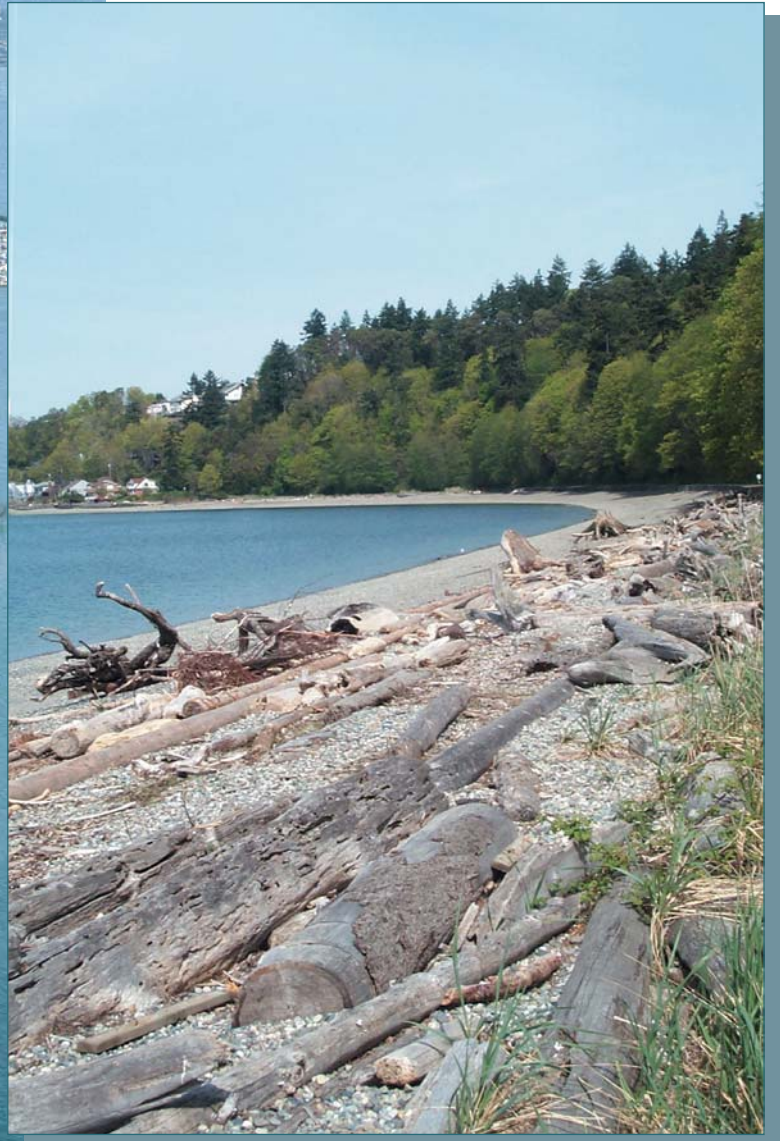


Reconnaissance Assessment of the **STATE OF THE NEARSHORE ECOSYSTEM:**

Eastern shore of Central Puget Sound, including Vashon and Maury Islands



**Reconnaissance Assessment of the State of the Nearshore Ecosystem:
Eastern Shore of Central Puget Sound, Including Vashon and
Maury Islands (WRIAs 8 and 9)**

**Battelle Marine Sciences Laboratory
Sequim, Washington**

**Pentec Environmental
Seattle, Washington**

**Striplin Environmental Associates
Seattle, Washington**

**Shapiro Associates, Inc.
Seattle, WA**

**King County Department of Natural Resources
Seattle, Washington**

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PREFACE

Puget Sound has long been recognized for its natural beauty, mild climate, abundant and diverse living resources, and a “quality of life” unlike regions found elsewhere. These qualities have attracted increasing numbers of people to this region to live and work, and for recreation. The increasing human population has led to increased demands for housing, infrastructure, and recreational opportunities. The demand for products, services, and increasing world trade has also led to growth in commerce and industry. This growth has resulted in increasing pressure on terrestrial and aquatic ecosystem processes that support all natural resources in the region. Development and other alterations of sensitive areas such as shorelines have led to dramatic losses of habitats and species declines. The most recent indicators of impacts to marine resources include the Endangered Species Act (ESA) listings of Puget Sound chinook salmon, Hood Canal summer chum salmon, bull trout, and petitions to list coho salmon, 18 other marine fishes and orca whales in Puget Sound. These ESA listings have led to increasing efforts in the development of watershed and salmon recovery plans. The marine environment has only recently been recognized as a part of individual watersheds and historical efforts to protect salmonids have primarily focused on the freshwater, reproductive and rearing phases of salmon life history.

Recognizing the importance of the nearshore environment to salmonids and overall watershed health, King County and other local jurisdictions sponsored a program to develop a science-based approach to understanding the role of the nearshore environment in salmon recovery and watershed planning. Early in this process, it was determined that a reconnaissance-level assessment was needed to determine what was known and what was not known about the nearshore. On December 7, 1999, King County convened a workshop of marine scientists to identify data sources and data gaps. The results of the workshop were published in June of 2000 (Macdonald 2000) and served as a basis of information for the Nearshore Technical Committee (NTC) that first met in January of 2000.

The NTC is comprised of marine scientists and technical specialists from a broad range of institutions (federal, state, county and city resource management agencies, tribes, the Port of Seattle, the University of Washington, Battelle Marine Sciences Laboratory and other consultants from the private sector). These specialists volunteer their time and energy to provide guidance and technical expertise in the development of a nearshore technical program for salmon recovery and watershed planning in WRIs 8 and 9. This report is a product of their collective efforts and those of the contributing authors.

The idea for this report was first conceived and presented to the NTC by Steve Ralph (USEPA) in the early spring of 2000. It was clearly recognized that this would be a great contribution because nobody had ever attempted to write a comprehensive report on the Central Puget Sound nearshore system, especially one that was to go beyond a single species assessment. Fortunately, numerous marine scientists contributed to this effort and the Port of Seattle and Puget Sound Action Team graciously agreed to help fund the report. It proved to be a daunting task, but the perseverance and dedication of many individuals prevailed.

This report provides some new information and a level of assessment that has never before been completed for this region. Most of what is contained in this report is a consolidation of previously reported information. Taking an ecosystem approach in our assessment enabled us to summarize what we know about the nearshore ecosystem, identify data gaps, and draw important and meaningful conclusions and recommendations. However, many of the conclusions and recommendations found in this report have been reported previously. The assessment reveals that concerns regarding the loss of nearshore habitat and species are nothing new, and that responses to warnings from scientists have been inadequate to protect the nearshore ecosystem and species that are dependent upon properly functioning conditions within the system. The system is clearly out of balance and actions are urgently needed to protect, preserve, and restore the health of the nearshore ecosystem to prevent further degradation and loss.

We are hopeful that this report provides a new and useful foundation for decision-makers and resource managers. While we lack adequate levels of rigorous scientific information in some areas to provide definitive answers for restoration and recovery, the abundance of data gaps should not be a barrier to making decisions on protective measures. We fully expect that opponents to recommendations for increased conservation measures and improved resource management will continue to use well-established arguments of using less conservative measures and fewer regulations until we have more information. This approach can only lead to further degradation and losses. Similarly, inadequate levels of funding and other resource allocations for additional scientific investigation and assessment will leave us uninformed and unable to respond appropriately to increasing pressures for improved resource management, restoration, and salmon recovery.

In addition, we hope that this report will provide a springboard from which to launch a new understanding and appreciation for a part of the ecosystem that has long been neglected and poorly understood. We would like to think of this report as a work-in-progress. However, there are currently no plans for updating and revising this report. Regardless, readers are encouraged to ask questions and provide constructive comments on this document to improve our understanding and ability to convey complete and accurate technical information. Furthermore, we encourage policy makers to use this document in at least two ways: First, as an expression of concern by scientists and resource managers that all is not well in the nearshore; and, second, as a resource from which a greater understanding and appreciation of this extraordinary ecosystem can be achieved.

Finally, it should be noted that this report is a good example of how technical experts from a broad range of jurisdictional, research, management, and other interests can come together in a cooperative manner to develop an approach and collaborate on an assessment of a complex ecosystem. It is imperative that this cooperative effort be encouraged and supported by managers and policy-makers for future assessment work because of the scale of work and the broad range of expertise needed to properly address management and ecosystem protection and restoration needs.

Jim Brennan — Editor

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This report is the result of a major collaborative effort by many dedicated technical professionals who have a great appreciation for, and interest in, the marine environment. The concept and development of this report, and other nearshore technical guidance in WRIAs 8 and 9 watershed and salmon recovery work, came from the Nearshore Technical Committee (NTC). For most members, their participation is not a part of their regular work program, yet they continue to give of their precious and valuable time. Their dedication to this effort is greatly appreciated, and their technical input and guidance has proven to be invaluable. This report would not have been possible without their assistance and the contribution of review comments by other marine ecosystem experts. We would also like to extend a special note of appreciation to the Port of Seattle for their financial contribution in providing technical support in the creation of this document, and to the Puget Sound Water Quality Action Team for their financial contribution.

We have made every effort to list the names of those who have directly participated in the development and review of this report in order to acknowledge their contribution, and hope that we have not missed anyone. Our advance apologies if we have missed someone. We are eternally grateful and deeply indebted to everyone who has had a direct or indirect influence in the development and production of this report.

This report is also the result of efforts by visionary politicians, policy-makers and planners who have recognized the need to understand and incorporate the nearshore ecosystem into watershed and salmon recovery planning efforts. Their leadership and support is essential to the continuation and success of our ability to understand, protect, and restore our valuable marine resources.

Principal Authors of Individual Chapters:

Executive Summary	<i>Jim Starkes¹</i>
Introduction.....	<i>Jim Brennan² and Greg Williams³</i>
Conceptual Model.....	<i>Jim Brennan</i>
Oceanography and Physical Processes	<i>Marty Miller³</i>
Nutrient Dynamics and other Water Properties	<i>Dana Woodruff⁵ and Marty Miller³</i>
Primary Productivity Dynamics and Rates	<i>Dana Woodruff</i>
Food Web.....	<i>Greg Williams, Dana Woodruff, and Pete Striplin⁵</i>
Selected Nearshore Habitats	
▪ Eelgrass.....	<i>Ron Thom³</i>
▪ Kelp Forests.....	<i>Ron Thom</i>
▪ Flats	<i>Ron Thom</i>
▪ Tidal Marshes	<i>Ron Thom</i>
▪ Subestuaries.....	<i>Amy Borde³</i>
▪ Sand Spits.....	<i>Ron Thom</i>

- Beaches and Backshore *Ron Thom*
- Banks and Bluffs *Ron Thom*
- Marine Riparian Zones *Jim Brennan and Amy Borde*

Selected Fishes

- Salmonids *Mark Pedersen⁴ and Greg Williams*
- Forage Fishes *Greg Williams*
- Groundfish *Greg Williams*
- Rockfish *Greg Williams*

Selected Invertebrates

- Clams, Oysters, Abalone *Roy Kropp³*
- Dungeness crab *Mark Pedersen and Roy Kropp*

Shoreline Conditions

- Armoring *Laura Blackmore² and Ann Skillman³*
- Overwater Structures *Ann Skillman*
- Dredging *Sue Blanton³*
- Filling *Viki Fagerness⁵*
- Sewage Discharge *Pete Striplin*
- Sediment Contamination *Pete Striplin*
- Non-point Pollution *Mark Pedersen*
- Non-native Species *Mark Pedersen*

Elliott Bay and the Duwamish River Estuary *Jim Starkes, Jon Houghton¹, Cygnia Freeland¹, and Kerrie McArthur¹*

Conclusions and Recommendations *Greg Williams, Ron Thom and Jim Brennan*

- 1 Pentec Environmental, Edmonds Washington
- 2 King County Department of Natural Resources
- 3 Battelle Marine Sciences Laboratory
- 4 Shapiro Associates, Inc.
- 5 Striplin Environmental Associates

Final Report Editor:
Jim Brennan

Draft report editorial review and preparation:

Heida Diefenderfer, John Southard, Jeff Ward, Battelle Marine Sciences Laboratory
Nathan Evans, Associate Western University program intern at Battelle
Jill Raben, Shapiro & Associates, Inc.

Project Management:

Laura Blackmore and Jim Brennan, King County Department of Natural Resources
Greg Williams, Battelle Marine Sciences Laboratory

Graphics:

Laural Preston, Sandy Kraus and Megann Devine, King County Department of Natural Resources, GIS and Visual Communications Unit
Amy Borde, Battelle Marine Sciences Laboratory

GIS:

Collene Gaolach and Ken Rauscher, King County Department of Natural Resources, GIS and Visual Communications Unit

ShoreZone Data:

Washington Department of Natural Resources (with special thanks to Helen Berry, WADNR, for all of her assistance).

Nearshore Technical Committee Members

Jim Brennan, Chair, KCDNR; Laura Blackmore, Coordinator, KCDNR; Ron Thom, Battelle Marine Sciences Lab.; Gail Arnold and Al Solonsky, City of Seattle; Robert Newman, and Hugh Shipman, WADOE; Steve Ralph, USEPA; Scott Brewer, Tom Nelson and Randy Shuman, KCDNR; Thom Hooper, NMFS; Jon Houghton, Pentec Environmental and George Blomberg, Port of Seattle; Jaques White, People for Puget Sound; Doug Myers, PSWQAT; Si Simenstad, UW; Phyllis Meyers, Suquamish Tribe; Bill Taylor, Taylor Associates; Pat Cagney and Lori Morris, USACOE; Lou Ellyn Jones and Curtis Tanner, USFWS; John Kerwin, WCC; Randy Carman, Kirk Lakey, Mike Chamblin, Pam Erstad, Kurt Fresh, Wayne Palsson, Dan Penttila, and Jim West, WDFW; Tom Mumford and Betty Bookheim, WANDR.

Other Reviewers and Participants:

Wendy Gerstel, Washington Department of Natural Resources
Al Fukuyama, University of Washington
Glenn Grette, Pacific International Engineering
Michael Kyte, Berger/Abam Engineers, Inc.
Pat Romberg, King County Department of Natural Resources
Katy Vanderpool, King County DNR
Hilary Culverwell, King County DNR
Brian Murray, King County DNR
Daniel Smith, King County DNR
Debra Williston, King County DNR
Dag Henderson, King County DNR

Program Managers:

David Masters and David St John, King County Department of Natural Resources

Final Report Preparation:

Tom Ventur, King County Department of Natural Resources

Marcia McNulty, King County Department of Natural Resources

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Left photograph: Ned Ahrens, King County Department of Information and Administrative Systems

Right photograph: Katy Vanderpool, King County Department of Natural Resources

ACRONYMS AND ABBREVIATIONS

ACOE	U.S. Army Corps of Engineers
CAD	confined aquatic disposal
CSL	Cleanup Screening Levels
CSO	Combined Sewer Overflow
DO	dissolved oxygen
DPS	distinct population segments
ENSO	El Niño southern oscillation
ESUs	Evolutionarily Significant Units
$\text{g C m}^{-2} \text{y}^{-1}$	grams carbon per meter squared per year
H_2S	hydrogen sulfide
HPAH	high molecular weight polycyclic aromatic hydrocarbons
LAET	Lowest Apparent Effects Threshold
LPAH	low molecular weight polycyclic aromatic hydrocarbons
LWD	large woody debris
MGY	million gallons/year
MLLW	mean lower low water
MOSS	Marine Outfall Siting Study
NMFS	National Marine Fisheries Service
N:P	nitrogen to phosphate ratio
PAR	photosynthetically active radiation
ppt	parts per thousand
PRISM	Puget Sound Regional Synthesis Model
PSDDA	Puget Sound Dredged Disposal Analysis
PSP	paralytic shellfish poisoning
RM	river mile
SQS	Sediment Quality Standards
ug at/l	micrograms atoms per liter
um	micrometers
USFWS	United States Fish and Wildlife Service
WDNR	Washington State Department of Natural Resources
WDOE	Washington Department of Ecology
WRIA	Watershed Resource Inventory Area

TABLE OF CONTENTS

	PREFACE	i
	ACKNOWLEDGEMENTS	iii
	ACRONYMS AND ABBREVIATIONS	vii
1.	INTRODUCTION.....	1.1
	BACKGROUND.....	1.1
	PROBLEM STATEMENT.....	1.2
	PURPOSE OF REPORT	1-3
	GEOGRAPHIC SCOPE	1-4
	DEFINITION OF THE NEARSHORE ZONE	1-7
	APPROACH AND ORGANIZATION OF REPORT	1-7
	CAVEATS	1-8
2.	CONCEPTUAL MODEL OF THE NEARSHORE	2-1
3.	FEATURES OF PUGET SOUND REGION: OCEANOGRAPHY AND PHYSICAL PROCESSES.....	3-1
	REGIONAL SETTING.....	3-1
	TIDES AND SEA LEVEL	3-2
	WIND PATTERNS	3-7
	WAVES	3-7
	SOURCES OF SEDIMENTS	3-8
	DRIFT CELLS.....	3-9
4.	NUTRIENT DYNAMICS AND OTHER WATER PROPERTIES	4-1
	BENTHIC NUTRIENT DYNAMICS	4-1
	WATER COLUMN NUTRIENT DYNAMICS	4-3
	WATER QUALITY PROPERTIES	4-4
	DATA GAPS	4-7
	KEY FINDINGS.....	4-7
5.	PRIMARY PRODUCTIVITY DYNAMICS AND RATES.....	5-1
	BENTHIC PRIMARY PRODUCTIVITY	5-1
	WATER COLUMN PRIMARY PRODUCTIVITY	5-1
	DATA GAPS	5-2
	KEY FINDINGS.....	5-3
6.	FOOD WEB.....	6-1
	PHYTOPLANKTON.....	6-1
	Stressors	6-3
	Reasons for Change.....	6-3
	Data Gaps.....	6-3
	ZOOPLANKTON AND OTHER HETEROTROPHS	6-4
	Stressors	6-5
	Historical Distribution and Reasons for Change	6-6
	Data Gaps.....	6-6
	BENTHIC INFAUNA AND EPIFAUNA	6-7
	PRIMARY CONSUMERS	6-7
	SECONDARY CONSUMERS	6-11
	LINKS BETWEEN FOOD WEBS AND NEARSHORE HABITAT	6-12
	Key Findings.....	6-15
7.	SELECTED NEARSHORE HABITAT TYPES.....	7-1

EELGRASS MEADOWS	7-1
Functions within Ecosystem	7-1
Processes that Maintain Eelgrass Meadows	7-2
Location of Eelgrass	7-2
WRIA 8 Eelgrass Distribution.....	7-3
WRIA 9 Eelgrass Distribution.....	7-3
Eelgrass Density.....	7-4
Stressors	7-4
Natural Stressors	7-4
Human-Influenced Stressors	7-9
Historical Distribution	7-10
Reasons for Change.....	7-10
Data Gaps.....	7-10
KELP FORESTS	7-11
Kelp Functions within the Ecosystem	7-11
Processes that Maintain Kelp	7-12
Location of Kelp.....	7-12
WRIA 8 Kelp Distribution	7-12
WRIA 9 Kelp Distribution	7-12
Kelp Density.....	7-13
Stressors	7-13
Historical Distribution of Kelp.....	7-14
Reasons for Change.....	7-14
Data Gaps.....	7-15
FLATS.....	7-15
Functions within Ecosystem	7-15
Processes that Maintain Flats.....	7-17
Location of Flats	7-17
Sediment Characteristics of Flats	7-17
Stressors	7-18
Historical Distribution	7-18
Reasons for Change.....	7-19
Data Gaps.....	7-19
TIDAL MARSHES.....	7-19
Functions within Ecosystem	7-19
Processes that Maintain Tidal Marshes	7-20
Location of Tidal Marshes.....	7-20
WRIA 8	7-21
WRIA 9	7-21
Stressors	7-21
Historical Distribution	7-22
Reasons for Change.....	7-22
Data Gaps.....	7-22
SUBESTUARIES (RIVER MOUTHS AND DELTAS).....	7-23
Functions within Ecosystem	7-23
Processes that Maintain Subestuaries and Deltas	7-24
Location of Subestuaries	7-24
WRIA 8 Subestuary Distribution	7-24
WRIA 9 Subestuary Distribution	7-24
Stressors	7-25
Historical Distribution	7-25

Reasons for Change.....	7-26
Data Gaps.....	7-26
SAND SPITS	7-26
Functions within Ecosystem	7-26
Processes that Maintain Sand Spits	7-27
Location of Sand Spits.....	7-27
Stressors	7-27
Historical Distribution	7-28
Reasons for Change.....	7-28
Data Gaps.....	7-28
BEACHES AND BACKSHORE	7-29
Functions within Ecosystem	7-29
Processes that Maintain Beaches and Backshore.....	7-30
Location of Beaches and Backshore	7-30
WRIA 8	7-30
WRIA 9	7-30
Stressors	7-31
Historical Distribution	7-32
Reasons for Change from Historical Distribution	7-32
Data Gaps.....	7-32
BANKS AND BLUFFS	7-35
Functions within Ecosystem	7-35
Processes that Maintain Banks and Bluffs.....	7-35
Location of Banks and Bluffs	7-35
Stressors	7-36
Historical Distribution	7-36
Reasons for Change.....	7-36
Data Gaps.....	7-36
MARINE RIPARIAN ZONES	7-37
Functions within the Ecosystem	7-37
Water Quality	7-37
Wildlife Habitat.....	7-38
Microclimate.....	7-41
Shade	7-42
Nutrient Input	7-42
Bank Stabilization	7-43
Large Woody Debris (LWD).....	7-44
Location of Marine Riparian Vegetation.....	7-44
Stressors	7-45
Historical Distribution	7-45
Reasons for Change.....	7-45
Data Gaps.....	7-46
KEY FINDINGS FOR SELECTED HABITATS	7-46
Eelgrass.....	7-47
Kelp Forests.....	7-47
Flats.....	7-48
Tidal Marshes	7-48
Subestuaries (River Mouths and Deltas)	7-49
Sand Spits	7-49
Beaches and Backshore.....	7-50
Banks and Bluffs.....	7-50

	Marine Riparian Vegetation	7-50
8.	SELECTED FISHES	8-1
	SALMONIDS.....	8-2
	Salmonid Use of the Nearshore Environment.....	8-3
	Current Distribution and Use in WRIAs 8 and 9.....	8-7
	Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	8-7
	Juveniles.....	8-8
	Adults.....	8-8
	Historical Distribution and Use.....	8-8
	Chum Salmon (<i>Oncorhynchus keta</i>).....	8-9
	Juveniles.....	8-9
	Adults.....	8-10
	Historical Distribution and Use.....	8-10
	Coho Salmon (<i>Oncorhynchus kisutch</i>)	8-10
	Juveniles.....	8-11
	Adults.....	8-11
	Historical Distribution and Use.....	8-11
	Sockeye Salmon (<i>Oncorhynchus nerka</i>)	8-12
	Juveniles.....	8-12
	Adults.....	8-12
	Historical Distribution and Use.....	8-13
	Pink Salmon (<i>Oncorhynchus gorbuscha</i>)	8-13
	Juveniles.....	8-13
	Adults.....	8-13
	Historical Distribution and Use.....	8-13
	Cutthroat Trout (<i>Oncorhynchus clarki</i>).....	8-14
	Juveniles.....	8-14
	Adults.....	8-14
	Historical Distribution and Use.....	8-15
	Steelhead (<i>Oncorhynchus mykiss</i>)	8-15
	Juveniles.....	8-15
	Adults.....	8-16
	Historical Distribution and Use.....	8-16
	Bull Trout (<i>Salvelinus confluentus</i>)	8-16
	Juveniles.....	8-17
	Adults.....	8-17
	Historical Distribution and Use.....	8-17
	ALL SALMONIDS	8-17
	Reasons for Change.....	8-18
	Stressors	8-19
	Data Gaps.....	8-20
	Key Findings.....	8-21
	FORAGE FISH.....	8-22
	Pacific Herring (<i>Clupea harengus pallasii</i>).....	8-23
	Juveniles.....	8-23
	Adults.....	8-23
	Current Distribution and Use.....	8-23
	Historical Distribution and Use.....	8-24
	Surf Smelt (<i>Hypomesus pretiosus</i>)	8-27
	Juveniles.....	8-27
	Adults.....	8-27

Current Distribution and Use.....	8-27
Historical Distribution and Use.....	8-27
Longfin Smelt (<i>Spirinchus thaleichthys</i>).....	8-28
Juveniles.....	8-28
Adults.....	8-28
Current Distribution and Use.....	8-28
Historical Distribution and Use.....	8-29
Eulachon (<i>Thaleichthys pacificus</i>).....	8-29
Juveniles.....	8-29
Adults.....	8-29
Current Distribution and Use.....	8-29
Historical Distribution and Use.....	8-29
Pacific Sand Lance (<i>Ammodytes hexapterus</i>).....	8-29
Juveniles.....	8-29
Adults.....	8-30
Current Distribution and Use.....	8-30
Historical Distribution and Use.....	8-30
ALL FORAGE FISH.....	8-31
Reasons for Change.....	8-31
Stressors.....	8-31
Data Gaps.....	8-32
Key Findings.....	8-32
GROUND FISH.....	8-33
Pacific Cod (<i>Gadus macrocephalus</i>).....	8-33
Juveniles.....	8-33
Adults.....	8-33
Current Distribution and Use.....	8-34
Historical Distribution and Use.....	8-34
Walleye Pollock (<i>Theragra chalcogramma</i>).....	8-35
Juveniles.....	8-35
Adults.....	8-35
Current Distribution and Use.....	8-35
Historical Distribution and Use.....	8-35
Pacific Hake (<i>Merluccius productus</i>).....	8-36
Juveniles.....	8-36
Adults.....	8-36
Current Distribution and Use.....	8-36
Historical Distribution and Use.....	8-36
Lingcod (<i>Ophiodon elongatus</i>).....	8-37
Juveniles.....	8-37
Adults.....	8-37
Current Distribution and Use.....	8-37
Historical Distribution and Use.....	8-38
English Sole (<i>Pleuronectes vetulus</i>).....	8-38
Juveniles.....	8-38
Adults.....	8-38
Current Distribution and Use.....	8-38
Historical Distribution and Use.....	8-39
Rock Sole (<i>Lepidopsetta bilineata/Lepidopsetta polyxystra</i>).....	8-39
Juveniles.....	8-39
Adults.....	8-39

	Current Distribution and Use.....	8-39
	Historical Distribution and Use.....	8-39
	All Groundfish	8-40
	Reasons for Change.....	8-40
	Stressors.....	8-40
	Data Gaps.....	8-41
	Key Findings.....	8-41
	ROCKFISH.....	8-41
	Rockfish spp. (<i>Sebastes</i> sp.).....	8-42
	Juveniles.....	8-42
	Adults.....	8-43
	Current Distribution and Use.....	8-43
	Historical Distribution and Use.....	8-45
	Reasons for Change.....	8-45
	Stressors.....	8-46
	Data Gaps.....	8-46
	Key Findings.....	8-46
9.	SELECTED INVERTEBRATES	9-1
	NATIVE LITTLENECK (<i>Protothaca staminea</i>)	9-1
	Current Distribution.....	9-1
	Historical Distribution	9-2
	BUTTER CLAM (<i>SAXIDOMUS GIGANTEA</i>).....	9-2
	Current Distribution.....	9-2
	Historical Distribution	9-5
	MANILA CLAM (<i>VENERUPIS</i> [<i>RUDITAPES</i>] <i>PHILIPPINARUM</i>)	9-5
	Current Distribution.....	9-5
	Historical Distribution	9-5
	GEODUCK (<i>PANOPEA ABRUPTA</i>).....	9-6
	Current Distribution.....	9-6
	Historical Distribution	9-6
	OLYMPIA OYSTER (<i>Ostrea conchaphila</i>)	9-7
	Current Distribution.....	9-7
	Historical Distribution	9-7
	NORTHERN ABALONE (<i>HALIOTIS KAMTSCHATKANA</i>)	9-7
	Current Distribution.....	9-7
	Historical Distribution	9-7
	DUNGENESS CRAB (<i>CANCER MAGISTER</i>).....	9-7
	Current Distribution.....	9-8
	Historical Distribution	9-8
	ALL SELECTED INVERTEBRATES.....	9-8
	Reasons for Change.....	9-8
	Stressors	9-9
	Data Gaps.....	9-10
	Key Findings.....	9-11
10.	SHORELINE CONDITIONS	10-1
	SHORELINE ARMORING.....	10-1
	Types and Distribution	10-1
	Physical Effects of Armoring on the Nearshore	10-2
	Biological Effects of Armoring on the Nearshore	10-4
	Cumulative Effects of Shoreline Armoring on the Nearshore.....	10-5

Data Gaps.....	10-5
OVERWATER STRUCTURES.....	10-6
Types and Distribution	10-6
Effects upon Nearshore Ecosystem.....	10-6
Data Gaps.....	10-7
DREDGING	10-8
Current and Historical Dredging Sites.....	10-8
Effects on the Nearshore Ecosystem.....	10-8
Data Gaps.....	10-9
FILLING.....	10-9
Current and Historical Filling Sites.....	10-10
Effects upon Nearshore Ecosystem.....	10-10
Changes in the Physical Environment	10-10
Changes in the Biological Community	10-10
Beach Nourishment and Restoration Projects	10-11
Data Gaps.....	10-11
SEWAGE DISCHARGES	10-12
Types and Distribution	10-12
West Point and North (WRIA 8).....	10-12
Alki Point and South (WRIA 9).....	10-13
Effects upon Nearshore Ecosystem.....	10-13
Data Gaps.....	10-13
SEDIMENT CONTAMINATION.....	10-14
Types and Distribution	10-14
West Point and North (WRIA 8) and Alki Point and South (WRIA 9)	10-14
Effects upon Nearshore Ecosystem.....	10-15
Data Gaps.....	10-16
NON-POINT POLLUTION.....	10-16
Definition and Types.....	10-16
Effects upon Nearshore Ecosystems.....	10-17
Data Gaps.....	10-18
NON-NATIVE SPECIES	10-18
Definition.....	10-18
Distribution and List	10-18
Selected Species.....	10-23
Zostera japonica	10-23
Spartina spp.....	10-23
Copepods	10-23
Sargassum.....	10-24
Other Species.....	10-24
Data Gaps.....	10-25
KEY FINDINGS.....	10-25
Shoreline Armoring	10-25
Overwater Structures.....	10-25
Dredging	10-25
Filling	10-26
Sewage Discharges.....	10-26
Sediment Contamination	10-26
Non-Point Pollution	10-26
Non-Native Species.....	10-26

11. ELLIOTT BAY AND THE DUWAMISH RIVER ESTUARY	11-1
SHORELINE CONDITIONS	11-2
Shoreline Armoring	11-14
Types and Distribution	11-14
Effects Upon Nearshore Ecosystems	11-15
Data Gaps.....	11-16
Overwater Structures.....	11-16
Types and Distribution	11-16
Effects Upon Nearshore Ecosystems	11-17
Data Gaps.....	11-17
Dredging	11-18
Current and Historical Dredging Sites.....	11-18
Effects Upon the Nearshore Ecosystem	11-19
Data Gaps.....	11-20
Filling	11-20
Current and Historical Filling Sites.....	11-20
Effects Upon the Nearshore Ecosystem	11-20
Data Gaps.....	11-20
Sewage Discharges.....	11-21
Types and Distribution	11-21
Effects Upon Nearshore Ecosystems	11-21
Data Gaps.....	11-22
Sediment Contamination	11-27
Types and Distribution	11-27
Effects upon the Nearshore	11-28
Data Gaps.....	11-29
Key Findings.....	11-29
Shoreline Armoring	11-29
Overwater Structures.....	11-30
Dredging	11-30
Filling	11-30
Sewage Discharges.....	11-30
Sediment Contamination	11-31
SEDIMENT DYNAMICS AND PATTERNS	11-31
Duwamish River.....	11-31
Mechanisms of Sediment Transport	11-32
Historical Sediment Dynamics of the Duwamish River	11-33
Alterations in Stream Form and Discharge	11-33
Alterations to Sediment Loading.....	11-35
Present Sediment Dynamics of the Duwamish River.....	11-36
Tides and Salinity	11-36
Sediment Loading.....	11-37
ELLIOTT BAY.....	11-37
Drift Cells	11-37
Stressors.....	11-38
Historical Distribution	11-38
Reasons For Change From Historical Distribution.....	11-39
Data Gaps.....	11-39
Key Findings.....	11-39
Duwamish River.....	11-39
Elliott Bay.....	11-40

SALMONID DISTRIBUTION AND USE	11-40
Current Juvenile Use of the Duwamish and Elliott Bay Estuary.....	11-43
Juvenile Chinook Salmon	11-43
Juvenile Chum Salmon.....	11-45
Juvenile Coho Salmon.....	11-46
Other Juvenile Salmonids.....	11-47
Current Adult Use of the Duwamish Estuary and Elliott Bay	11-47
Fall Chinook Salmon.....	11-47
Chum Salmon.....	11-48
Coho Salmon.....	11-48
Pink Salmon.....	11-50
Steelhead Trout.....	11-50
Sea-run Cutthroat Trout.....	11-51
Bull Trout.....	11-51
Historical Use of the Duwamish Estuary by Anadromous Salmonids	11-51
Reasons for Changes in Salmonid Abundance	11-52
Stressors	11-52
Data Gaps.....	11-53
Key Findings.....	11-54
OTHER FIN-FISH DISTRIBUTION AND USE	11-54
Duwamish Estuary.....	11-54
Elliott Bay.....	11-57
Stressors	11-57
Data Gaps.....	11-60
Key Findings.....	11-61
SHELLFISH DISTRIBUTION.....	11-61
Current Distribution.....	11-61
Historical Distribution.....	11-61
Data Gaps.....	11-61
Key Findings.....	11-61
12. CONCLUSIONS AND RECOMMENDATIONS	12-1
CONCLUSIONS	12-2
RECOMMENDATIONS	12-7
PROBLEMS.....	12-10
FINDINGS.....	12-11
13. LITERATURE CITED.....	13-1
APPENDIX -- DATA GAPS AND KEY FINDINGS.....	A-1

TABLES

Table 1:	Comparison of basin physical characteristics for Puget Sound.....	3-1
Table 2:	Nutrient results from the MOSS sampling program.....	4-2
Table 3:	Water quality properties from the MOSS sampling program	4-6
Table 4:	Data gaps for primary productivity.....	5-2
Table 5:	Data gaps for phytoplankton	6-4
Table 6:	Data gaps for zooplankton	6-7
Table 7:	Assignment of Puget Sound benthic infaunal taxa into feeding groups	6-10
Table 8:	Commonly occurring fish species in nearshore habitats throughout WRIAs 8 and 9.....	6-11

Table 9:	Factors controlling eelgrass growth.....	7-2
Table 10:	Data gaps for eelgrass.....	7-11
Table 11:	Data gaps for kelp.....	7-15
Table 12:	Data gaps for flats.....	7-19
Table 13:	Data gaps for tidal marshes.....	7-23
Table 14:	Data gaps for subestuaries.....	7-26
Table 15:	Data gaps for sand spits.....	7-29
Table 16:	Shoreline lengths where various beach types were recorded in the ShoreZone database.....	7-31
Table 17:	Data gaps for beaches and backshore.....	7-32
Table 18:	Shoreline lengths where various cliff types were recorded in the ShoreZone database.....	7-35
Table 19:	Data gaps for banks and bluffs.....	7-36
Table 20:	Data Gaps for Marine Riparian Zones.....	7-46
Table 21:	Common and Scientific Names of WDFW Priority Fish Species.....	8-1
Table 22:	Salmonids: Summary of nearshore and estuarine habitat use.....	8-7
Table 23:	Data gaps for salmonids.....	8-21
Table 24:	Forage Fish: Washington State/Federal status in South Puget Sound and indication of nearshore marine and estuarine habitat use.....	8-23
Table 25:	Data gaps for forage fish.....	8-32
Table 26:	Groundfish: Washington State/Federal status in South Puget Sound and indication of nearshore and estuarine habitat use.....	8-33
Table 27:	Data gaps for groundfish.....	8-41
Table 28:	State/Federal status and nearshore habitat use of rockfish species in Washington State.....	8-42
Table 29:	Distribution, habitat type, and density of rockfish spp. observed within WRIA 8 and 9 nearshore habitats.....	8-44
Table 30:	Data gaps for rockfish.....	8-46
Table 31:	Data gaps for invertebrates.....	9-11
Table 32:	Abundance of three species of hardshell clams at selected King County beaches.....	9-12
Table 33:	Shoreline Armoring Data Gaps.....	10-5
Table 34:	Overwater Structures Data Gaps.....	10-8
Table 35:	Data gaps for dredging.....	10-9
Table 36:	Data gaps for filling.....	10-11
Table 37:	Data gaps for sewage discharges.....	10-14
Table 38:	Data for four intertidal stations showing concentrations of selected metals and four classes of organic compounds.....	10-15
Table 39:	Data gaps for sediment contamination.....	10-16
Table 40:	Data gaps for non-point pollution.....	10-18
Table 41:	Origins, First Records, and Mechanisms of Introduction of 39 Non-Native Species Collected by the 1998 Puget Sound Expedition.....	10-19
Table 42:	Origins, First Records, and Mechanisms of Additional Non-Native Species in Puget Sound.....	10-22
Table 43:	Data gaps for non-native species.....	10-25
Table 44:	The Duwamish Estuary habitat changes from 1854 to 1986 (Blomberg et al. 1988).....	11-1
Table 45:	Elliott Bay/Duwamish Estuary shoreline habitat and substrate survey results (Port of Seattle, unpublished data).	11-13
Table 46:	Data gaps for shoreline armoring.....	11-16
Table 47:	Data gaps for overwater structures.....	11-18
Table 48:	Data gaps for sewage discharges.....	11-22
Table 49:	Data gaps for sediment contamination.....	11-29
Table 50:	Data gaps for sediment dynamics.....	11-39

Table 51	Timing of anadromous salmonid migration in the Green/Duwamish River basin (from Grette and Salo 1986).....	11-41
Table 52	The number of juvenile salmonids collected in the Duwamish Estuary (Warner and Fritz 1995).....	11-44
Table 53	Run size of chinook salmon, coho salmon, and steelhead trout in the Green/Duwamish River from 1966 to 1998 (WDFW unpublished data)	11-49
Table 54	Data gaps for salmonids	11-53
Table 55	Fish species collected in the Duwamish River in 1994 (Warner and Fritz 1995)	11-56
Table 56	Fish species collected off Alki Point and West Point (Miller et al. 1977)	11-58
Table 57:	Data gaps for other fin-fish species.....	11-60

FIGURES

Figure 1	Study Area	1-5
Figure 2	Nearshore Section Illustrating Typical Zonation.....	1-9
Figure 3	Nearshore Environment Habitat Types	1-11
Figure 4	Simplified Conceptual Model of the Puget Sound Nearshore Ecosystem.....	2-3
Figure 5	Riverine/Estuarine Ecosystems	2-5
Figure 6	Conceptual Model of Salmonid Use of the Nearshore Environment	2-6
Figure 7	Potential Stressors in the Coastal Ecosystems of the Pacific Northwest and Associated Ecological, Economic, and Social Impacts.....	2-9
Figure 8	General Conceptual Model, with Example for Evaluating Effects of Shoreline Armoring and Mitigation Actions.....	2-11
Figure 9	WRIA 8 Nearshore Bathymetry and Topography.....	3-3
Figure 10	WRIA 9 Nearshore Bathymetry and Topography.....	3-5
Figure 11	WRIA 8 Nearshore Drift Cells.....	3-11
Figure 12	WRIA 9 Nearshore Drift Cells.....	3-13
Figure 13	Simplified Example of a Detritus-based Shallow Subtidal Food Web in Puget Sound.....	6-13
Figure 14	Eelgrass and Kelp Areas Mapped Using Side-Scan Sonar.....	7-5
Figure 15	Eelgrass and Kelp Shoreline Lengths	7-7
Figure 16	Fucus and Ulva Shoreline Lengths	7-33
Figure 17	Conceptual Model of Marine Riparian Functions	7-39
Figure 18	Salmonid Use of the Nearshore Environment.....	8-5
Figure 19	Known Forage Fish Spawning Areas.....	8-25
Figure 20	Distribution of Selected Invertebrates	9-3
Figure 21	Historic channel/Shore Locations, Upland Forest and Wetlands of the Duwamish River Estuary.....	11-3
Figure 22	Artificial Channel Constraints and Shoreline Modifications – Elliott Bay & Duwamish Waterway.....	11-5
Figure 23	Artificial Channel Constraints and Large Woody Debris – Map 1 of 3.....	11-7
Figure 24	Artificial Channel Constraints and Large Woody Debris – Map 2 of 3.....	11-9
Figure 25	Artificial Channel Constraints and Large Woody Debris – Map 3 of 3.....	11-11
Figure 26	Yearly Minimum Dissolved Oxygen (mg/L) in the Duwamish River	11-23
Figure 27	Yearly Average Ammonia Nitrogen (mg/L) in the Duwamish River.....	11-25