
TABLE OF CONTENTS: VOLUME 1

Clallam County Resolution No. 47, 2005, Approving the Plan
Acknowledgements
Planning Unit Signatures and Initiating Government Letters of Approval

TABLE OF CONTENTS	i
EXECUTIVE SUMMARY	xi
1.0 INTRODUCTION AND PLANNING FRAMEWORK	1-1
1.1 Watershed Planning in Washington	1-1
1.1.1 How Watershed Planning is Initiated	1-2
1.1.2 Watershed Plan Limitations.....	1-7
1.1.3 Expanded Planning Funds	1-7
1.1.4 Watershed Plan Implementation	1-7
1.2 Watershed Planning Process and History in WRIA 18	1-8
1.2.1 Initiating Governments.....	1-8
1.2.2 History of Watershed Planning in East WRIA 18.....	1-13
1.2.3 History of Watershed Planning in West WRIA 18.....	1-25
1.2.4 WRIA 18 Watershed Planning Process.....	1-26
Addendum, May 2005.....	1-37
2.0 WATERSHED CHARACTERIZATION	2-1
2.1 Natural Environment	2.1-1
2.1.1 Geography.....	2.1-1
2.1.2 Climate	2.1-3
2.1.3 Geology	2.1-6
2.1.4 Soils.....	2.1-18
2.1.5 Hydrology and Geohydrology	2.1-19
2.1.6 Biology.....	2.1-49
2.2 Human Environment	2.2-1
2.2.1 Land Use and Demographics	2.2-1
2.3 Water Quantity	2.3-1
2.3.1 Water Budget	2.3-1
2.3.2 Water Rights.....	2.3-1
2.3.3 Water Use	2.3-26
2.3.4 Water Availability.....	2.3-77
2.3.5 Future Water Supply Requirements	2.3-80
2.4 Elwha River and Tributaries	2.4-1
2.4.1 Overview	2.4-1
2.4.2 Elwha River (Upper and Lower mainstem) (WRIA #18-0272)	2.4-2
2.4.3 Indian Creek (WRIA #18-0283)	2.4-35
2.4.4 Little River (WRIA #18-0297).....	2.4-47

2.5	Port Angeles Urban Independent Drainages	2.5-1
2.5.1	Dry Creek (WRIA #18-0265)	2.5-1
2.5.2	Tumwater Creek (WRIA #18-0256)	2.5-13
2.5.3	Valley Creek (WRIA # 18-0249)	2.5-20
2.5.4	Peabody Creek (WRIA #18-0245).....	2.5-31
2.5.5	White Creek (WRIA #18-0235).....	2.5-37
2.5.6	Ennis Creek (WRIA #18-0234)	2.5-39
2.5.7	Lees Creek (WRIA #18-0232)	2.5-57
2.6	Morse Creek (WRIA #18-0185)	2.6-1
2.6.1	Geography.....	2.6-1
2.6.2	Climate	2.6-2
2.6.3	Geology	2.6-2
2.6.4	Soils.....	2.6-3
2.6.5	Hydrology and Geohydrology	2.6-3
2.6.6	Biology.....	2.6-15
2.6.7	Factors of Change.....	2.6-15
2.6.8	Land Use and Demographics	2.6-21
2.6.9	Ecosystem Functions and Conditions.....	2.6-24
2.6.10	Water Quality.....	2.6-25
2.6.11	Fish and Habitat	2.6-26
2.7	Bagley, Siebert, and McDonald Creeks (Central Strait Independent Drainages)	2.7-1
2.7.1	Bagley Creek (WRIA #18-0183)	2.7-1
2.7.2	Siebert Creek (WRIA #18-0173).....	2.7-7
2.7.3	McDonald Creek (WRIA #18-0160).....	2.7-11
2.8	Dungeness Watershed	2.8-1
2.8.1	Geography.....	2.8-1
2.8.2	Hydrology	2.8-5
2.8.3	Geohydrology	2.8-10
2.8.4	Factors of Change.....	2.8-12
2.8.5	Water Quality.....	2.8-26
2.8.6	Fish and Habitat	2.8-42
2.8.7	Matriotti Creek (WRIA #18-0021)	2.8-78
2.8.8	Hurd Creek (WRIA #18-0028)	2.8-80
2.8.9	Bear Creek (WRIA #18-0030)	2.8-82
2.8.10	Canyon Creek (WRIA #18-0038).....	2.8-83
2.8.11	Caraco Creek (WRIA #18-0046)	2.8-84
2.8.12	Gray Wolf River (WRIA #18-0048)	2.8-84
2.8.13	Gold Creek (WRIA #18-0121)	2.8-85
2.8.14	Silver Creek (WRIA #18-0131)	2.8-87
2.9	East Strait Clallam Independent Drainages	2.9-1
2.9.1	Meadowbrook Creek (WRIA #18-0020).....	2.9-1
2.9.2	Cooper Creek (WRIA #18-0017)	2.9-5
2.9.3	Cassalery Creek (WRIA #18-0015)	2.9-6
2.9.4	Gierin Creek (WRIA #18-0004)	2.9-11
2.9.5	Bell Creek (WRIA #18-0001).....	2.9-16

2.10	Sequim Bay and Drainages	2.10-1
2.10.1	Watershed Overview	2.10-1
2.10.2	Sequim Bay	2.10-12
2.10.3	Johnson Creek (WRIA#17-0301)	2.10-22
2.10.4	Dean Creek (WRIA #17-0293)	2.10-29
2.10.5	JCL Creek (WRIA #17-0301).....	2.10-36
2.10.6	Chicken Coop Creek (WRIA #17-0278).....	2.10-55
2.10.7	Other Streams	2.10-58
2.11	Strait of Juan de Fuca Marine Nearshore Environment	2.11-1
2.11.1	Overview	2.11-1
2.11.2	Physical Environment.....	2.11-2
2.11.3	Biology.....	2.11-5
3.0	RECOMMENDATIONS	3-1
3.1	Water Quantity Recommendations	3.1-1
3.1.1	Future Water Supply Strategies for People and Fish	3.1-1
3.1.2	Water Rights and Water Use Data	3.1-2
3.1.3	Surface Water Supply Sources	3.1-4
3.1.4	Groundwater Supply Sources.....	3.1-6
3.1.5	Public Water Supply	3.1-16
3.1.6	Enforcement and Relinquishment of Unused Water Rights..	3.1-21
3.1.7	Water Conservation.....	3.1-22
3.1.8	Irrigation Water Management	3.1-27
3.1.9	New Water Storage	3.1-34
3.1.10	Reclaimed Water Supply	3.1-35
3.2	Water Quality Recommendations	3.2-1
3.2.1	Pollution from Failing Septic Systems	3.2-1
3.2.2	Pollution from Animal-Keeping Practices.....	3.2-3
3.2.3	Pollution from Stormwater Runoff.....	3.2-4
3.2.4	Other Sources of Pollution (Hazardous Waste, Commercial and Industrial Pollution)	3.2-5
3.2.5	Groundwater.....	3.2-7
3.2.6	Shellfish.....	3.2-10
3.2.7	Monitoring and Assessment	3.2-11
3.2.8	Clean Water District.....	3.2-13
3.3	Habitat Recommendations	3.3-1
3.3.1	Area- Wide Habitat Restoration, Salmon Recovery, and Fish Management	3.3-1
3.3.2	Rural Streams	3.3-6
3.3.3	Urban Streams	3.3-9
3.3.4	Wetlands	3.3-11
3.3.5	Riparian Corridors	3.3-12
3.3.6	Wildlife Management.....	3.3-14
3.3.7	Floodplains and Flood Hazard Management	3.3-15

3.4	Instream Flow Recommendations	3.4-1
3.5	Stormwater Recommendations	3.5-1
3.6	Land Use and Land Management Recommendations	3.6-1
3.6.1	Land Conversions	3.6-1
3.6.2	Development in Sensitive Areas.....	3.6-3
3.6.3	Interaction Between Septic and Wellhead Zones of Control...	3.6-5
3.6.4	WRIA 18 Boundaries	3.6-7
3.6.5	Water Conservation in Land Development.....	3.6-8
3.6.6	Forest Lands Management.....	3.6-9
3.7	Public Education and Outreach Recommendations	3.7-1
3.7.1	Public Education and Conservation.....	3.7-1
3.7.2	Annual State of the Watershed.....	3.7-5
3.8	Watershed Management Recommendations	3.8-1
3.8.1	WRIA 18 Watershed Councils	3.8-1
3.8.2	Local Watershed Groups.....	3.8-3
3.9	Elwha River and Tributaries Recommendations	3.9-1
3.9.1	Elwha River (WRIA #18-0272)	3.9-1
3.9.2	Indian Creek (WRIA #18-0283) and Lake Sutherland	3.9-6
3.9.3	Little River (WRIA #18-0297).....	3.9-8
3.10	Port Angeles Independent Drainages Recommendations	3.10-1
3.10.1	Dry Creek (WRIA #18-0265)	3.10-1
3.10.2	Tumwater Creek (WRIA #18-0256)	3.10-2
3.10.3	Valley Creek (WRIA #18-0249)	3.10-3
3.10.4	Peabody Creek (WRIA #18-0245).....	3.10-5
3.10.5	White Creek (WRIA #18-0235).....	3.10-6
3.10.6	Ennis Creek (WRIA #18-0234)	3.10-7
3.10.7	Lee's Creek (WRIA #18-0232)	3.10-10
3.11	Morse Creek Recommendations	3.11-1
3.12	Bagley, Siebert, and McDonald Recommendations (Central Strait Independent Drainages)	3.12-1
3.12.1	Bagley Creek (WRIA #18-0183)	3.12-1
3.12.2	Siebert Creek (WRIA #18-0173).....	3.12-2
3.12.3	McDonald Creek (WRIA #18-0160).....	3.12-7
3.13	Dungeness River and Tributaries Recommendations	3.13-1
3.13.1	Dungeness River (WRIA #18-0018)	3.13-1
3.13.2	Matriotti Creek (WRIA #18-0021)	3.13-9
3.13.3	Other Dungeness Tributaries	3.13-10
3.14	East Strait Independent Drainages Recommendations	3.14-1
3.14.1	Meadowbrook Creek (WRIA #18-0020).....	3.14-1

3.14.2	Cooper Creek (WRIA #18-0017)	3.14-2
3.14.3	Cassalery Creek (WRIA #18-0015)	3.14-3
3.14.4	Gierin Creek (WRIA #18-0004)	3.14-5
3.14.5	Bell Creek (WRIA #18-0001)	3.14-6
3.15	Sequim Bay and Drainages Recommendations.....	3.15-1
3.15.1	Johnson Creek (WRIA #17-0301)	3.15-1
3.15.2	Sequim Bay State Park Creek	3.15-2
3.15.3	Dean Creek (WRIA #17-0293)	3.15-2
3.15.4	Jimmycomelately Creek (WRIA #17-0285).....	3.15-3
3.15.5	No Name Creek.....	3.15-5
3.15.6	Chicken Coop Creek (WRIA #17-0278).....	3.15-5
3.15.7	Sequim Bay Estuarine Wetlands	3.15-6
3.15.8	Sequim Bay Marine Shoreline and Waters.....	3.15-9
3.16	Strait of Juan de Fuca Marine Nearshore Recommendations	3.16-1

ACRONYMNS AND ABBREVIATIONS

GLOSSARY

BIBLIOGRAPHY

APPENDIX

List of Appendices

<i>Appendix 1-A:</i>	WRIA 18 Planning Framework
<i>Appendix 1-B:</i>	Recommendations of Others
<i>Appendix 1-C:</i>	Sequim-Dungeness Valley Agricultural Water Users Association Rules and Regulations
<i>Appendix 1-D:</i>	Intergovernmental Agreement
<i>Appendix 1-E:</i>	DRMT Watershed Restoration Plans & Activities 1989 to 2001, 2001 Milestones Report, and the 2002 Milestones Report
<i>Appendix 1-F:</i>	DRMT "Focus Workshops" Schedule: WRIA 18 Watershed Plan
<i>Appendix 1-G:</i>	EMMT 2002-2003 Work Plan
<i>Appendix 1-H:</i>	SEPA Documentation
<i>Appendix 2-A:</i>	Concurrent Research Summaries
<i>Appendix 2-B:</i>	WRIA 18 Water Rights Analysis (Ecology 2000)
<i>Appendix 2-C:</i>	WRIA 18 Geographic Information Systems Analysis of Water Rights (Ecology 2002)
<i>Appendix 2-D:</i>	Water Conservation Measures
<i>Appendix 2-E:</i>	Detail of Chinook Plantings from Dungeness Hatcheries
<i>Appendix 3-A:</i>	Remaining Issues (Those Issues Yet to be Resolved)
<i>Appendix 3-B:</i>	Limiting Factors Analysis
<i>Appendix 3-C:</i>	Instream Flow Fact Sheet
<i>Appendix 3-D:</i>	Dungeness Watershed Proposed Project List 2002-05
<i>[Appendix 3-E:</i>	Documentation of Public Hearing Process (<i>found in VOLUME 2</i>)

List of Tables

Table 1.2-1	Integration among Members of Watershed Planning Units and Other Natural Resource Management and Salmon Recovery Efforts in WRIA 18.....	1.1-15
Table 2.1-1	Average Annual Water Budget for Sequim-Dungeness Area as Estimated by Thomas et al, (1999)	2.1-22
Table 2.1-2	Estimated Annual Water Resource from Precipitation for Selected Sub-areas of the Dungeness River Basin and East WRIA 18.....	2.1-25
Table 2.1-3	Recorded Monthly Flows for East WRIA 18 Smaller Streams	2.1-28
Table 2.1-4	Surface Water Flows in East WRIA 18 Drainages	2.1-29
Table 2.1-5	Groundwater Availability in East WRIA 18.....	2.1-38
Table 2.1-6	Temperature Preferences and Lethal Limits for WRIA 18 Salmonids.....	2.1-53
Table 2.1-7	Assessment of Habitat Limiting Factor Severity for Major Salmonid-Bearing Watersheds within WRIA 18.....	2.1-55
Table 2.1-8	Distribution of Salmonids Species in WRIA 18	2.1-56
Table 2.1-9	Timing of Life History Stages for Anadromous Salmonids in WRIA 18.....	2.1-57
Table 2.1-10	WRIA 18 Salmon and Steelhead Stock Designations and Associated Status	2.1-58
Table 2.1-11	Wetland Acreage, Percent of Total Subwatershed, City of Port Angeles.....	2.1-71
Table 2.2-1	Clallam County Population Growth Trends.....	2.2-2
Table 2.2-2	WRIA 18 Population Growth Histories and Forecasts	2.2-3
Table 2.2-3	WRIA 18 Buildout Potential by Subbasin.....	2.2-5
Table 2.2-4	WRIA 18 Population Growth Under Current Zoning and Land Division by Subbasin.....	2.2-6
Table 2.2-5	WRIA 18 Population and Residential Density by Subbasin	2.2-13
Table 2.3-1	WRIA 18 Water Rights by Subbasin.....	2.3-3
Table 2.3-2	WRIA 18 Surface Water Rights by Subbasin.....	2.3-5
Table 2.3-3	WRIA 18 Groundwater Rights by Subbasin.....	2.3-7
Table 2.3-4	WRIA 18 Well Numbers, Density, and Depth: Distribution by Subbasin.....	2.3-17
Table 2.3-5	Water Right Purpose as a Percent of Source Total.....	2.3-23
Table 2.3-6	Water Right Purpose as a Percent of Total Rights	2.3-25
Table 2.3-7	Class A Public Water Systems: Connections and Sources	2.3-33
Table 2.3-8	WRIA 18 Class A and B Public Water Systems.....	2.3-38
Table 2.3-9	Municipal and Domestic Water Demand by Subbasin.....	2.3-40
Table 2.3-10	Commercial and Industrial Water Demand by Subbasin	2.3-48
Table 2.3-11	Estimated Annual WUA Irrigation Water Budget	2.3-53
Table 2.3-12	WUA Water Rights and Current Use	2.3-54
Table 2.3-13	Current and Future Water Demand for WRIA 18 Non-WUA Agricultural Land	2.3-56
Table 2.3-14	Recent WUA Dungeness River Diversions.....	2.3-62
Table 2.3-15	Comparison of Stream Flows to WRIA 18 Water Rights and Peak Water Use Impacts.....	2.3-78
Table 2.3-16	Water Rights and Claims on the Dungeness River.....	2.3-79

Table 2.3-17	Residential Water Demand by Subbasin within Group A Public Water System Boundaries	2.3-82
Table 2.3-18	Future Agricultural Water Demand on the Dungeness River (2020).....	2.3-84
Table 2.4-1	Major Elwha River Tributaries.....	2.4-2
Table 2.4-2	New Wild Salmonid Production and Recovery Time	2.4-29
Table 2.6-1	Morse Creek Watershed Areas	2.6-4
Table 2.6-2	Mean Monthly Flows for Morse Creek at Gage No. 12047300	2.6-7
Table 2.6-3	Percent of Days Below Level Stated Morse Creek Flows at Gage No. 12047300.....	2.6-7
Table 2.6-4	FERC Flow Requirements	2.6-29
Table 2.6-5	Timing of Returning Spawners in Morse Creek	2.6-33
Table 2.8-1	Incremental Average Annual Flows in the Dungeness River Basin	2.8-9
Table 2.8-2	Lower Dungeness River (RM 0 to RM 10.5) Subdivisions	2.8-15
Table 2.8-3	Major Levees (Dikes) along the Lower Dungeness River and Related Reaches.....	2.8-16
Table 2.8-4	Bridges along the Lower Dungeness River and Associated Impacts.....	2.8-19
Table 2.8-5	Land Use in the Dungeness River Area Watershed	2.8-21
Table 2.8-6	Sediment Sources from the Upper Dungeness River Basin and Annual Yield	2.8-21
Table 2.8-7	Fecal Coliform TMDL Load Allocations – Dungeness River and Tributaries	2.8-32
Table 2.8-8	Dungeness Bay Action Plan	2.8-37
Table 2.8-9	Instantaneous Mean Daily Values for Fecal Coliform Concentration, Loading and Allocations, Flow, and Relative Contributions of Flow and Fecal Coliform Loading to Inner and Outer Dungeness Bay	2.8-38
Table 2.8-10	Indigenous Stocks of Salmon and Trout of the Dungeness River Basin.....	2.8-43
Table 2.8-11	Historical Reconstruction of Pink and Chinook Salmon Run Size	2.8-44
Table 2.8-12	Evaluation of River Bed Material as Suitable Fish Spawning Gravel.....	2.8-45
Table 2.8-13	Flow Providing Maximum Habitat Area by Species and Life Stages.....	2.8-59
Table 2.8-14	Recommended Monthly Flows vs. Monthly Exceedance Flows	2.8-59
Table 2.8-15	Dungeness River System Chinook Redd Distribution, 2001 Spawning Season from the Chinook Broodstock Program.....	2.8-65
Table 2.8-16	Erosion Features by Process Type and Land Use or Land Condition for the Mass Wasting Inventory	2.8-75
Table 2.10-1	Limited Water Temperature Data for Johnson Creek (1991-1999).....	2.10-26
Table 2.10-2	Theoretical Optimum Instream Flow Summary for Johnson Creek (1997)	2.10-27
Table 2.10-3	Theoretical Instream Flow Predictions for Johnson Creek (1993)	2.10-27
Table 2.10-4	Theoretical Optimum Instream Flow Summary for Dean Creek	2.10-34
Table 2.10-5	Water Temperature Data – Jimmycomelately (JCL) Creek (RM 0.1).....	2.10-43
Table 2.10-6	DOH Water Quality Data 1992-1995 (Station 21 at mouth of JCL Creek)	2.10-45
Table 2.10-7	Theoretical Optimum Instream Flow Summary for JCL Creek (1997)	2.10-48
Table 2.10-8	Theoretical Instream Flow Predictions for JCL Creek (1993)	2.10-49
Table 2.10-9	Theoretical Instream Flow Predictions for Chicken Coop Creek (1993)	2.10-57

Table 3.4-1	Dungeness Planning Area (East WRIA 18) Recommendations for Regulatory Instream Flow Levels.....	3.4-5
Table 3.4-2	Elwha-Morse Planning Area (West WRIA 18) Recommendations for Regulatory Instream Flow Levels.....	3.4-9
Table 3.4-3	Priorities for West WRIA 18 Rivers and Streams.....	3.4-15
Table 3.13-1	Monthly ranking of species and life stages, maximum habitat area flow (cfs), and recommended flows based on rank of species and life stages.....	3.13-8

List of Figures

Figure 1.1-1	East WRIA 18 Area Map	1.1-3
Figure 1.1-2	West WRIA 18 Area Map.....	1.1-5
Figure 1.2-1	WRIA 18 Watershed Planning Unit Organizational Chart.....	1.1-11
Figure 1.2-2	WRIA 18 Watershed Plan Roadmap	1.1-27
Figure 1.2-3	Flow of East WRIA 18 Planning.....	1.1-31
Figure 1.2-4	Flow of West WRIA 18 Planning.....	1.1-35
Figure 2.1-1	Generalized Surficial Geology and Locations of Hydrogeologic Sections.....	2.1-11
Figure 2.1-2	Hydrogeologic Cross Section A-A', Sequim-Dungeness Area, Washington	2.1-13
Figure 2.1-3	Hydrogeologic Cross Section B-B', Sequim-Dungeness Area, Washington	2.1-15
Figure 2.1-4	Average Annual Ground Water Budget for Primary Study Area During Period of December 1, 1995 to September 30, 1997, Sequim-Dungeness Area, Washington ...	2.1-23
Figure 2.1-5	Conceptualized Groundwater System: East WRIA 18 (Figure 12 from Drost 1983) ...	2.1-33
Figure 2.1-6a	Critical Aquifer Recharge Areas in East WRIA 18	2.1-45
2.1-6b	Critical Aquifer Recharge Areas in West WRIA 18	2.1-47
Figure 2.1-7	WRIA 18 Salmon Stock Status	2.1-59
Figure 2.1-8	Wetlands in East WRIA 18	2.1-65
Figure 2.1-9	Wetlands in West WRIA 18	2.1-67
Figure 2.2-1	Subbasin Areas Analyzed for Buildout – East WRIA 18	2.2-7
Figure 2.2-2	Subbasin Areas Analyzed for Buildout – West WRIA 18	2.2-9
Figure 2.2-3	Change in Land Use/Land Cover for the Dungeness River Area	2.2-15
Figure 2.2-4	Zoning, Urban Growth Areas in East WRIA 18.....	2.2-21
Figure 2.2-5	Zoning, Urban Growth Areas in West WRIA 18.....	2.2-23
Figure 2.3-1	Class A Water Systems in West WRIA 18.....	2.3-27
Figure 2.3-2	Class A Water Systems in Central WRIA 18	2.3-29
Figure 2.3-3	Class A Water Systems in East WRIA 18.....	2.3-31
Figure 2.3-4	Sequim-Dungeness Valley Irrigation Districts and Companies (East WRIA 18)	2.3-51
Figure 2.3-5	Comparison of Water Withdrawals from Dungeness River in September 1987 and September 1998; Estimated Savings from Proposed Water Conservation Project	2.3-57

Figure 2.3-6	Dungeness River Agricultural Water Users Association: Average Annual Diversion Rates 1979-2000	2.3-65
Figure 2.3-7	Washington State Department of Fish and Wildlife Elwha River Fish Hatchery Water Budget	2.3-67
Figure 2.3-8	Lower Elwha Klallam Tribe Elwha River Fish Hatchery Water Budget	2.3-69
Figure 2.3-9	Washington State Department of Fish and Wildlife Morse Creek Fish Production Water Budget	2.3-73
Figure 2.3-10	Washington State Department of Fish and Wildlife Hatchery Water Budget: Dungeness River and Hurd Creek.....	2.3-75
Figure 2.4-1	Elwha River and Tributaries Area Map	2.4-3
Figure 2.4-2	Elwha River Hydrograph at McDonald Bridge near Port Angeles, 1952 through 76.	2.4-11
Figure 2.4-3	Elwha River Capital Facilities	2.4-17
Figure 2.4-4	Restoration Projects West WRIA 18.....	2.4-23
Figure 2.4-5	Indian Creek Hydrograph above Confluence with the Elwha River 1952 through 76...	2.4-39
Figure 2.4-6	Little River above Olympic Hot Springs Road 1952 through 1976.....	2.4-51
Figure 2.5-1	Port Angeles Urban Independent Drainages Area Map.....	2.5-3
Figure 2.5-2	Dry Creek Hydrograph.....	2.5-7
Figure 2.5-3	Tumwater Creek Hydrograph	2.5-15
Figure 2.5-4	Valley Creek Hydrograph.....	2.5-23
Figure 2.5-5	Peabody Creek Hydrograph	2.5-33
Figure 2.5-6	Ennis Creek Hydrograph	2.5-43
Figure 2.5-7	Lees Creek Hydrograph	2.5-59
Figure 2.6-1	Morse Creek Area Map	2.6-5
Figure 2.6-2	Morse Creek between Mining Creek 1952 through 76.....	2.6-9
Figure 2.6-3	Morse Creek between Surveyor Creek 1952 through 76.....	2.6-11
Figure 2.6-4	Morse Creek near Port Angeles 1952 through 76	2.6-13
Figure 2.6-5	Timing of Salmonid Life Stages in Morse Creek.....	2.6-35
Figure 2.7-1	Siebert, McDonald, Bagley Creeks (Central Strait Independent Drainages) Area Map	2.7-3
Figure 2.7-2	Bagley Creek Hydrograph	2.7-5
Figure 2.7-3	Siebert Creek Hydrograph.....	2.7-9
Figure 2.7-4	McDonald Creek Hydrograph	2.7-13
Figure 2.8-1	Dungeness River Watershed Area Map	2.8-3
Figure 2.8-2	Mean Daily Discharge for the Dungeness River and Average Monthly Precipitation Near Sequim, Washington.....	2.8-7
Figure 2.8-3	Calculated Gains and Losses in the Five Subreaches of the Dungeness River	2.8-13
Figure 2.8-4	Dungeness River Capital Facilities	2.8-17
Figure 2.8-5	Dungeness River and Tributaries Study Fecal Coliform 90 th Percentiles, and Target Fecal Coliform 90 th Percentile Concentrations	2.8-29

Figure 2.8-6	Sequim-Dungeness Clean Water District	2.8-35
Figure 2.8-7	Restoration Projects in East WRIA 18, 1994 - 2002	2.8-53
Figure 2.8-8	Dungeness River Approximate Mean Monthly Flows and Recommended Instream Flows	2.8-57
Figure 2.8-9	Increases in Spawning Area with Increases in Instream Flows	2.8-63
Figure 2.9-1	East Strait Independent Drainages Area Map	2.9-3
Figure 2.9-2	Cassalery Creek Hydrograph	2.9-9
Figure 2.9-3	Gierin Creek Hydrograph.....	2.9-13
Figure 2.9-4	Bell Creek Hydrograph	2.9-21
Figure 2.10-1	Sequim Bay Watershed Area Map (WRIA 17).....	2.10-3
Figure 2.10-2	Johnson Creek Hydrograph (1952 – 1976).....	2.10-23
Figure 2.10-3	Dean Creek Hydrograph (1952 – 1976)	2.10-31
Figure 2.10-4	Jimmycomelately Creek Hydrograph (1952 – 1976)	2.10-39
Figure 2.11-1	Strait of Juan de Fuca Marine Nearshore	2.11-3
Figure 2.11-2	Locations of Forage Fish and Their Spawning Areas	2.11-9