

CONTENTS

Acknowledgements

SUMMARY

Section 1 INTRODUCTION

Water Resource Challenges in the Region	1-1
The Outlook – An Ongoing and Adaptive Assessment	1-2
What’s in the 2001 Outlook Report?	1-2
Regional Nature of the Outlook	1-2

Section 2 THE CENTRAL PUGET SOUND WATER SUPPLIERS’ FORUM

Who Participates in the Forum?	2-1
What is the Purpose of the Forum?	2-2
Why Did the Forum Prepare the Outlook?	2-3
Will this Effort Continue?	2-3
What is the Relationship of the Forum to the Tri-County ESA and Watershed Planning Groups?	2-4

Section 3 THE REGION’S WATER SUPPLIES

Municipal Water Supplies	3-2
Large Sources of Supply in the Region	3-5
Existing Supplies Inventory	3-7
Quantifying a Municipal Source of Supply	3-12
Uncertainty in Municipal Water Supplies	3-13
Water Transmission Facilities	3-14
Non-Municipal Water Supplies	3-14

Section 4 THE REGION’S MUNICIPAL WATER NEEDS

Overview of Demographic and Demand Forecasts	4-1
Forecast Growth	4-5
Near-Term Population, Household, and Employment Forecast (2000–2020)	4-5
Long-Term Population, Household, and Employment Forecast (2020–2050)	4-7
Demand Forecast without Existing Conservation Programs (Baseline Forecast)	4-7
Near-Term Baseline Forecast (2000–2020)	4-7
Long-Term Baseline Forecast (2020–2050)	4-10
Demand Forecast with Existing Conservation Programs	4-12

CONTENTS

Baseline Demand Forecast by Urban Growth Area.....	4-14
Urban Growth Areas Located within the Planning Area.....	4-14
UGA Demographics.....	4-14
Results of UGA Baseline Demand Forecast.....	4-14
Baseline Demand Forecast by Water Resource Inventory Area (WRIA).....	4-20
WRIAs Located within the Planning Area.....	4-20
WRIA Demographics.....	4-23
Results of WRIA Baseline Demand Forecast.....	4-23
Comparing the Baseline Demand Forecast to Individual Utilities' Demand Forecasts.....	4-24
Summary of Regional Demand Forecasting Methodology (2000–2050).....	4-24
Calculating Current Water Use Factors.....	4-25
Forecasting Population, Households, and Employment.....	4-26
Preparing the Baseline Demand Forecast.....	4-27
Section 5 FISH AND OTHER WATER NEEDS IN THE REGION	
How are Instream Flows, Fish, and Water Supplies Related?.....	5-2
Current Status of Planning and Information Available by WRIA.....	5-3
WRIA Information Sources.....	5-4
WRIA Planning Processes.....	5-4
Instream Flows and Their Regulation.....	5-9
Individual WRIA Overviews and Data.....	5-10
Stillaguamish (WRIA 5).....	5-11
Snohomish (WRIA 7).....	5-21
Cedar-Sammamish (WRIA 8).....	5-29
Duwamish-Green (WRIA 9).....	5-33
Puyallup-White (WRIA 10).....	5-41
Chambers-Clover (WRIA 12).....	5-47
Fish-Friendly Efforts of Water Suppliers.....	5-51
Snohomish PUD Jackson Project.....	5-51
Tacoma's Habitat Conservation Plan.....	5-51
Seattle Public Utilities Habitat Conservation Plan.....	5-52
References.....	5-53
Section 6 EVALUATION OF MUNICIPAL WATER NEEDS AND EXISTING SUPPLIES	
Local Utility Supply and Demand Comparison.....	6-1
Supply and Demand Comparison by County.....	6-12
Supply and Demand Comparison Methodology.....	6-21
Demand Projections.....	6-21
Existing Sources of Supply.....	6-22
Section 7 POTENTIAL REGIONAL SOLUTIONS	
Future Regional Supply Options.....	7-1
Supply Option Workgroups.....	7-2
Conservation Workgroup.....	7-2
Conventional Supply Options/Institutional Constraints Workgroup.....	7-2
Water Reuse Workgroup.....	7-3
Stormwater Workgroup.....	7-3
Section 8 OPTIONS FOR INCREASED CONSERVATION	
Appropriate Use of Conservation Scenarios.....	8-1
Summary of Conservation Scenarios.....	8-2
Key Elements of Conservation Scenarios.....	8-5

Conservation Scenarios.....	8-6
Water Savings Levels Defined for Each Scenario.....	8-7
Sources of Information on Water Savings and Costs.....	8-10
Measures Used to Develop Conservation Scenarios.....	8-12
Background on Regional Conditions.....	8-12
Geographic Variation in Water Consumption.....	8-12
Seasonal Variation in Water Consumption.....	8-15
Current Status of Conservation Programs.....	8-17
Key Issues for Conservation Options.....	8-17
Political Acceptance of Conservation Objectives and Approaches.....	8-17
Education and Outreach.....	8-18
Effects of Pricing and Rate Structures on Consumer Choices.....	8-19
Methods for Evaluating Economic Aspects of Conservation.....	8-20
Balancing Regional Coordination with Local Control.....	8-20
State Water Law.....	8-21
State Role in Promoting Conservation.....	8-21
Coordination Between Land-Use Management and Water-Resource Management.....	8-22
Section 9 CONVENTIONAL SUPPLY OPTIONS	
What is a Conventional Supply Option?.....	9-2
Criteria for Profiling Supply Options.....	9-2
Summary of Conventional Supply Options.....	9-2
Supply Option Profiles.....	9-4
Snohomish County.....	9-11
King County.....	9-18
Pierce County.....	9-38
Generic Regional Water Supply Options.....	9-46
Supply Option Cost Example.....	9-62
Future Local Supply Options for Utilities with Predicted Shortfalls.....	9-62
Section 10 REUSE OPTIONS	
What is “Reuse”?.....	10-1
Overview of Water Reuse Projects in the Region.....	10-2
Reuse Project Descriptions and Status.....	10-5
Snohomish County.....	10-5
King County.....	10-7
Pierce County.....	10-9
Summary of Regulatory Framework.....	10-13
County, City, and Utility Policies on Water Reuse and Reclamation.....	10-14
Snohomish County.....	10-14
King County.....	10-14
Pierce County.....	10-15
Issues Associated with Development and Use of Reclaimed Water.....	10-16
“Direct Potable” Reuse.....	10-16
“Non-Potable” Reuse.....	10-16
Generic “Indirect Potable” Reuse.....	10-22
Preliminary Assessment of Reclaimed Water Potential.....	10-26
Key Issues and Next Steps for Reuse.....	10-27
Section 11 STORMWATER OPTIONS	
Potential for Stormwater to Augment Water Supplies.....	11-1

CONTENTS

Conclusions.....	11-3
Criteria for Profiling Stormwater Management Options	11-4
Specific Stormwater Management Options	11-4
Management Option Profiles	11-5
On-Site Storage for Summertime Irrigation and Stream Augmentation	11-5
Pipe Outfalls for Direct Injection to Wellfields or to Storage Facilities	11-9
Redesign of Street Rights-of-Way.....	11-10
Use or Keep Stormwater Generated On-Site at the Site.....	11-11
Low Impact Development	11-20
Locating and Using Gravel Pockets for Percolation.....	11-28
Retrofitting Stormwater Systems in Highway and Other Roadways	11-29
Nature of Stormwater	11-30
Seasonal Variation in Precipitation and Water Consumption	11-30
Stormwater Quality.....	11-31
Development Practices and Impacts on Water Supplies	11-31
Geologic Impacts on Water Supplies	11-32
Development Impacts on Water Supplies.....	11-32
Current and Future Regulatory Environment	11-32
Washington State Department of Ecology Stormwater Management Manual.....	11-33
Puget Sound Water Quality Action Team and Work Plan	11-33
Shoreline Master Program.....	11-34
National Pollutant Discharge Elimination System	11-34
Endangered Species Act.....	11-36
Washington State Department of Fish and Wildlife/Hydraulic Project Approval	11-36
Growth Management Act	11-37
Responsible Entities	11-37
Section 12 BARRIERS TO MEETING MUNICIPAL WATER NEEDS	
History and Current Status of Washington State Water Rights	12-2
Basis for Water Rights in Washington State	12-2
The 1917 Water Code.....	12-3
1945 Comprehensive Groundwater Statutes	12-3
Water Rights Adjudication	12-4
Environmental Considerations in Water Rights	12-4
Current Status of the Water Rights Process.....	12-4
Additional Information on Washington State Water Rights.....	12-5
Summary of Constraints and Issues.....	12-5
Institutional Constraints and Potential Solutions.....	12-7
Obstacles to Decision Making.....	12-7
Water Code Issues	12-7
Potential Solutions.....	12-8
Obstacles to Decision Making.....	12-8
Restrictions on Moving Water Between Utilities (Water Code Issues)	12-13
Difficulty in Obtaining or Changing Water Rights (Water Code Issues).....	12-15
Validity and Quantification of Water Rights (Water Code Issues)	12-18
Section 13 MOVING FORWARD	
Next Steps for the Forum.....	13-1
The Forum’s Continuing Role in Regional Water Supply Planning	13-2
Future Outlook Updates.....	13-3

Improving Coordination in Individual Utility Planning..... 13-3
 Improving Consistency in Demographic Forecasts 13-3
 Improving Consistency in Tracking and Reporting Water Supply
 Planning Data..... 13-4

Appendices

- A. Demand Forecasting Methodology
- B. Conservation Information
- C. Conventional Supply Options
- D. Water Reuse
- E. List of Technical Memoranda

