 40 presentations to workplaces, garden clubs and homeowners associations at 49 locations.

Trained 200 landscape professionals through all day IPM workshop which attracted 320 people. 18% of survey respondents (152) rated the workshop "outstanding", 57% rated it "very useful", and 21% rated it "fairly useful".

Trained 268 nursery staff, landscape professionals, Natural Lawn & Garden Hotline staff and horticultural students through 23 presentations.

Trained 100 individuals in 10 pilot presentations for grounds management staff located in King County, outside Seattle.

Trained 80 master gardeners on green gardening techniques, and a total of 107 Master Gardeners received a three hour introduction to Green Gardening principles during their training program. In addition, 25 Master Gardeners were trained to present the Green Gardening slide shows.

Six "Practical Gardener" columns focused on green gardening techniques for the Seattle Times. Mary Robson wrote the following six articles for the Home Section of the Seattle Times: mulch and its use, growing vegetables without pesticides, where to get information (featured the Natural Lawn & Garden Hotline), beneficial insects (featured the Good Bug Guide), fall soil care, moss.

Natural Yard Care

Since 1997 the Natural Lawn Care Program, a cooperative effort with King County Department of Natural Resources, Seattle Public Utilities and other public agencies, has used advertising, media events, brochures, community outreach and other methods to encourage

people to change their lawn care methods. Natural lawn care methods will mean reduced use of pesticides, fertilizers and water, and reduction of solid waste.

The program has grown into the Natural Yard Care training series, that includes other WLRD programs like native plant use, noxious weed education, Biosolids, compost recycling, etc.

Four fact sheets on natural lawn care and natural landscape design were created and distributed. 186,430 brochures were distributed to six main venues in 2002. It is estimated that 100,000 brochures were actually distributed to customers through these venues (the remaining brochures were either collected for re- distribution or left with the venues for distribution in 2003):

- 35,000 via the Northwest Flower and Garden Show
- 33,000 via nurseries
- 32,000 via all other events and organizational requests

Educate 300 people on natural lawn care through workshops, meetings, and speaking engagements. 872 people were reached through a variety of educational opportunities, including Naturescaping workshops, Master Home Environmentalist training, Master Composter/ Soil Builder training, classes at the Center for Urban Horticulture, and a presentation at the National Pesticide Stewardship Alliance Conference.

Distributed 20,000 brochures and videos through lawn care phone line, events and other methods. Good bugs guide was very popular, especially appealing to all ages, as were all other gardening- related brochures in 2002.

Implemented the Professional Lawn Care Certification Program (with WA Association of Landscape Professionals).

The Natural Lawn and Garden Hotline - responded to 2,443 Integrated Pest Management-related questions in 2002. There were a total of 9,347 questions answered by the Hotline: 6,791 calls, e- mails and walk- ins.

Other efforts

Work with local governments to produce and distribute education to their residents about why and how to reduce pesticide use. Natural Yard Care Neighborhoods is working with several local governments to expand the program into their cities in 2003.

Worked with Natural Yard Care Cross- Team-- a joint effort of King County, Seattle Public Utilities, and suburban water purveyors to develop joint messages and educational materials.

Worked with community groups, retailers and others on pesticide education projects. Participated in planning for 2003 Northwest Natural Yard Days activities in retail stores-- planned for April 2003.

General Outreach

Distributed 20,000 general Household Hazardous Waste brochures, e. g. Five Steps & Hazards on the Homefront [WLRD]. General household hazardous waste brochures were not very popular in 2002 in comparison with gardening- related brochures. In general, local government activity focused more on gardening topics in 2002 and less on general household hazardous waste topics.

Distributed household hazardous waste brochures to 5,000 people at Home Show and Home Show 2, in partnership with SPU.

Master Home Environmentalist staff participated in Environmental Justice Needs Assessment and trained a new class of volunteers. 89 home visits and assessments were performed in the year. Data is tracked from completed home environmental assessments with a newly developed computer program.

Provided household hazardous waste education via ECOSS to non- English speaking, low-income and other ethnic minority families. In 2002, ECOSS outreach workers conducted 354 home visits, convened/ facilitated 234 groups, and attended more than 33 separate events. They distributed about 502 Green Cleaning Kits in the following language- specific communities: Spanish, 34; Chinese, 10; Vietnamese, 109; Cambodian, 53; East African, 138; English, 158.

Home Buyers Education

Household Hazardous Waste information was distributed to 24, 000 new home buyers, and Green Home kits were given to targeted residents. We are working with other LHWMP agencies to expand the Green Home Kit to include not only the mailer version but a bucket/ basket of less toxic products to be distributed at community and educational events. The kit is advertised on the LHWMP website and on the Washington Department of Health website, among other venues.

"Green Home" educational events were held at three grocery stores, with media outreach and informational materials.

School Program

In 2002, the Local Hazardous Waste Management Program Household Hazardous Waste School Program saw 6674 students (grades 4-12) and their 159 teachers. The program includes a lesson about tracing the path of household products from the home -- via storm drains and groundwater and runoff -- to water bodies and to fish. Also included, is a lesson about proper disposal methods, and a discussion about why it's not a good idea to dispose of hazardous household waste in storm drains, or by dumping on the ground.

Groundwater Program

Classroom Presentations

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During classroom style presentations, the Groundwater Education Program provides students with the knowledge and skills they need to make informed decisions and behavior changes aimed at increasing the quality and quantity of groundwater.

Students are engaged in interactive classroom activities on the water cycle and groundwater conservation and protection and a home water use inventory/audit.

In addition to school visits, the Groundwater Program participated in a number of youth oriented festivals. These included the following:

- Water Festival 2002 (Highline CC)* (3/26-27)
- Northshore Watershed Festival (Bothell)* (5/15-17)
- Meridian Elementary School (Kent School District)/Soos Creek Science Fair* (6/6)
- Renton River Days Kids Day (in conjunction with City of Renton) (July 24)
- "Kids Day America/International " in North Bend, sponsored by the National
- Chiropractic Association (Sept. 21)
- Wilder Elementary School (Lake Washington School District) PTA Science Fair (Sept 25)

*School oriented and/or sponsored

51 schools in 14 districts in King County were visited in 2002. This resulted in over 4,000 (4020) student contacts through 93 different teachers/classrooms. The majority of the presentations were for grades 3-6.

Public Outreach

Public and adult outreach is accomplished primarily through informational booths at community and environmental fairs with the dissemination of materials and discussion of our exhibits and displays. At these festivals and fairs, interactive exhibits in the booth allow attendants the opportunity to discuss groundwater with community members. A large groundwater model is used to show the relationship of those of us above the ground to the water below the ground. Citizens can also be directed to other resources to develop a positive attitude toward this resource.

The Groundwater Program had a presence at the following community fairs/festivals:

- Vashon Strawberry Festival (July 13-14)
- King County Fair (July 16-22)
- Renton River Days (July 26-28)
- Vashon Earth/Fair (August 2-4)
- Alpine Days (North Bend) (August 10, 11)
- Issaquah Salmon Days (Oct. 5, 6)

Department of Natural Resources, Parks Division

King County manages over 25,000 acres of land with many of these properties protecting salmon habitat and thus water quality. Unfortunately, King County is facing an unprecedented budget crisis that is affecting all agencies, including Parks. Reduced sales tax revenues and voter-approved initiatives contributed to a County budget shortfall of \$52 million for 2003. The County anticipates budget shortfalls of more than \$22 million in 2004 and 2005. While all County activities funded by the general fund have made budget cuts in response to the shortfalls, Parks has taken a proportionately larger share of the cuts because it performs more of a discretionary than mandatory function.

In 2003, Parks cut \$9.1 million from its budget including more than 80 full time positions. This was following a nearly \$3.2 million cut in the 2002 budget that included 30 full time positions. Regrettably, the Interpretive Programs Office was one of the programs eliminated from the 2003 Parks budget. Many of the programs once offered by the IPO office are being continued through a unique partnership with "Nature Vision", a non-profit environmental education business. They will be continuing the "Nature Connection" programs, which were the programs Parks previously offered to schools. These programs covered topics relating to wetlands, streams, forests and marine life. Nature Vision is also able to provide these programs to groups such as Boys Scouts, Girl Scouts, etc. The County still owns the supplies and curriculum materials that were developed and acquired by Parks, and allows Nature Vision access to them. Nature Vision's Website is <http://www.naturevision.org>.

In 2002, Parks provided the following public education programs:

Interpretive Programs (General Public Programs)

A variety of family programs were offered in 2002 including "Cyclin' for Salmon" on the Cedar River Trail, "Sammamish River Salmon Salute", "Plant Search and Rescue" and "A Walk through Time" at Cougar Mountain Regional Wildland Park.

Stream, Wetland and Puget Sound Connection (School Programs)

Our family of habitat-based school programs ("Nature Connections") continued to attract large numbers of classes. Primary field sites for Stream Connection were county parks near Renton, Woodinville and Carnation in the Snoqualmie Valley. Wetland Connection field sites included Marymoor Park (Redmond) and Soos Creek Park (Kent). Puget Sound Connection field sites focused on Richmond Beach (Shoreline) and Seahurst Beach (Burien) and emphasized marine habitat. All of the Connection programs featured a classroom session and a field-based session at an appropriate location. Total number of bookings in schools throughout King County was 495.

Water-Related School Programs

Other water-related school programs included “Water Cycles”, “Pond Dipping”, “Toadally Amphibians”, and “Water Whiz”. These programs were presented to students in 51 programs. Water quality messages are included in each program.

Employee Training Related to Water Quality

Employee training is an important component of managing the park system acreage to insure compliance with current regulations and model land management practices. Employees attended the following list of courses in 2002.

- Pesticide Applicators Re-certification - 18 employees (16 hours each)
- Pesticide Pre-License - 1 employee (1 day each)
- Dangerous Waste Management – 1 employee
- Washington Native Plant Society course on native plants – 1 employee

Other Parks Activities to Benefit Water Resources

Parks reduced water consumption in 2002 by functioning on the schedule for 2001, which was a drought year requiring conservation measures.

Also in 2002, Parks hired an engineer, David Sizemore, to assist in developing a drainage maintenance program for NPDES compliance.

Department of Development and Environmental Services

In 2002, DDES Environmental Education (EE) outreach staff focused on activities related to the County’s proposed updates to the Critical Areas Ordinance and other environmental codes including KCC 9.04, the drainage code. (The drainage code updates are the first step towards a King County Surface Water Design Manual that is equivalent to Ecology’s Stormwater Manual for Western Washington. The CAO activities included a meeting between the MasterBuilders and the DDES Environmental Committee to discuss the CAO and the Stormwater Ordinance changes, outreach on the proposed updates to the stormwater ordinance, and 4 focus groups with rural citizens to discuss their responses and ideas to the 65% vegetation retention requirement proposed in the stormwater ordinance.

Department of Executive Services

The Environmental Purchasing Program, of the King County Procurement & Contract Services Section, produces periodic (about once a month) e-mail Environmental Purchasing (EP) Bulletins to highlight recycled and environmentally preferable products, events, contracts, and other materials of interest to participants in the program. These bulletins were originally produced for program contacts within King County, but are now distributed to suburban cities and others and have become a valuable tool for initiating the exchange of information with other programs.

A copy of a recent bulletin is included in the Appendix and can be accessed at <http://www.metrokc.gov/procure/green/bul76.htm>. The program's 2002 annual report is available at <http://www.metrokc.gov/procure/green/annrep02.pdf>. Past bulletins can be found at: <http://www.metrokc.gov/procure/green/bulindex.htm>.

Topic Categories:

- The Program
- Annual reports
- Environmentally Preferable Materials - Construction
- Environmentally Preferable Materials - Office/Janitorial
- Allied King County programs/activities
- Hazardous waste
- Construction, Demolition and LandClearing
- Recycling/Reuse
- Green Building
- Waste Prevention/Source Reduction
- Environmental Purchasing Resources

Integrated Pest Management

The King County government continues its efforts to incorporate Integrated Pest Management (IPM) principles in their internal operations as directed by the 1999 Executive Order. IPM is a well-established, holistic approach to managing pests and landscapes. It seeks to prevent or address pest problems by employing a wide range of strategies, generally using chemical pesticides as a last resort. The IPM approach considers the impacts of management methods on the environment and public health.

Some of the landscape management activities used last year that highlight IPM principles were:

- ◆ Continued hand pulling weeds and using mechanical tools such as flame weeders, weed wrench's and string weeders.
- ◆ Using large amounts of mulch for weed suppression.
- ◆ Actively considering alternative methods, practices and products.
- ◆ Tolerating a greater number of weeds in the landscape. Because this causes an increase in complaints from a public accustomed to a more manicured look placards were developed to educate the public on IPM and the "weedy" look.

Other IPM activities included:

- ◆ The IPM Steering Committee continued to meet monthly to communicate, coordinate and share experiences. The members are from county departments and divisions with a role in managing landscapes.
- ◆ In response to the arrival of the West Nile virus the issue of mosquito control and IPM principles was a regular agenda item for the steering committee.

- ◆ The e-mail Info-Share, created to share expertise, solve problems, announce events and otherwise communicate, was distributed quarterly.
- ◆ Staff continued to research and provide information on local training opportunities.
- ◆ Continued efforts to make changes in contract language for contractors working on county property. The county hopes this will reduce pesticide use over time as contracts are renewed.
- ◆ Continued the process of reviewing requests to use Tier 1 products for the control of noxious weeds.

Other Compliance Activities

In addition to the documents described above, the Appendix to this report also includes information on other compliance activities continuing in the County, water-related CIP projects (improving fish passage, etc.), and mapping of the County's storm sewer system.

S10 (B) 7: IDENTIFICATION OF KNOWN WATER QUALITY IMPROVEMENTS OR DEGRADATION

Beach Monitoring Program

To track public health issues related to swimming, a public swimming beach monitoring program was conducted from 1996-2002 as a cooperative effort of WLRD, KC Environmental Laboratory, the Seattle King County Public Health Department (SKCPHD), and a number of suburban cities. In 1998, 21 public swimming beaches on lakes Washington, Sammamish, Five-Mile, Wilderness, Pine, Beaver, and Green were sampled weekly from June through September. In 1999-2001, the public swimming beaches on lakes Washington, Sammamish, and Green were sampled weekly from June through September, while the other lakes were sampled by other jurisdictions and private laboratories. In 2000, sampling included the Magnuson Off-leash Dog Area. In 2002, 26 beaches and the off-leash area were sampled. All bacterial data were immediately transferred to the SKCPHD for determinations on public health and contacts with the local jurisdictions and parks departments, and published on the King County Website at <http://dnr.metrokc.gov/wlr/waterres/lakes/bacteria.htm>.

Data from the beach monitoring program was used by the SKCPHD to identify potential public health problems. Bacterial counts at nearly all the beaches monitored were within acceptable ranges and did not warrant swimming beach closures. Juanita Beach (King County Parks) was the only beach closed during the summer of 2001, and this closure was caused by a sewer line break associated with construction adjacent to the park. In 2002 only Green Lake swimming beach was closed, but because of toxic cyanobacteria, not fecal bacterial, contamination.

Basin Management Evaluation Program (BMEP)

In the year 2001, the Basin Management Evaluation Program (BMEP) annual monitoring activities continued to face many obstacles and permit requirements stemming from the Endangered Species Act. Although some of our monitoring activities continued as planned and

projected for 2001, several monitoring programs were altered, challenged, or discontinued because of unforeseen obstacles.

King County Water and Land Resources Division's stream habitat assessments, which have been performed annually since 1997 on Bear and Soos creeks and the Cedar River tributaries, were halted or altered because of a property access issue. The County's property access policies were challenged by a property owner who did not want County scientists accessing and monitoring his land. This issue was presented to a task force for remedy and all forays onto private lands were halted until a reasonable outcome could be determined. King County unsuccessfully attempted to get written letters granting access to contiguous properties in the Bear Creek study sites, and the County disbanded its annual habitat assessments for 2000. Where property access was obtainable, limited habitat surveys were carried out in Bear Creek in 2001.

Since 1994, King County biologists have actively surveyed the Bear Creek, Cedar River, and Issaquah Creek basins as part of an effort to monitor the health of native salmonid populations in WRIA 8. These surveys include active participation from local, state, federal, and tribal agencies. Since the 1999 listing of Puget Sound chinook salmon, particular emphasis has been placed on documenting the distribution and spawning characteristics of these species, and will continue for the next five years. In 2002, surveys will continue to focus upon chinook salmon, with emphasis on making distinctions between hatchery raised and wild fish in the Lake Washington Watershed.

In 2000, King County began to formally survey the nearshore environment along King County beaches to determine the presence of ESA listed species (e.g. chinook salmon and bull trout). In 2001, these efforts were increased to include Vashon Island and the southern portion of Snohomish County. This effort will continue during 2002.

Hydrologic Monitoring continued as planned in King County for 2001. Soos, Bear, and Issaquah creeks were gauged and monitored. Gauges were also maintained in the Cedar River tributaries and in the East Lake Sammamish system. These will be continued in 2002.

Land Use and Land Cover assessments were slated to begin in 2000 but have been postponed until 2002.

Benthic macroinvertebrate monitoring continued on track in 2001. King County Water and Land Resources Division sampled sites in Bear Creek, Soos Creek, Cedar River, Issaquah Creek, and in Shinglemill Creek on Vashon Island.

Water Quality Monitoring continued as projected in 2001. County scientists will continue to monitor water quality in 2002-2003.

Wetland monitoring in King County has changed dramatically since the NPDES permit was written. King County has focused its wetland monitoring resources on mitigation banking sites; these monitoring sites include one site in the Sammamish plateau and another site near Swamp

Creek. Wetland monitoring continued at the Urban Planned Development in Bear and Swamp creek systems. Wetland Monitoring activities have also expanded to include vegetation surveys, bird surveys, and amphibian surveys.

Hydrologic monitoring continued as planned in King County for 2001. Gaging in the Bear, East Lake Sammamish, Issaquah Creek, and Lower and Middle Cedar River watersheds supported water quality investigations and habitat studies. New gages were also established in the Green River watershed for water quality assesment. Three new sites were established in WRIA 7 on tributaries to the Snoqualmie River as rate funded surface water activites expanded into these areas. These will be continued in 2002.

A table showing the types and location of monitoring completed during the permit term is included in the Appendix.

S10 (B) 8: STATUS OF WATERSHED-WIDE COORDINATION

ILA Program

In 2001, work began on development of work products under the ILA construct involving cost sharing by more than 45 jurisdictions to support the salmon conservation planning effort. The work is now entering its third year and all jurisdictions are continuing to participate.

In WRIA 7, the final version of the Snohomish Basin Near Term Action Agenda (NTAA) was approved in 2001, which included guidance for local governments in updating local policies and regulations while a more detailed salmon conservation plan is developed. In 2002, the joint review of local planning policies and regulations was completed. In addition, the Forum approved a proposal to develop model language for jurisdictions that would meet the guidance of the NTAA. In addition, scoping and workplan development for the Multi-Species Salmon Conservation Plan was completed in 2002.

In WRIA 8, The Draft WRIA 8 Reconnaissance Report, which includes known, probable, and possible factors of decline organized by sub-basin, was published in March 2001. Also, the Reconnaissance Assessment was updated and expanded as a Limiting Factors Report. The first draft of the Near Term Action Agenda was completed in December 2001 and adopted in 2002. Detailed scoping for the Salmon Conservation Plan took place in 2002 as well as work on the Strategic Assessment. The Strategic Assessment will provide technical foundation for the conservation plan as well as baseline information needed for adaptive management. WRIA 8 also hired a consultant to develop the Ecosystem Diagnostic and Treatment (EDT) model for the watershed, which will provide guidance for the development of recommendations in the conservation plan.

The draft Near Term Action Agenda for WRIA 9 was completed at the end of 2001 and is based on findings in the WRIA 9 Reconnaissance Report. As with the other NTAA's, it contains actions that can be taken in the next 2-3 years while more detailed conservation planning is

underway. In 2002, work on the Strategic Assessment proceeded the detailed scoping and workplan for the Comprehensive Salmon Conservation Plan was completed.

While not part of the ILA structure, work in WRIA-10 is transitioning from the technical assessment and development of strategic priorities contained in the Watershed Analysis, completed in 2001, toward the completion of a recovery plan. The plan, to be completed in 2003, will include identifying potential actions, assessing the effectiveness of the actions and prioritizing the actions necessary to meet recovery goals. The implementation of plan, similar to the technical and planning processes, will be accomplished by voluntary participation of watershed stakeholders.

CONCLUSION

The County's SWMP continues substantially as planned and disclosed in our approved submittal, although the emphasis of our management activities has shifted to addressing threats to the survival of salmonids and to making the water quality improvements (including improved habitat elements--not just water chemistry) necessary to assure that salmonids can thrive in our waters.