4.1.4 Turning Basin Vicinity Project:

Location/Description and Background:
Turning Basin Vicinity, Turning Basin No. 3. The Turning Basin is located at the head of navigation on the Duwamish Waterway. Portions of the area are currently being restored by federal agencies and the Port of Seattle under the Coastal America Partnership.

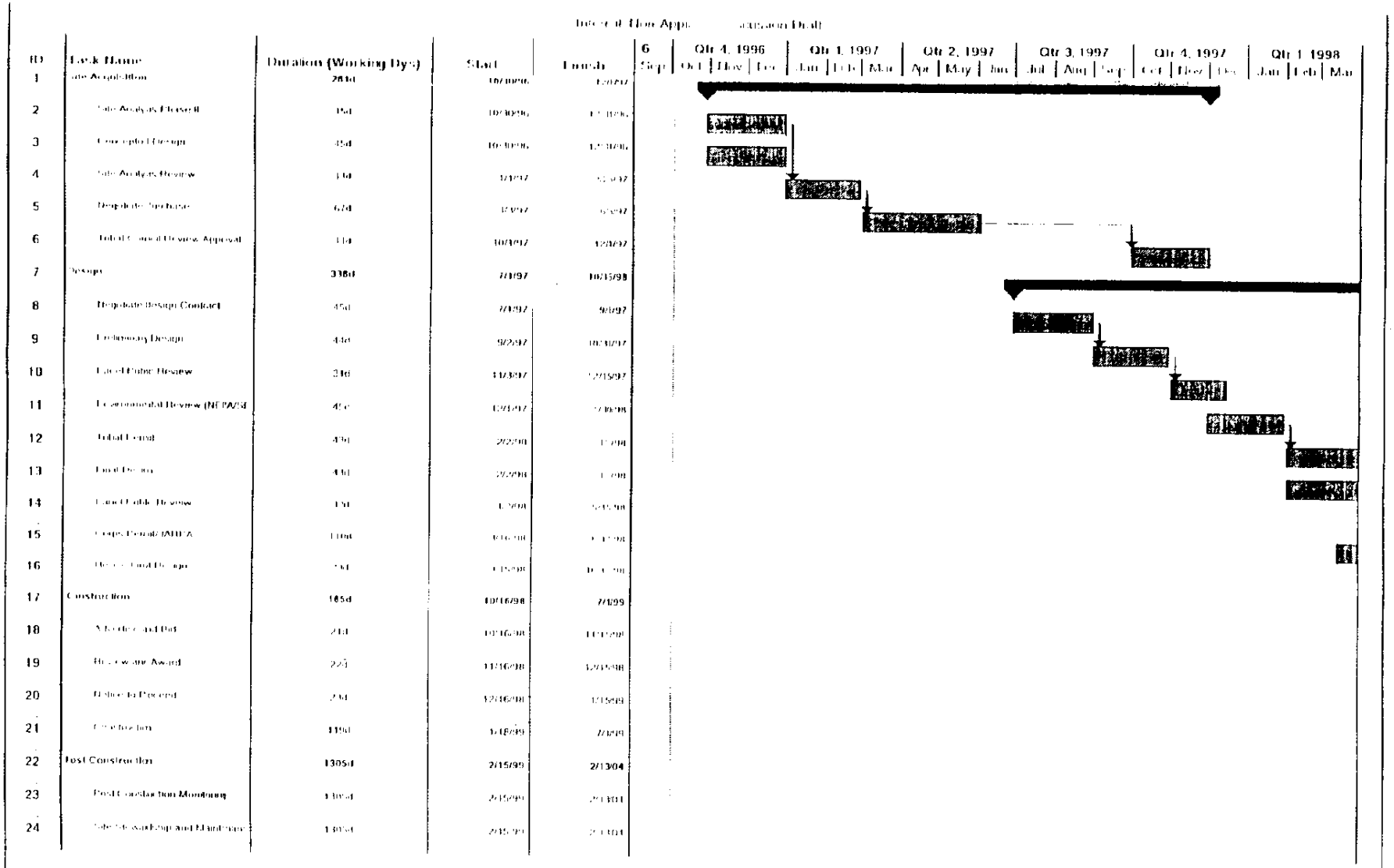
Scope: The precise tasks associated with the project proposal are somewhat dependent on the option selected (see Section 2 for a full description of the two options). Briefly, Option 1 includes property acquisition and demolition; Option 2 includes property acquisition, demolition, and habitat development.

The tasks associated with Option 1 are as follows:

1) Property acquisition. The task encompasses all real estate activities and negotiations to sale and transfer of title to the United States in trust for the Muckleshoot Indian Tribe. As stipulated in the project description, transfer of the title from the current owner to the tribe would be dependent on the presence of no on-site contamination or other environmental violations. This task would be coordinated by the Muckleshoot Indian Tribe. Estimated timeframe: approximately 3 months.

2) Demolition and Restoration Permitting. This task includes obtaining any necessary permits for the demolition of existing structures and piers on the property, as well as those required for regrading the property and revegetating activities. This task will be coordinated by the Muckleshoot Indian Tribe and the U.S. Army Corps of Engineers. Estimated timeframe; 6 to 9 months.

Draft Turning Basin Vicinity Project Budget										
	Date: 10/2/96									
ID	TASK NAME	SCHEDULE		BUDGET BY QUARTER						
		Start	Finish	To date	4th Qtr. 96	1st Qtr. 97	2nd Qtr. 97	3rd Qtr. 97	4th Qtr. 97	1st Qtr. 98
1	**Site Acquisition**	10/30/96	12/1/97							
2	Site analysis - Phase II	10/30/96	12/31/96		$33,500					
3	Conceptual design (20%)	10/30/96	12/31/96		$23,940					
4	Site analysis review	1/1/97	2/28/97							
5	Negotiate purchase	3/3/97	6/3/97							
6	Tribal Council review	10/1/97	12/1/97							
	Land purchase								$225,000	
	Acquisition proj. mgmt. (40%)				$5,760	$5,760	$5,760	$5,760	$5,760	
7	Design	7/1/97	10/15/98							
8	Negotiate design contract	7/1/97	9/1/97							
9	Preliminary design (20%)	9/2/97	10/31/97						$23,910	
10	Panel/public review	11/3/97	12/15/97							
11	Environmental review	12/1/97	1/30/98							
12	Tribal permit	2/2/98	3/1/98							
13	Final design (60%)	2/2/98	4/1/98							$71,820
14	Panel/public review	4/2/98	5/15/98							
15	Corps/JAEPA permits	3/16/98	8/14/98							
16	Revise final design	9/15/98	10/15/98							
	Design proj. mgmt. (40%)							$4,800	$4,800	$4,800
17	**Construction**	10/16/98	8/15/99							
18	Advertise and bid	10/16/98	11/15/98							
19	Review and award	11/16/98	12/15/98							
20	Notice to proceed	12/16/98	1/15/99							
21	Construction	1/18/99	8/15/99							
	Construction proj. mgmt. (20%)									
22	**Post Construction**	8/15/99								
23	Monitoring	2/15/00	8/15/10							
24	Stewardship/maintenance	8/15/99								
TOTAL BY QUARTER					**$63,200**	**$5,760**	**$5,760**	**$10,560**	**$259,500**	**$76,620**



Project: Fanning Basin Vicinity Project
Date: 10/13/96

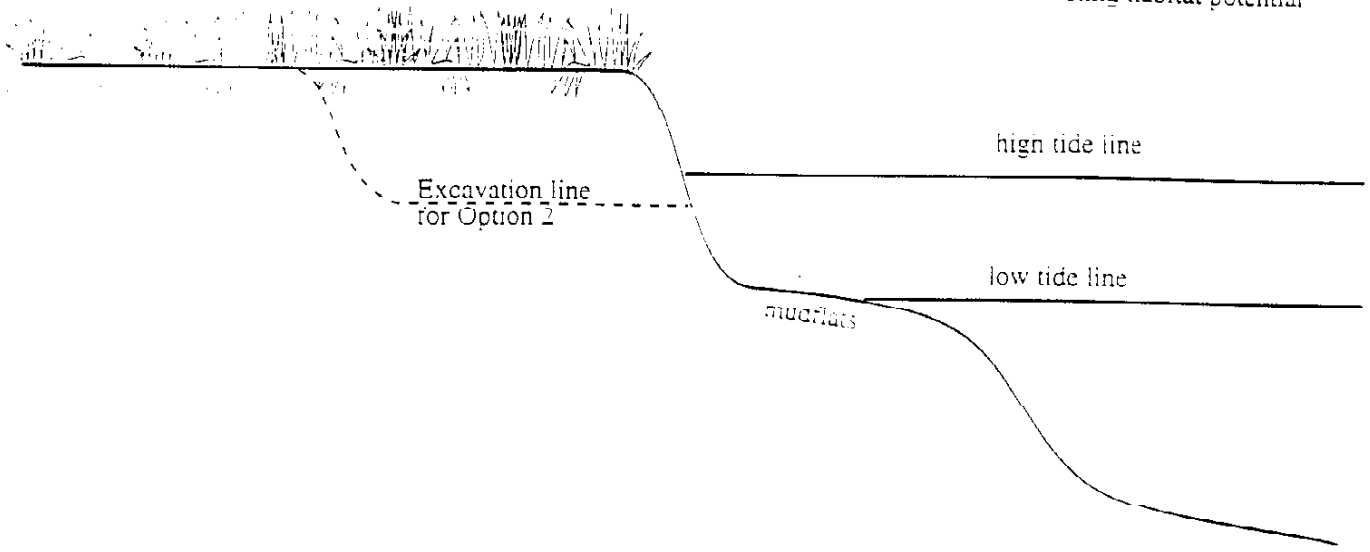
Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

Page 1

Figure 2. Summary of Proposed Options

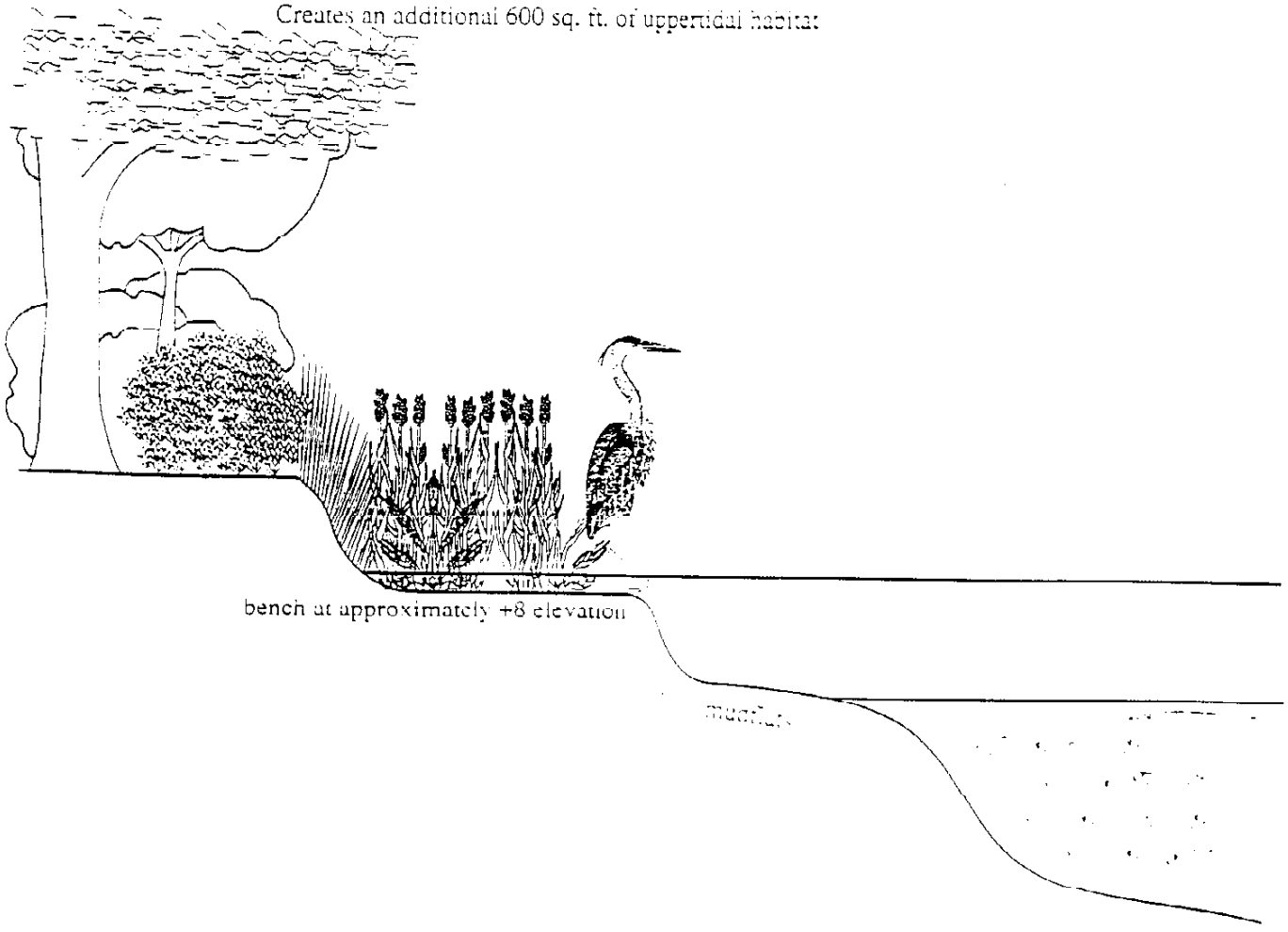
OPTION 1. Profile of Existing Contours

Removes asphalt, concrete and commercial structures to maximize existing habitat potential



OPTION 2. Property After Construction/Habitat Restoration

Creates an additional 600 sq. ft. of uppertidal habitat



4.1.5 Elliott Bay Nearshore:

Location/Description and Background:
The West Seattle shoreline of Elliott Bay with a southern boundary north of Salty's restaurant to a point west of the Duwamish Head light; various types of habitats will be considered from the upper intertidal to a depth of approximately 50 feet.

King County Department of Natural Resources' Water Resources unit has been selected as the project manager.

Scope:
Goal: The goal of the Elliott Bay Nearshore Habitat Substrate Enhancement project is to improve nearshore marine habitat conditions by enhancing productivity of epibenthic fauna, increasing the distribution and density of macroalgae and other primary producers, and improving the attributes that support resident and migratory marine and estuarine fish species.

Objectives:

1) Increase diversity of bottom substrates.
2) Increase the area of limiting hard bottom substrates.
3) Provide intertidal substrates at proper horizons for eelgrass.
4) Increase the volume of physical protective structures for juvenile and adult resident invertebrates and fishes.
5) Increase hard structure surfaces for macroalgae.
6) Remove undesirable bottom debris.
7) Provide substrate improvements that are compatible with commerce, navigation, tribal and sport fishing and recreational shoreline uses.
8) Provide public education and involvement opportunities.
9) Provide information useful to subsequent substrate enhancement projects.
10) Design improvements to be sustainable.

Performance Work Statement:
King County has assembled a core team to assist the Panel in:

Assessing, mapping and documenting shoreline, tidal and substrate areas for existing potential, and historical biodiversity and biological functions. (A great deal of this information has been attained by the Panel through the Washington State Department of Fisheries)

Selecting several specific locations to construct the substrate enhancement meeting the above objectives.

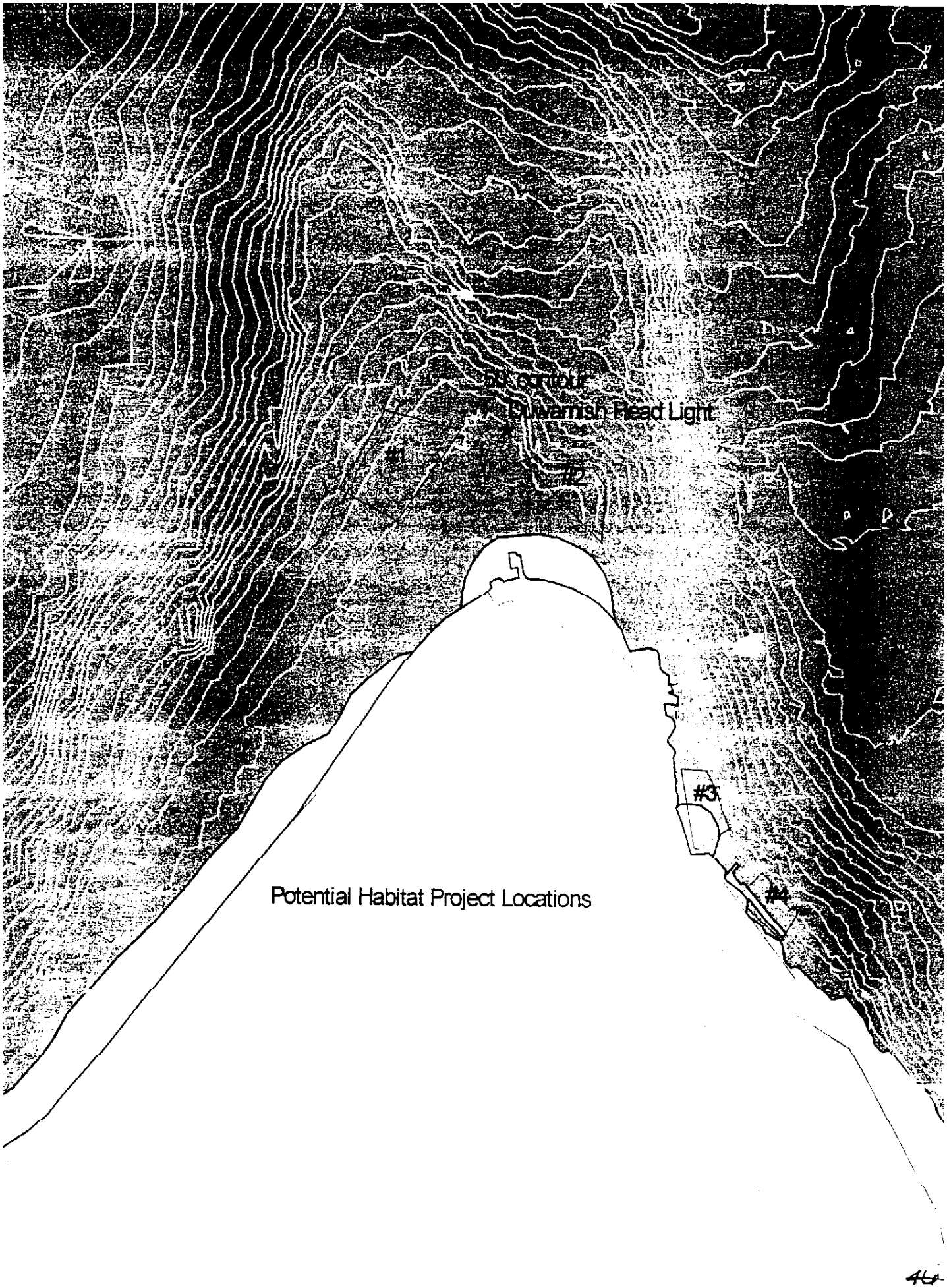
Identifying alternative methods to construct, place or locate, seed and promulgate substrate environs;

Designing long term habitat monitoring and maintenance program;

Developing and implementing a public and agency coordination process;

Providing a public education and participation process (stewardship) in evaluating and assessing the project area, including project design and development; and

Project cost accounting, coordination and scheduling.


50' contour
Duwamish Head Light
#1
#2
#3
#4
Potential Habitat Project Locations

OPTION C: TASK DETAIL

	Basic Proposal Recommendations *	Add Ons
SITE CHACTERIZATION		
Select Sites	Three Sites	Additional
See attached map: proposed sites		
Characterize Sites (3-4)		Additional
Parameters		
Project boundaries	X	
Site/control site boundaries (4)	Shuman Map	
	GPS	
Current Substrate	PSD, Buckley	
	Shuman	
Depth	Map X	
Slope	Arc Info/Student	
	Shuman, Buckley	
Sediment Contamination	3 Composites, Ecol,	
Eel grass beds	Shuman/ Buckley	
Water Quality	General, Stark	
Waves/Currents	ETS, Stark	
Biota	Buckley, EBM EIS	
	Species list from video	
Property ownership	Maps(DNR,Sea.Kroll)	
Constraints,e.g Utilities, navigation,fishery	Diving, Metro/Seattle maps	
	tribes, CG	
		Other parameters
Obtain Information		
		Lit. Review
		Local,Beyond
		Consultant
Project Constraints	Hab. Group,Maps	
Project Experience	Review local studies	
	Hab. Group brainstorm	
location		
design		
species to encourage	Objectives	
juvenile fish		
salmonids		
prey epibenthic species		

*Source of information or recommendation

substrate	Coarse, cobble, boulder	Other, e.g shells, cement
depth	30-50 ft.(60 DHW)	
stability (currents, slope)	Velocity/direction	Deposition
eel grass	Beyond 20-30 ft.	
effects on unimpacted area	Design spaces	Add study

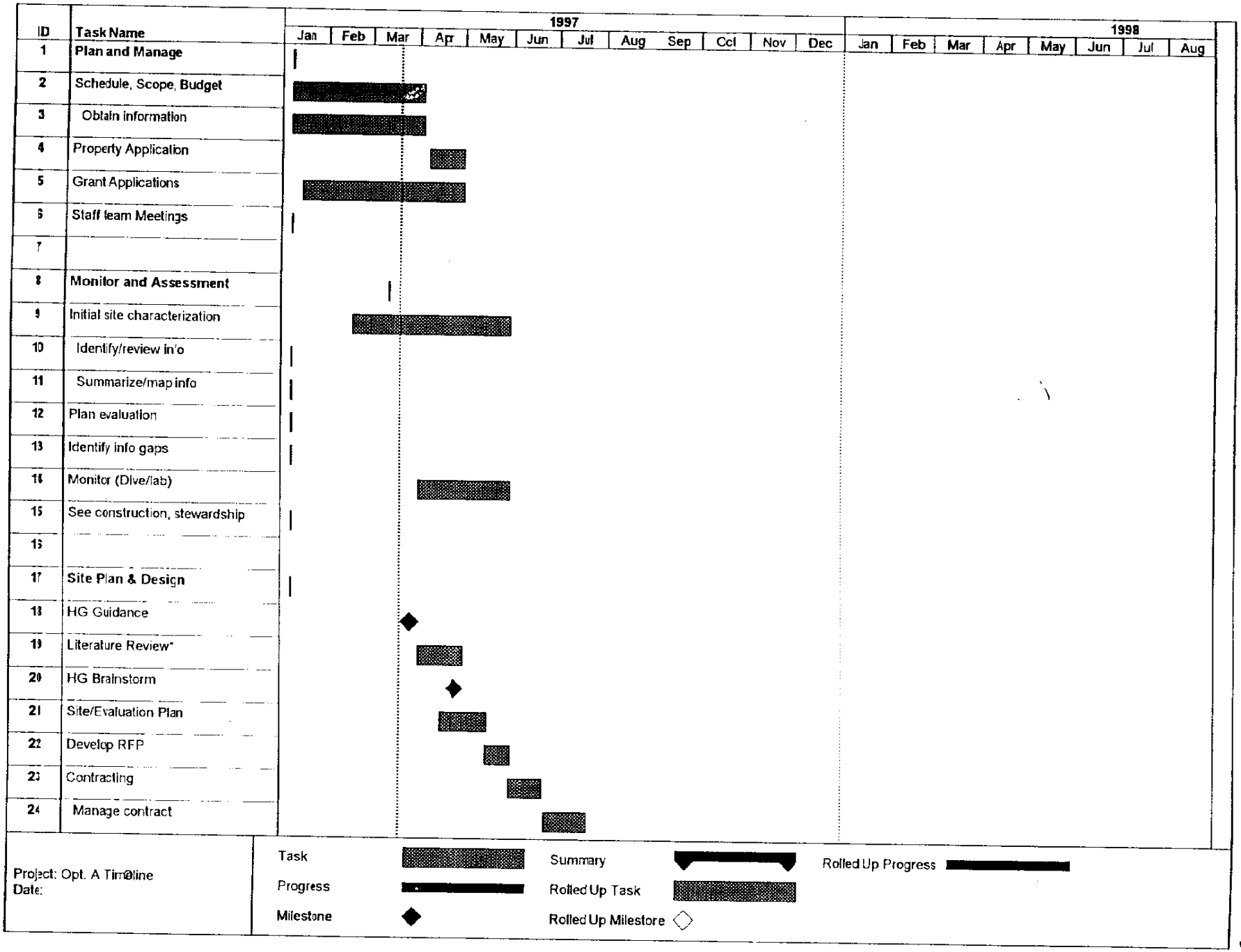
ANALYSIS AND DESIGN

Tasks	Basic **Staff recommendations based on info, Hab.Group brainstorm**	Add-on **Consultant develop alternatives**
Id suitable sites w. controls re. above eg. depth, slope, current, size, constraints, eel grass, uses	e.g. 20-50ft.	additional sites
Rec. configuration/placement	e.g. E shape, bands Map	add. specifics
Determine target species	Objectives, see above resident salmonids juvenile epibenthic prey (selected)	non-prey
Identify new substrate, e.g.	E.g. cobble & boulder Bay balls, if grant Art, if grant, parameters Bay balls, if grant	Substrate other types specifics
Recommend evaluation plan (See below)	Staff/Hab Group	Consultant
Site plans/map	Map	More detail
Review and comment	Limited consultant Hab. Group/EBDRP	Consultant
Environmental Review		
Permits and checklist		More if EIS
Public Meeting	Site, substrate o.k. (earlier?)	

IMPLEMENTATION

	Basic	Add On
Decision making		
One public meeting/public notice	Staff presentation Pub. Involve Group	Additional
Two EBDRP decision points SSB Design selection		Additional
Construction	3 sites (1.5+ ac.)	Additional if bid or grant allow
Tasks		
Price substrate materials options Mixed coarse, Cobble and boulders Recycled materials, if no extra cost		
Purchase/Load/Transport/ Place Coordinate w. Bay Balls, art	If within budget	If grant funds cover costs. construction storage transport

Stewardship		
Tasks	**Basic**	**Add-On**
	None	Apply for additional grants
Bay Balls and/or art Apply for/manage grant Construct, Store, transport Bay Balls Publicize Coordinate with construction location (e.g. intertidal, West)size		
Interpretive signs Apply for grant, implement		
Long term monitoring Volunteer diving/video Counts / Volunteers Analysis and Reporting		


ID
Task Name
1997
1998
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Jan
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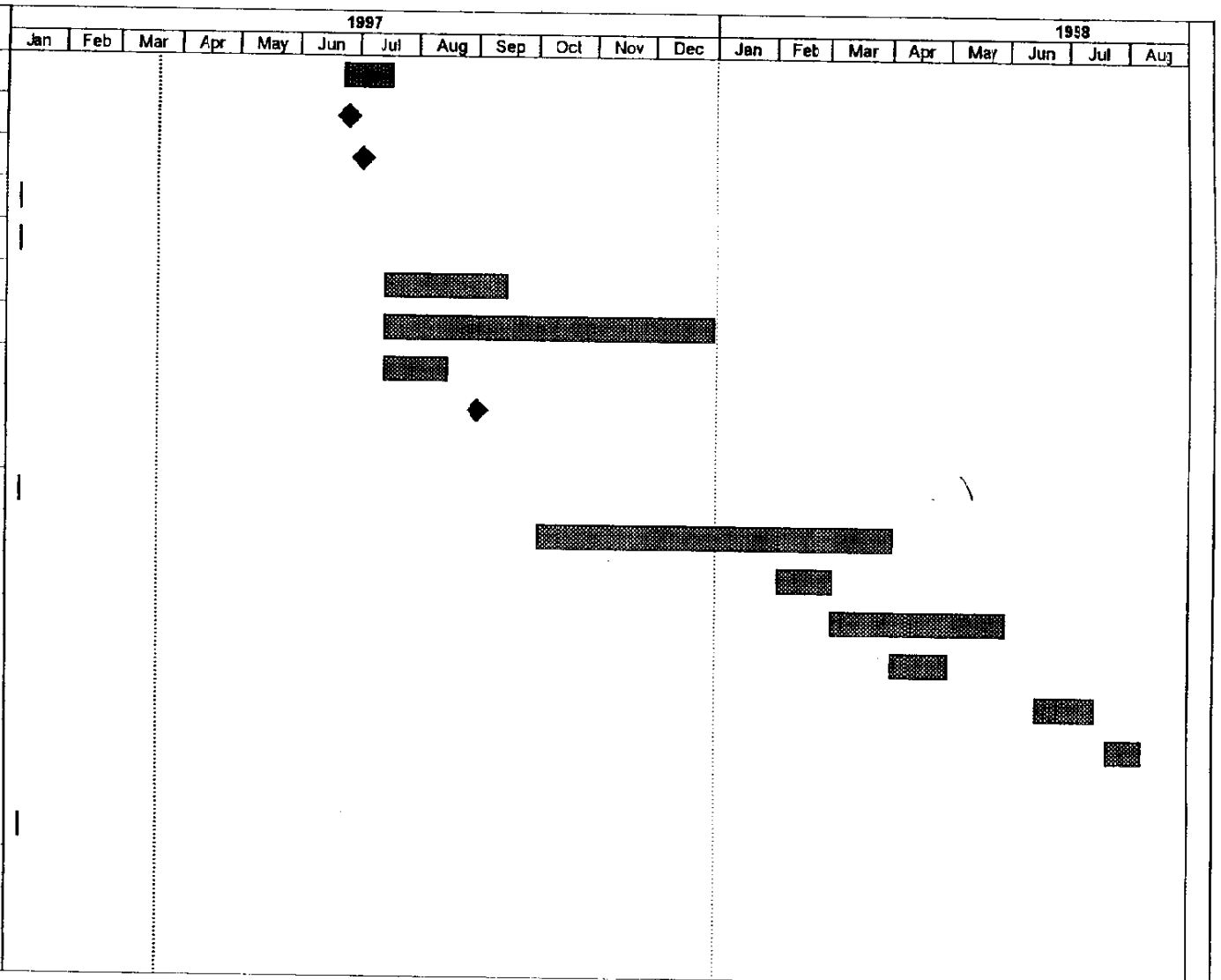
Mar
Apr
May
Jun
Jul
Aug
1 Plan and Manage
2 Schedule, Scope, Budget
3 Obtain information
4 Property Application
5 Grant Applications
6 Staff team Meetings
7
8 Monitor and Assessment
9 Initial site characterization
10 Identify/review info
11 Summarize/map info
12 Plan evaluation
13 Identify info gaps
14 Monitor (Dive/lab)
15 See construction, stewardship
16
17 Site Plan & Design
18 HG Guidance
19 Literature Review*
20 HG Brainstorm
21 Site/Evaluation Plan
22 Develop RFP
23 Contracting
24 Manage contract
Project: Opt. A Timeline
Date:
Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

ID	Task Name
25	Obtain/review info
26	Consultant Recommendations/HG
27	Design/RFP report
28	
29	**Review & Alternative Selection**
30	EIS/NEPA checdlist
31	Permits
32	Public Meeting/Notice
33	Final Design Approval
34	
35	**Construction**
36	Construction RFP/Contracting
37	Monitoring Contract
38	Volunteer Project(s)*
39	Pre construction monitor/report
40	Construction/Contract Managemnt
41	Construction monito/report
42	
43	**Stewardship**
44	Post Monitor & Assessment 4/99
45	Awareness/Education, if grants
46	Long term Monitoring 4/03



Project: Opt. A Timeline
Date:

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

BUDGET ESTIMATE/OPTION C	1997	1998	Total	Additions*/ Modifications
Planning & Design				
Site Analysis				
. 12 FTE @1 FTE@$62,000	8,040			8,040
.25@$45,000	11,250			
100% overhead	19,310			*8040*
Monitoring*	6,000			
Analysis & Design				
Consultant Contract	2,600			15,000
Contracting				1000
Permitting				
SEPA/NEPA	3,000	3,000		
.05 FTE /yr.				
Permits	5,000			
Project Planning				
.2 FTE@ $62,000	12,400			
overhead @ $62,000	12,400			
Sub Total	**80,000**	**3,000**	**$83,000**	
Implementation				
Construction				
Contract		133,600		Add, *if grant*
Contracting		5,000		
Property Right of Entry		0		2000
Project/Contract Management				
.4 & .55 FTE &@$62,000	24,800	34,100		
100% overhead	24,800	34,100		
Monitoring				
Pre/Post monitoring	6,000	2,000		5000 +/-
Analysis/Reporting				
.15 FTE		9,300		
100% overhead		9,300		
0+12 Evaluation		6,000		5000 +/-
Sub Total	**55,600**	**233,400**	**289,000**	
Contingency	0	0	0	10%
Grand Total			**$372,000**	
*Proposed, if additional sources of funds				

4.2 Sediment Remediation Projects

SEDIMENT REMEDIATION $ w/o Amendment									
	1992/1993	1994	1995	1996	1997	1998	1999	2000+ Monitoring	Project Total
Central Waterfront									
Site Investigation									
Recontamination Study			412,000.00						412,000.00
Clean-up Study Documents			30,000.00						30,000.00
Sample Collection/Analysis				91,600.00					91,600.00
Consultant Selection				15,000.00					15,000.00
Consultant Contract (COE $322,000)									0.00
Design									0.00
Permitting/Env. Process									0.00
Project Management									0.00
Planning and Design Subtotal			442,000.00	106,600.00	0.00	0.00	0.00		548,600.00
Unencumbered Implementation Funds*									2,856,500.00
TOTAL									**3,405,100.00**
Diagonal Duwamish									
Screening	43,800	7,000.00	4,500.00						55,300.00
Site Investigation	28,000	126,000.00	51,000.00	119,000.00					324,000.00
Clean-up Plan		8,000.00	49,000.00	160,000.00	128,950.00				345,950.00
Permitting									0.00
Planning & Design Subtotal	71,800	141,000.00	104,500.00	279,000.00	128,950.00				725,250.00
Unencumbered Implementation Funds*									3,943,000.00
TOTAL									**4,668,250.00**
Norfolk									
Screening									
Site Investigation	19,000.00	66,000.00	95,000.00						180,000.00
Clean-up Plan		5,000.00	25,000.00	122,000.00					152,000.00
Permitting				41,000.00	50,000.00				91,000.00
Planning and Design Subtotal	19,000.00	71,000.00	120,000.00	163,000.00	50,000.00				423,000.00
Construction				10,000.00	1,152,000.00				1,162,000.00
Monitoring								100,000.00	100,000.00
Management					16,000.00				16,000.00
Subtotal				10,000.00	1,168,000.00			100,000.00	1,278,000.00
TOTAL									**1,701,000.00**
Pier 53-55									
Site Investigation	56,000.00								56,000.00
Clean-up Plan									0.00
Permitting	18,000.00								18,000.00
Planning and Design Subtotal	74,000.00								74,000.00
Construction	62,000.00								62,000.00
Monitoring	184,000.00	500.00		84,000.00				62,000.00	330,500.00
Management									
Subtotal	226,000.00	500.00		84,000.00				62,000.00	392,500.00
TOTAL									**466,500.00**
Planning & Design Total									**1,770,850.00**
Implementation Total									**8,470,000.00**
Sediment Program Total									**10,240,850.00**

* Can not be spent w/out the availability of additional planning and design funds.

4.2.1 Pier 53/55 Sediment Cap and Natural Recovery Area

Location/Description and Background:
In March 1992, contractors for the U.S. Army Corps of Engineers placed 22,000 cubic yards of clean sand offshore of Piers 53,54, and 55 in Elliott Bay on Seattle's downtown waterfront, capping 4.5 acres of chemically contaminated bottom sediments. This action, known as the Pier 53/55 Project, was the culmination of 4 years of study and planning by many agencies, including the City of Seattle Department of Engineering, the King County Department of Metropolitan Services (County), the U.S. Army Corps of Engineers (Corps), the Washington State Department of Ecology (Ecology), the Washington State Department of Natural Resources (DNR), the Washington State Department of Fisheries, and the U.S. Environmental Protection Agency (EPA).

The project site is an east-west-trending rectangular and trapezoidal area located offshore of Piers 53, 54, and 55. This site is west and slightly north of the intersection of Madison Street and Alaskan Way in downtown Seattle. The project consists of a 3-foot-thick sediment cap covering 2.9 acres farthest offshore and an experimental 1-foot-thick enhanced natural recovery area (ENR) covering 1.6 acres nearshore.

Planning for a remediation project along the Seattle waterfront began as part of the County's (formerly Metro) Toxic Sediment Remediation Program, which was formed to coordinate and plan multiagency planning efforts to clean up contaminated sediments in Elliott Bay and the lower Duwamish Estuary.

Planning for remediation was suspended when the National Oceanic and Atmospheric Administration (NOAA) filed a lawsuit against the City of Seattle and Metro in 1990. After the lawsuit was settled, planning for a remediation project in Elliott Bay was revived. The Pier 53 site was chosen when the City of Seattle expressed a willingness to take the lead in implementing a capping project at the site and the Corps was willing to provide capping sand from routine maintenance dredging in the Duwamish River.

No effort was made to reassemble the interagency committee. Instead, the City of Seattle and Metro decided to develop plans and coordinate agencies during the permit process. The Corps was committed to complete dredging in the Duwamish River by the end of 1992 and would dispose of the sand at the open water disposal site in Elliott Bay if no beneficial capping project was possible.

After the Pier 53 sediment cap was installed, the project was presented to the Panel. The Panel reviewed the project and, after deciding it met the Panel's criteria for a sediment remediation project, declared that the project was eligible for in-kind credit toward the settlement. (Resolution 1992-20). The management of the Pier 53 project then proceeded under the direction of the Panel, with the City of Seattle as the project sponsor. Metro (King County) agreed to conduct the monitoring program, which was established during the permitting process.

The purpose of the monitoring program is to define how stable the cap is, how well it is functioning to isolate the contaminated sediments, whether the cleanup continues to meet the state sediment standards, and how the cap is biologically repopulated. It is also a means to evaluate the rate of possible recontamination. Monitoring will continue through 2002.

Scope:

Objectives for the Monitoring Plan:
Provide baseline taxonomic data.

Guide and document the sediment placement, thickness, and long term stability.

Document how well the three foot cap and the enhanced natural recovery area function to isolate contaminated sediments from migrating upwards into the cap, and to document the extent of that contamination if it occurs.

Identify whether chemicals accumulate on the remediation site such that they indicate migration of materials from off-site.

Determine the amount and type of benthic recolonization that occurs on the project site and determine whether there are differences in the character and rate of recolonization between the three foot cap and the one foot thick enhanced natural recovery area.

Review and evaluate the monitoring data with the regulatory agencies to determine 1) if the three foot cap is functioning as expected to isolate contaminated sediments; 2) if a one foot layer of sediment will function as expected such that biological mixing occurs to enhance natural recovery; 3) whether further actions are warranted for either the capping site or the enhanced natural recovery area.

To provide data that may inform and assist the NOAA panel and other agency teams in developing future clean up plans for Elliott Bay.

Performance Work Statement (Tasks) and Schedule: see following pages

Table I. Summary Schedule of Monitoring Activities for Pier 53 Capping

DESCRIPTION OF ACTIVITY	Construction Phase	Ten Year Plan Post Cap Monitoring										
	1992	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002*
Set BottonStakes	X	X										
Bottom stake measurements by diver	X	May	August			August						August
Sediment cores for chemistry, 5 stations total:												
3 stations on 3' cap (5 depth segments)		May	August			August						August
2 stations on enhanced natural recovery area (2 or 3 depth segments)		May	August			August						August
Surface grabs for chemistry – adjacent to site, 6 stations (3 stations top 2 CM + top 6 CM) (3 stations top 2 CM only)		May										
Surface grabs for chemistry, 7 stations on project site (top 2 cm)		May	August			August						August
Surface grabs to document taxonomy prior to project work, 2 stations	X											
Surface grabs for taxonomy:												
2 stations on enchanced natural recovery area		August	August			August						August
2 stations on 3' cap		August	August			August						August
REMOTS camera survey		August	August			August						August
Monitoring report for given year (due January of following year)		X	X			X						X
Monitoring review meetings		X	X			X						X
Four year project review												X

NOTES:

a) Baseline sampling will be conducted as soon as practical within the first three months after cap placement.

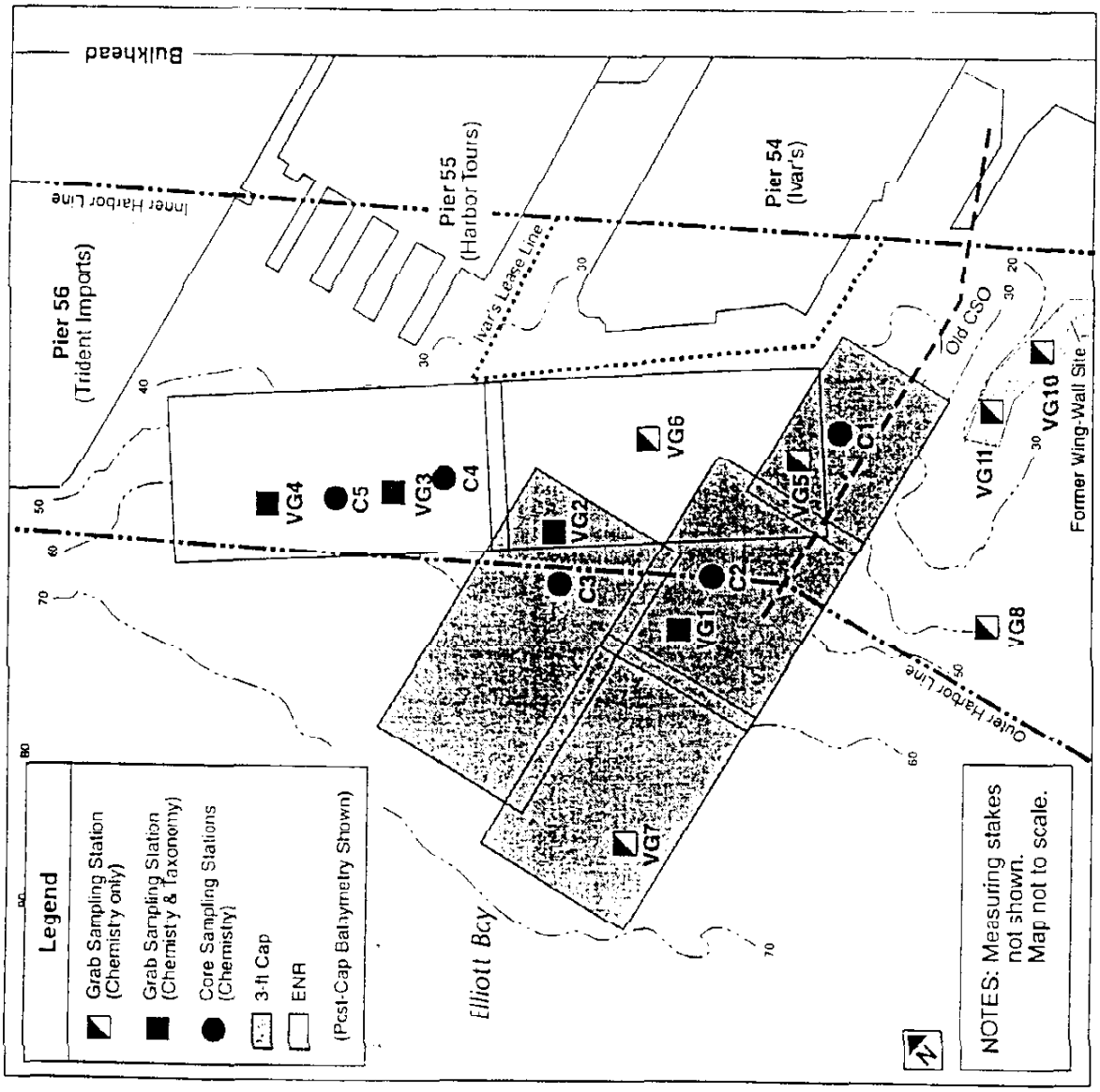
b) Monitoring review meetings may be held within the first two months of subsequent year.

c) *Decision to sample in 2002 will be based on meeting in 1996.

d) Sampling targeted for August may also be completed in September, if necessary.

The Pier 53-55 Sediment Cap 1993 Monitoring Costs

Monitoring Report (Draft and Final)		Hours	Rate	Cost	
Data analysis, data interpretation, research, writing					
	Scientist	460	42.00	19,320.00	
Illustrations					
	Illustrator	175	48.00	8,400.00	
Editing					
	Editor	93	55.00	5,115.00	
Project manager Review					
	Scientist	25	44.00	1,100.00	
Printing (15 draft copies 25 final copies)				757.00	
		Report Costs. Reso 94-01			34,692.00
Stake Measurement		Days	Rate	Cost	
	Vessel and crew of 3	1	1500.00	1,500.00	
	Diver and support boat	1	1200.00	1,200.00	
Core Samples					
Field sampling (5 cores plus replicate)					
	Vessel and crew of 4	2	2000.00	4,000.00	
	Diver and support boat	2	1200.00	2,400.00	
	Core tubes			1,800.00	
Surface Grab Samples					
Field sampling (10 stations plus replicate)					
	Vessel and crew of 3	2	1500.00	3,000.00	
Benthic Taxonomy					
4 stations @ 5 reps Vessel and crew of 4		1	2000.00	2,000.00	
Total Station (includes preparation and data reduction)		4.5	500.00	2,250.00	
Analytical		Samples	Rate	Cost	
Conventionals		24	106.00	2,544.00	
Organics		24	600.00	14,400.00	
Metals		24	175.00	4,200.00	
Benthic Taxonomy Screening Preserving and Shipping		20	200.00	4,000.00	
Benthic Taxonomy Identification		20	200.00	4,000.00	
Quality Assurance Review		Hours	Rate	Cost	
Data Reduction					
	QA officer	20	50.00	1,000.00	
QA Narrative					
	QA officer	10	50.00	500.00	
Project manager Review					
	Scientist	8	40.00	320.00	
			Subtotal Sampling Costs		49,114.00
			Total		$83,806.00


Bulkhead
Inner Harbor Line
Pier 56
(Trident Imports)
Pier 55
(Harbor Tours)
Pier 54
(Ivar's)
Ivar's Lease Line
Old CSO
Former Wing-Wall Site
Outer Harbor Line
Elliott Bay
VG1
VG2
VG3
VG4
VG5
VG6
VG7
VG8
VG10
VG11
C1
C2
C3
C4
C5
Legend
Grab Sampling Station (Chemistry only)
Grab Sampling Station (Chemistry & Taxonomy)
Core Sampling Stations (Chemistry)
3-ft Cap
ENR
(Post-Cap Bathymetry Shown)
NOTES: Measuring stakes not shown.
Map not to scale.

Norfolk CSO

Location?Discription and Background:
The Norfolk outfall is located in the Duwamish River above Turning Basin No. 3, south of Seattle in the City of Tukwila and Parallels the southern boundary of the Boeing Development Center and Boeing Field. The City of Seattle's 84-inch-diameter overflow outfall originates at the King County Norfolk Regulator Station that receives sewage from the Norfolk drainage basin. Recent modeling efforts have determined that the estimated annual average overflow volume is 70 MG per year and will be reduced to about 7 MG per year when the new Henderson Diversion structure is fully operational in 1997.

In 1994, a four document Cleaup Study Plan was prepared consisting of the Work Plan, the Sampling and Analysis Plan, the Health and Safety Plan, and the Public Participation Plan. These documents underwent Public review and were approved by the EBDRP Panel. Three Phases of Site Assessment sampling were conducted from 1994 to the end of 1995 to define chemical conditions in surface sediments and at depth below the surface. This information was presented in a draft Site Assessment report that identified the following 4 chemicals of concern: Mercury, PCBs, Bis (2-Ethylhexyl) phthalate and 1,4-Dichlorobenzene. A preliminary sediment remediation site boundary was developed based on the composite boundary of where any of the 4 chemicals exceeded the Sediment Quality Standard (SQS). Ultimately the site boundary was expanded beyond the SQS boundary and out to where PCBs were not detected in the sediment samples except at the down stream boundary where a wood piling wing wall provided a physical boundary.

Scope:
Goal:

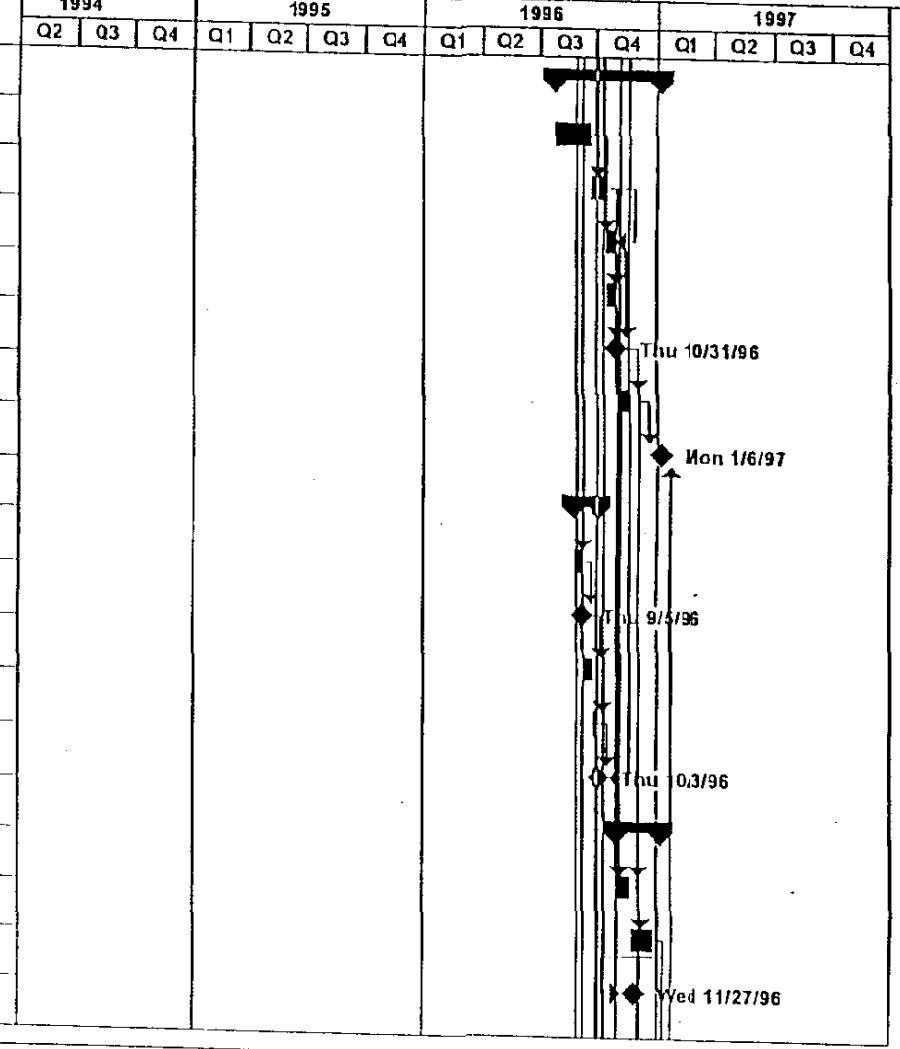
The Norfolk project will remove from aquatic life and human exposure the contaminated sediments associated with the site boundaries.

A preferred approach for sediment remediation was selected after evaluating several potential options and was presented in the Norfolk CSO Sediment Cleanup Study Report issued in October 1996. The preferred alternative was mechanical dredging with a clamshell bucket. Dredged sediment would be placed on a barge for dewatering and transported down river to where the sediment would be offloaded directly into lined containers for shipment to one of three possible disposal sites. The preferred disposal option is heat processing and recycling of the material at Holnam Cement Plant. However, some material with PCB values between 20 to 50 ppm will need to go to a class D hazardous waste landfill and a small amount with PCB values above 50 ppm will need to go to a dangerous waste landfill. After completing the dredging, the excavation area would be back filled to the original grade with sediment of similar characteristics to rapidly restore habitat. The estimated total volume of dredging is 7,200 cubic yards.

Ecology evaluated the clean-up proposal and wrote a draft Sediment Management Standards, Cleanup Action Decision document that approved the preferred option. Both the Ecology Decision and the Norfolk Clean-up study report underwent public review and were finalized as proposed. The NEPA and SEPA environmental review processes were completed and the U. S. Army CORPS obtained authorization for the project under the Nation 38 permit for remediation projects. The Shoreline permit was issued by City of Tukwila and access agreements were requested of the property owners Boeing and Washington Department of Natural Resources. Dredging is scheduled for the last part of 1997.

Schedule Version: Tue 10/1/96

ID	Name	Dur	SchedStart	SchedFinish	Predecessors
139	Environmental Review	119d	Thu 7/25/96	Mon 1/6/97	
140	Prepare EA	40d	Thu 7/25/96	Tue 9/17/96	
141	EA Review by Panel	22d	Wed 9/18/96	Thu 10/17/96	140
142	Prepare Checklist	11d	Thu 10/17/96	Thu 10/31/96	140,141FF
143	Revise EA	10d	Fri 10/18/96	Thu 10/31/96	141
144	Final EA and Checklist to Panel	0d	Thu 10/31/96	Thu 10/31/96	141,142
145	Public Comment on Checklist	15d	Fri 11/1/96	Thu 11/21/96	144
146	Issue FONSI	0d	Mon 1/6/97	Mon 1/6/97	145,157
147	Monitoring Plan	30d	Fri 8/23/96	Thu 10/3/96	
148	Prepare Plan	10d	Fri 8/23/96	Thu 9/5/96	135
149	Draft Plan to Metro & SRTWG	0d	Thu 9/5/96	Thu 9/5/96	148
150	SRTWG Review & Panel Approval	15d	Fri 9/6/96	Thu 9/26/96	149
151	Plan Revision	5d	Fri 9/27/96	Thu 10/3/96	150
152	Plan Submittal to Panel	0d	Thu 10/3/96	Thu 10/3/96	151,138FF
153	Public Comment Period	47d	Fri 11/1/96	Mon 1/6/97	
154	Prepare for PC on EA & SA/AE	15d	Fri 11/1/96	Thu 11/21/96	138,144
155	Public Comment Period	24d	Fri 11/28/96	Wed 12/31/96	154
156	Hold Public Meeting	0d	Wed 11/27/96	Wed 11/27/96	155FS-21d
157	Response on EA & SA/AE	8d	Thu 12/26/96	Mon 1/6/97	155



Norfolk Site
Tue 10/1/96
DRAFT

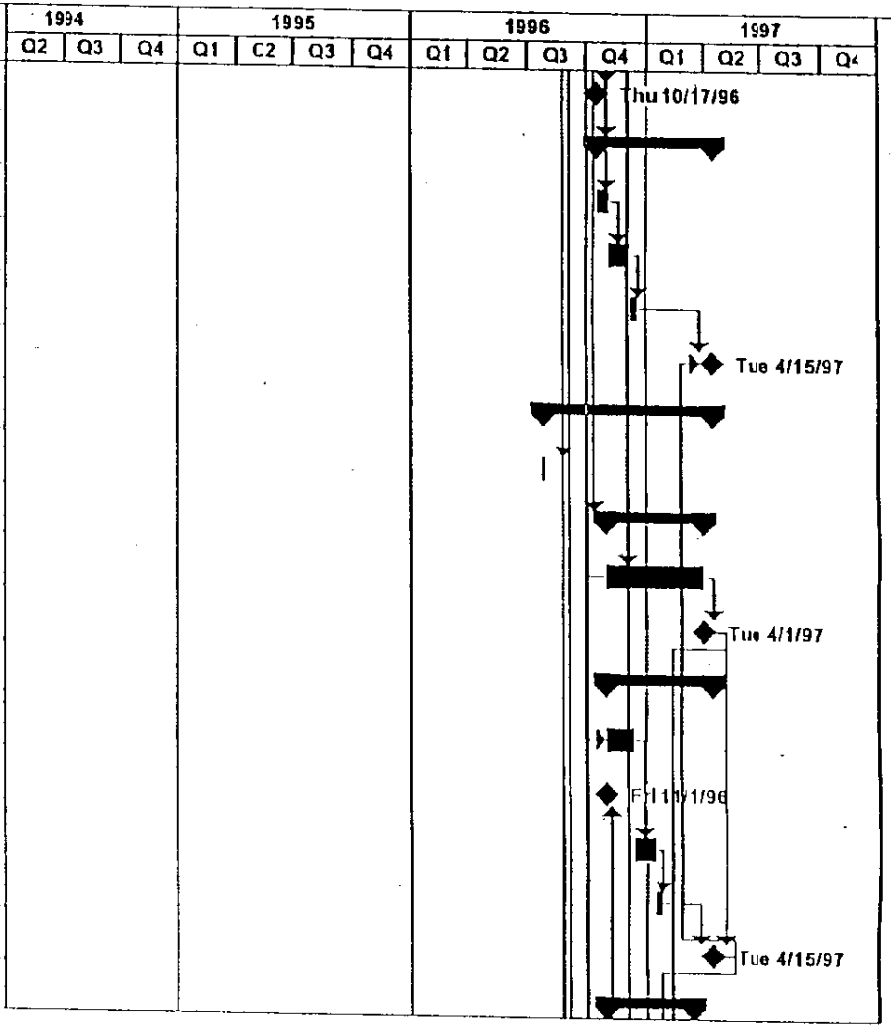
Task
Progress
Milestone
Summary

Rolled Up Task
Rolled Up Milestone ◇
Rolled Up Progress

Norfolk CSO Sediment Remediation Site

Schedule Version: Tue 10/1/96

ID	Name	Dur	SchedStart	SchedFinish	Predecessors
158	Panel Recom'ds Pref. Alternative	0d	Thu 10/17/96	Thu 10/17/96	141
159	Cleanup Decision - Ecology	128d	Fri 10/18/96	Tue 4/15/97	141
160	Ecology Prepares Draft Cleanup Decision	13d	Fri 10/18/96	Tue 11/5/96	141
161	Public/Panel reviews Draft Cleanup Decision	23d	Wed 11/6/96	Fri 12/6/96	160
162	Ecology revises Cleanup Decision	9d	Mon 12/9/96	Thu 12/19/96	161
163	Cleanup Decision Reposited	0d	Tue 4/15/97	Tue 4/15/97	162,174
164	Permits	190d	Thu 7/25/96	Tue 4/15/97	
165	Begin permitting process	1d	Thu 7/25/96	Thu 7/25/96	134
166	Shoreline Permit	108d	Fri 11/1/96	Tue 4/1/97	134
167	Final Checklist avail for Shoreline	108d	Fri 11/1/96	Tue 4/1/97	144
168	Issue Shoreline Permit	0d	Tue 4/1/97	Tue 4/1/97	167
169	Individual Permit	118d	Fri 11/1/96	Tue 4/15/97	
170	Prepare Corp Permit	30d	Fri 11/1/96	Thu 12/12/96	167SS
171	Shoreline Permit Drawings Available	0d	Fri 11/1/96	Fri 11/1/96	185
172	PC Period for Permit & CAD	22d	Fri 12/13/96	Mon 1/13/97	170
173	Resp. to Com'ts for Permit & CAD	10d	Tue 1/14/97	Mon 1/27/97	172
174	Issue Corp Permit	0d	Tue 4/15/97	Tue 4/15/97	173,168FS+10d
175	W.Q. Certification	96d	Fri 11/1/96	Mon 3/17/97	



Norfolk Site
Tue 10/1/96
DRAFT

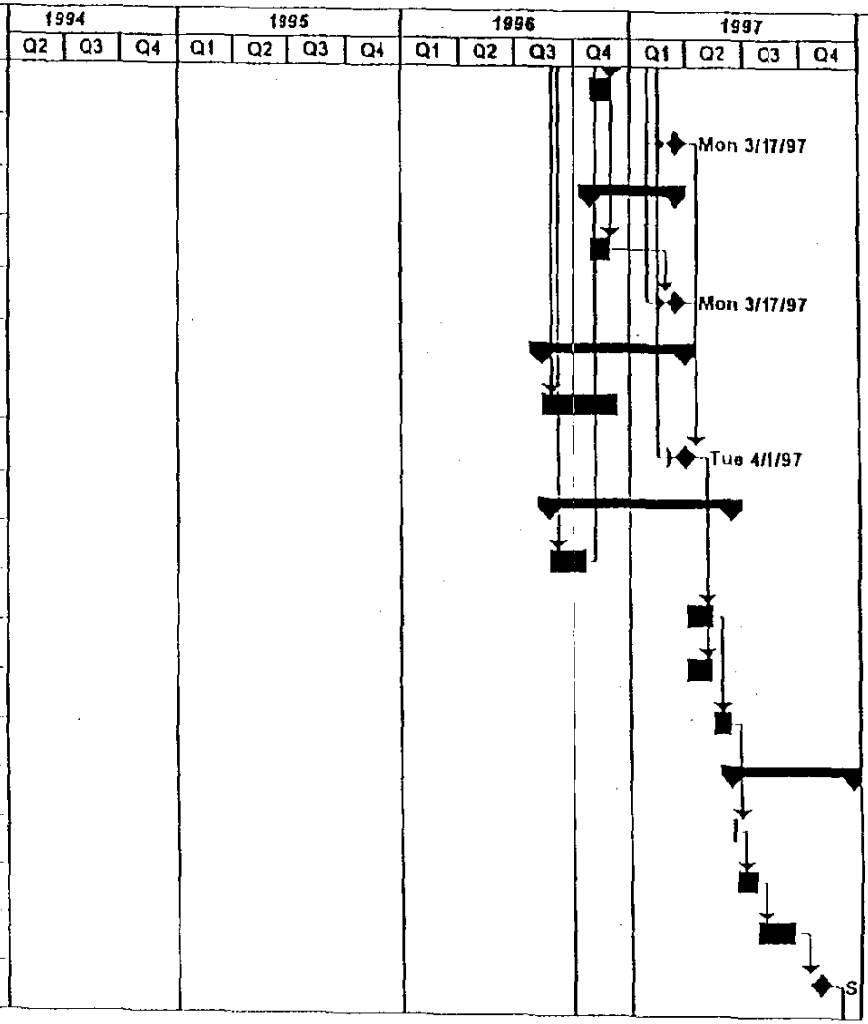
Task
Progress
Milestone
Summary

Rolled Up Task
Rolled Up Milestone ◇
Rolled Up Progress

Norfolk CSO Sediment Remediation Site

Schedule Version: Tue 10/1/96

ID	Name	Dur	SchedStart	SchedFinish	Predecessors
176	Begin Permit prep.	22d	Fri 11/1/96	Mon 12/2/96	144
177	Cert. Issued	0d	Mon 3/17/97	Mon 3/17/97	174FS-22d
178	Dept of Fisheries HPA	96d	Fri 11/1/96	Mon 3/17/97	
179	Prep HPA	22d	Fri 11/1/96	Mon 12/2/96	144
180	HPA Issued	0d	Mon 3/17/97	Mon 3/17/97	179, 174FS-22d
181	DNR Right of Entry Agreement	167d	Mon 8/12/96	Tue 4/1/97	
182	DNR Agreement	90d	Mon 8/12/96	Fri 12/13/96	134
183	Sign DNR Agreement	0d	Tue 4/1/97	Tue 4/1/97	177,180,168
184	Contract Document Preparation	209d	Fri 8/23/96	Wed 6/11/97	
185	Prepare 60% Bid Submittal	45d	Fri 8/23/96	Thu 10/24/96	135
186	Prepare 90% Bid Submittal	30d	Wed 4/2/97	Tue 5/13/97	183
187	Prep of Division 0 Forms	30d	Wed 4/2/97	Tue 5/13/97	183
188	Completion of 100% Document	21d	Wed 5/14/97	Wed 6/11/97	186
189	Bid Advertisement & Award	139d	Thu 6/12/97	Mon 12/22/97	
190	Prepare bid package	5d	Thu 6/12/97	Wed 6/18/97	188
191	Advertisement	23d	Thu 6/19/97	Mon 7/21/97	190
192	Contractor Selection/Approval	45d	Tue 7/22/97	Mon 9/22/97	191
193	Notice to Proceed	0d	Sat 11/1/97	Sat 11/1/97	192FS+30d
194	Construction	36d	Mon 11/3/97	Mon 12/22/97	193



Norfolk Site
Tue 10/1/96
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Task
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Summary

Rolled Up Task
Rolled Up Milestone ◇
Rolled Up Progress

Norfolk Project Planning and Design

	1992/1993	1994	1995	1996	1997	1998	1999	2000 +	Total
Site Investigation									
Study Plan	19								19
Phase 1 Sampling		57							57
Phase 2 Sampling			72						72
Phase 3 Sampling			13						13
Project Management		9	10						19
Sub Total	19	66	95						180
Clean-Up Plan									
Contracting and Amendment		4	15	10					29
Ecochem				78					78
Contract Management			6	12					18
Project Management		1	4	22					27
Sub Total		5	25	122					152
Permitting									
EA				24					24
Ecochem				5	5				10
Right-of-Way				7	8				15
Shoreline					5				5
Easement					15				15
Contract Management					4				4
Project Management				10	8				18
Contingency									0
Sub Total				46	45				91
P&D Sub Total	19	71	120	168	45				423

Norfolk Project Construction Budget			
	1997	2000+	Total
Bid Documents			
Ecochem	48		48
Contract Management	6		6
Engineering and Divisional Review	6		6
Construction Review	4		4
Sub Total	64		64
Construction			
Dredging Contractor	700		700
Bonding (10%)	70		70
Profit (10%)	77		77
Ecochem Support	37		37
Construction Oversight	16		16
Contract Management	16		16
Contingency	182		182
Sub Total	1048		1098
Construction Sub Total			1162
Monitoring			
Post-Construction		100	100
Project Management	16		16
Construction and Monitoring Sub Total			1278
Total Project			1701

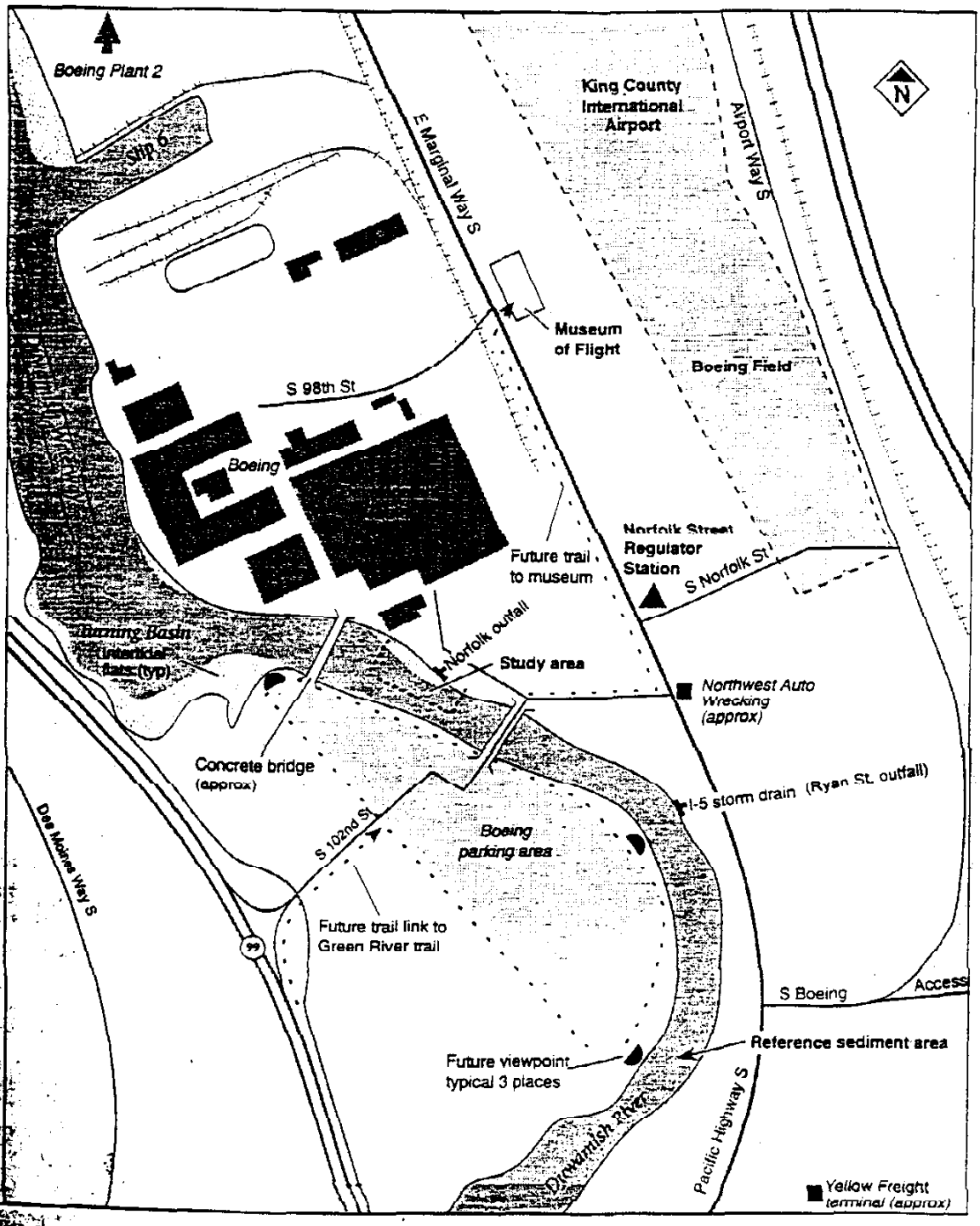

Figure 2-2

Norfolk CSO Sediment Cleanup Study
SITE MAP

USGS, 1973; USGS, 1983; Tanner, 1991; Boeing, 1994.