Seahurst Park Master Plan

APPENDIX C
SHORELINE HABITAT ALTERNATIVE ANALYSIS
TECHNICAL MEMORANDUM

Prepared for

City of Burien

Prepared by

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August 2002

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SHORELINE HABITAT ALTERNATIVES ANALYSIS

SEAHURST PARK MASTER PLAN

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Table of Contents

List of Tables

List of Figures

1 INTRODUCTION

This report presents an analysis of alternatives for varying degrees of habitat restoration to the modified shorelines at Seahurst Park. This Alternatives Analysis is funded by a grant from the Salmon Recovery Funding Board (SRFB) to the City of Burien. The grant requires both a characterization of the existing physical and biological conditions along the entire park shoreline, and an analysis of alternatives to traditional shoreline armoring that will benefit salmon utilizing nearshore habitat. The findings in the report show the relative costs, the complexity of these treatments, and the anticipated benefit to salmon. Each alternative is discussed in terms of the following:

- The estimated cost associated with construction of the shoreline
- The overall feasibility of obtaining permits for construction and anticipated maintenance of the project
- The overall benefit to salmon
- Other considerations related to the use of the shoreline as a city park

Much of the information presented in this report was generated through research on the history of the park and the shoreline habitat that exists at the site. A detailed description of the condition of the existing shoreline protection structures, the effect of these structures on the beach, the coastal processes affecting the existing beach, and the condition of nearshore habitats supporting salmonids is found in Appendix B, Background Information Technical Memo.

Seahurst Park is situated near the south end of a longshore drift cell that transports material northward to Elliott Bay. Beach sand and gravel at Seahurst Park are part of this dynamic system that changes over time. All but 600 linear feet of the 4,300 total linear feet of shoreline of Seahurst Park was armored by the former property owner, King County, in the early 1970s (See Figure 1.1). The armoring of the shoreline creates an increase in the erosive energy of waves moving sediment northward along the beach or into deeper water. These bulkheads have also cut off the beach from the steep bluffs above the park, which provide one of the primary sources of sediment. The resulting effect of the shoreline armoring is a dramatic drop in the beach elevation by approximately three to four feet over the past 30 years.

In addition to the physical changes from shoreline armoring, there is a degradation of the beach as a habitat for salmon and their prey. Among the fish found using nearshore are several

species of salmonids including: chinook (O*ncorhynchus tshawytscha*), coho (*Oncorhynchus kisutch*), steelhead (*Oncorhynchus myksiss*), sockeye (*Oncorhynchus nerka*) and chum (*Oncorhynchus keta*) salmon. In addition, spawning along the park's shoreline two species of "forage fish," sand lance (*Ammodytes hexapterus*) and surf smelt (*Hypomesus pretiosus*) have been documented.

Four alternatives are analyzed in this report to address varying degrees of change to the 3700 linear feet of the park's existing modified shoreline (See Table 1.1). These four alternatives are:

- Alternative A-Recommended Alternative
- Alternative B-Maximum Restoration Alternative
- Alternative C-Minimum Intervention Alternative
- Alternative D-No Action Alternative

Section 2 of the report describes each alternative, Section 3 provides the analysis of cost, permit feasibility, benefit to salmon, and other considerations, and Section 4 contains conclusions and recommendations. In addition to analyzing cost, permitting, and benefit to salmon, "other considerations" include the important ongoing recreational use and educational programs (in particular the Marine Technology Lab's multi-school district vocational programs) that take place at the park. It also includes environmental education opportunities, and the sustainability of a particular design. Finally, extensive public involvement was an integral part of the Seahurst Park design and planning process and is documented in Appendix A Community Outreach. Public comments reinforced both the support for salmon habitat restoration, and the need to balance it with convenient public access to the shoreline and educational programs.

Table 1.1
Alternative Comparison

Alternative	Linear Feet of Gabions Removed	Linear Feet of Concrete Bulkhead Removed	Linear Feet of Rock Rip Rap Removed	Linear Feet of Concrete Bulkhead Removed	Square Feet of Beach Substrate Restored	Linear Feet of Restored Riparian Corridor at Backshore Beach
Alternative A	850 ft	1,780 ft*	1,490 ft.	1,780 ft.	210,000 SF	2,700 ft.
Alternative B	1,050 ft.	1,800 ft.	1,560 ft.**	1,800 ft.	280,000 SF	2,200 ft.
Alternative C	550 ft.	0 ft.	320 ft.	0 ft.	130,000 SF	550 ft.
Alternative D	0	0		0	0	0

*Includes 240 feet of bulkhead that is above MHHW (that is not removed in Alternative B.)
**This does not include 350 feet of rip rap moved from intertidal to above MHHW.

2 SHORELINE ALTERNATIVES

2.1 Alternative A - Recommended Alternative

Under the Recommended Alternative, the proposed changes to the shoreline are based on working with natural processes, not against them (See Figure 2.1).

Shoreline modifications under this alternative are based on four concepts:

1. Remove existing shoreline protection structures, such as bulkheads and rock revetments, where they cause the most harm to habitat, and where it is compatible with the Master Plan approach for future use of the park.
2. Model restored beach slopes and substrates after natural conditions found nearby.
3. Replenish gravel and sand lost to erosion with imported and on-site materials.
4. Strive to protect the natural delivery paths of sediment, particularly sand and gravel, to the beach.

Under this alternative, many of the shoreline park uses, such picnicking, are concentrated in two locations. This arrangement allows the removal of large portions of the bulkhead and upland fill areas to be replaced with newly created beaches, backshore areas, and forested riparian zones.

All of the existing gabion bulkheads are removed, as well as most of the riprap and concrete bulkheads. Approximately 450 linear feet of the existing concrete bulkhead remains in place to protect the Marine Technology Lab and coho hatchery operation. The north half of the remaining concrete bulkhead retains rock riprap for toe protection and is modified to include tidepools as an environmental education element. This riprap also extends seaward in one location to form a low drift sill that would help stabilize newly imported beach sand and gravel, which extends to the south.

2.2 Alternative B - Maximum Restoration Alternative

This alternative proposes the removal of all shoreline structures and limits vehicle and trail access to the shoreline (See Figure 2.2). This alternative includes removing nearly all the upland fill behind bulkheads except where it is necessary to maintain a minimal emergency access route above the backshore from the main road to the Marine Technology Lab. The Marine Technology Lab is protected by a new buried riprap revetment behind a newly

created beach. Parking and access to the beach are greatly reduced over existing conditions to allow restoration of the entire shoreline. Removal of trail access to the south end of the shoreline and removal of the lower parking lot significantly reduces the ability of the public to access the shoreline for recreational use.

This alternative includes the removal of the entire gabion bulkhead and all of the concrete bulkhead that is below mean higher high water. (A small portion of gabion that is behind a backshore beach is kept as a "relic" of the existing wall and provides two stairways down to the beach.) A significant amount of beach nourishment is required at the north end where the forces of longshore sediment transport are the strongest. Along the rest of the shoreline, beach nourishment is used to backfill removed riprap and gabion drift sills and to maintain stable, natural beach slopes. These are generally a 5:1 coarse gravel substrate under a 7:1 or 8:1 coarse sand and pea gravel beach.

2.3 Alternative C - Minimum Intervention Alternative

This alternative minimizes changing access to the shoreline and restoring habitat. As in the previous two alternatives, the rock gabion basket bulkhead to the south is removed. However, a significant portion of the bulkhead that is stable and in no imminent danger of failure remains. To the north, the gabions and large riprap that hold in place two "perched" beaches are removed.

The entire concrete bulkhead remains in place and much of the toe remains reinforced by large rock riprap. This alternative provides beach nourishment only where it is needed to match existing beach grades in the places where rock riprap or gabions are removed.

2.4 Alternative D - No Action Alternative

The no action alternative assumes that no capital or maintenance improvements take place (see Figure 1.1). If no action is taken on the shoreline of Seahurst Park, several changes will take place as a result from continued wave action on the existing bulkheads. First, the gabion basket bulkhead along the southern portion of the beach will continue to fail. Future landslides originating on the steep bluff above the bulkhead may hasten the failure of the bulkhead. This bluff erosion is an ongoing, natural process. Failure of the gabion basket

bulkhead will result in the loose riprap that is currently inside wire baskets being spilled out across the beach.

The concrete bulkhead and upland area it protects would continue to intercept landslide material and prevent the natural nourishment of the beach.

3 ALTERNATIVE ANALYSIS

3.1 Alternative A - Recommended Alternative

3.1.1 Cost

As shown in Table 3-1 at the end of this section, the estimated cost for construction of this alternative is $5,153,300. This is the second-highest cost of the four alternatives.

3.1.2 Permit Feasibility

Since much of the construction associated with the improvements under this alternative is in and/or adjacent to Puget Sound waters, many aquatic-related approvals would be required. The specific environmental and land use permits that would be required to implement this alternative are shown in the matrix below.

Table 3-1
Applicable Permits

Type of Approval	Trigger	Responsible Agency
Shoreline Substantial Development Permit	Work within 200 feet of the shoreline	City of Burien (with Washington Department of Ecology oversight)
Critical Areas Review	Work within an area designated as a "critical" or "sensitive" area by the local jurisdiction.	City of Burien
Hydraulic Project Approval	Work that uses, diverts, obstructs, or changes the natural flow or bed of state waters	Washington Department of Fish & Wildlife
Clean Water Act – Sections 404/10	Placing structure, excavation or discharge in waters of the US	US Army Corps of Engineers
Clean Water Act – Section 401, Water Quality Certification	Required as part of Section 404 permit	Washington Department of Ecology
Coastal Zone Management Act Consistency Determination	Required as part of issuing shoreline permit	Washington Department of Ecology
Endangered Species Act Compliance	Required as part of issuing federal permits above	National Marine Fisheries Service; US Fish & Wildlife Service

The feasibility of a successful permitting process is strong under this alternative as there is considerable removal of shoreline structures and creation of enhanced habitat for salmon. There may be some permitting issues associated with the plan to import gravel material for the purpose of beach renourishment. This activity is traditionally considered "filling waters of the U.S." and typically requires some sort of mitigation.

However, most of the resource agency representatives that commented on the potential improvements at Seahurst Park are generally favorable toward the plans to remove structures and renourish the beach. They understand that even though "filling" would be required, the ultimate result would be improved habitat over existing conditions. Beach restoration and nourishment projects are becoming more common in Puget Sound and perhaps less controversial to permit than they were 10 years ago. In the case of this alternative, the impact from the fill is offset by improved habitat in upper tidal elevations and creation of new backshore areas.

The new riprap structure with tidepools and drift sill at the north end of the beach may present a small challenge in permitting as these structures are placed in-water and do not provide beneficial habitat for salmon.

This alternative also provides improved access to the waterfront, which will be a favorable condition for officials responsible for approving a shoreline permit.

3.1.3 Benefit to Salmon

Several features of this alternative can contribute to greatly improve the biological function that the nearshore habitats of Seahurst Park provide to salmon. Juvenile salmon in particular will benefit because they utilize the nearshore environments for rearing and/or migration after out migration from freshwater. The removal of the shoreline armoring, including gabions and riprap forming two perched beaches, and restoration of slope and substrate conditions throughout much of the park will provide additional upper intertidal habitat and enhance food productivity for juvenile salmon. This alternative will provide a wider upper intertidal zone with more natural slopes, compared to the current configuration where shoreline armoring encroaches into the intertidal zone and creates a steeply sloped and narrow upper intertidal zone in much of the park. The wider upper intertidal zone provided by this alternative will benefit juvenile salmon by creating additional habitat for invertebrate prey production, and refuge from predators that cannot access the shallow areas that juvenile salmon can. Similar enhancements to invertebrate prey production are anticipated in the middle intertidal zones due to the beach nourishment activities. The widened upper intertidal zone provides additional benefits for sand lance and surf smelt, two forage fish species

that comprise a major component of salmon diets and have been documented to spawn along the Seahurst Park shoreline. These fish spawn near the high tide line on sand and small gravel substrate. Both of these intertidal characteristics are currently available in only limited areas of the park due to the shoreline armoring that extends into the intertidal zone.

The removal of 2,630 linear feet of shoreline armoring (Table 1.1) provided by this alternative will also reconnect the riparian zone to the intertidal zone. In this way, nearshore habitat function will improve through the natural input of large woody debris, terrestrial prey items, and nutrients. Large woody debris provides nutrients and habitat for potential juvenile salmonid prey organisms, as well as structure for refuge from predators. Large woody debris also provides structure for sessile organisms, such as barnacles, to attach. Sessile organisms and their calcareous remains can become highly productive areas for juvenile salmonid prey such as amphipods.

The wetland and marsh area designed near North Creek can enhance nutrient cycling, prey productivity, and salmon rearing habitat in Seahurst Park. In this alternative, freshwater springs that currently drain through multiple pipes along the bulkhead will be diverted to create a small marsh area along the shoreline. During high tide, this area will provide lower salinity habitats that can benefit juvenile salmon just leaving the freshwater environment. In addition, the marsh can provide highly productive invertebrate prey resources for juvenile salmon and refuge from predators.

3.1.4 Other Considerations

Alternative A is designed to balance several considerations with shoreline habitat restoration. These include shoreline recreational access, ongoing educational programs, new environmental education opportunities, and habitat sustainability. Alternative A improves shoreline public access by improving disabled access to 2000 linear feet of the shoreline, and increases overall access to the beach and water's edge from paths paralleling the shore. Access is also made more convenient by increasing the capacity of the lower parking lot (adjacent to the beach), while at the same time moving the paved area for vehicles back from the shoreline. Educational programs at the Marine Technology Lab are not disrupted by improvements to the shoreline because the area

around the building is not disturbed. Alternative A supports greatly expanded environmental education programs focused on shoreline habitats by diversifying the habitats in close proximity to each other at the north end of the park. In addition interpretive displays and covered multi-use shelters are proposed in this same area. The stability of the shoreline is improved by the removal of bulkheads, the reconnecting of the central and south shorelines to landslide prone areas (natural sediment source) the addition of beach substrates (sand and gravel), and the installation of a drift sill/beach anchor at the north end of the restored beach.

3.2 Alternative B - Maximum Restoration Alternative

3.2.1 Cost

As shown in Table 3-1 at the end of this section, the estimated cost for construction of this alternative is $5,854,000. This is the highest cost of the four alternatives.

3.2.2 Permit Feasibility

Although this alternative maximizes restoration of the shoreline, construction activities would still take place in and/or adjacent to the water. All of the same permits that are required under Alternative A (see Section 3.1.2) would also be required for this alternative.

The same challenge of addressing "filling waters of the U.S.," due to importing gravel material for beach nourishment purposes, that exists with Alternative A would also apply under this alternative. Historically, mitigation is required for the filling and placing of structures in water. However, as the primary goal of this alternative is to improve habitat over existing conditions, it is possible that permitting agencies would not require mitigation for these actions. As with Alternative A, the impact from the fill is offset by improved habitat in upper tidal elevations and creation of new backshore areas.

This alternative does not promote public access to the shoreline, which is not consistent with the local shoreline master program for his area. This may present a challenge in gaining approval for a shoreline permit.

3.2.3 Benefit to Salmon

This alternative provides as much or more benefit for salmon as described for Alternative A-Recommended Alternative (see Section 3.1.3). Many of the differences between this alternative and Alternative A occur in the configuration of the parking areas, trails, and paths that border the beach. The additional 200 linear feet of gabions removed by this alternative do not encroach on the intertidal zone, therefore, they do not directly affect juvenile salmon habitat. The removal of the additional section of gabions would further connect the riparian zone to the intertidal zone, but a setback between the trees and the intertidal zone would remain. This limits the potential benefits that this section provides because the large wood debris recruitment to the intertidal zone would not occur.

This alternative removes all of the concrete bulkhead in the north section of the park. A revetment would be constructed in front of the Marine Technology Lab (covered by a restored beach) to provide structural protection for the building. The minimal amount of shoreline armoring and the more expansive beach nourishment in the north end of the park will benefit salmon by maximizing opportunities along the park shoreline to enhance invertebrate prey production, shallow water refuge from predators, and forage fish spawning habitat.

3.2.4 Other Considerations

Alternative B offers less shoreline recreational access, and is more disruptive to ongoing educational programs than Alternative A. Recreational access is reduced in two important ways. First, the 28-stall lower parking area that is used most frequently is reduced in size to only a few disabled parking stalls. All other parking is moved up the hill making it very difficult for the general public to access the shoreline. Public involvement feedback indicated that this lower lot is very important especially to the large elderly population in the area. A decision to drastically reduce the size of this lot would be politically unpopular and difficult or impossible for local elected officials to support. Ongoing education programs at the Marine Technology Lab are jointly run by the four school districts (Highline, Tahoma, Tukwila, and Federal Way). The proposed removal of uplands around the building would disrupt operation of this facility for an extended period of time. Replacement of the buried water storage tank for the hatchery

would also be required, and could jeopardize fish being raised by students there. While new environmental education opportunities could occur, specific habitat features and educational facilities are not included to support the effort. Habitat sustainability is greatly improved from existing conditions and comes closest to restoring pre-developed shoreline conditions of all the alternatives.

3.3 Alternative C - Minimum Intervention Alternative

3.3.1 Cost

As shown in Table 3-1 at the end of this section, the estimated cost for construction of this alternative is $1,538,000. This is the lowest cost of the three alternatives proposing any action (The No Action Alternative has no cost.)

3.3.2 Permit Feasibility

Although far less construction along the shoreline would occur under this alternative than Alternatives A and B, there would still be placement of sand and gravel in the water.

As with Alternatives A and B, there would be fill in the water for the purpose of installing a new gravel beach area in place of the removed gabion structures. There is not as much opportunity to offset this impact with enhanced intertidal habitat or backshore areas, as with Alternatives A and B. Therefore, there could be more challenges in permitting this alternative.

Finally, there is an expectation among the affected resource agencies that improvements planned at Seahurst Park would benefit salmon. The proposed improvements shown under this alternative would likely not meet these expectations; however, it is unclear how this could affect the permitting process.

3.3.3 Benefit to Salmon

This alternative provides minimal benefit for salmon. The removal of 550 linear feet of gabions in the extreme south end of the park will provide the same food productivity and shallow water refuge benefits described for the Alternative A - Recommended Alternative (Section 3.1.3), only to a lesser extent. However, the limited shoreline

armoring removal activities in the park will make long-term sustainability of restored natural beach conditions (and therefore the benefits to salmon food productivity) less likely. As described for Alternative A, the removal of gabions and riprap forming two perched beaches will improve juvenile salmonid and forage fish access to the upper intertidal zone.

3.3.4 Other Considerations

Alternative C is intended to minimally change the park's shoreline in terms of its current recreational use, and improve habitat in a more limited way. Overall there is somewhat decreased recreational opportunities due to the reduction of upland area and beach access on the south 1200 linear feet, with only a small improvement above current conditions on the north end. Ongoing educational programs are virtually unaffected by this alternative. Environmental education programs could be expanded, particularly at the south end where the most restoration is proposed. However, no special facilities are planned to support these programs and space is extremely limited at the south end of the park's shoreline. Habitat sustainability is most improved at the south end where bulkhead removal, substrate restoration, and reconnection of the unstable hillside to the beach as a sediment source occurs. The central shoreline substrates are restored, but the concrete bulkheads remain, and the uplands are not reconnected. The north shoreline bulkhead and rip-rap is least sustainable because there is no change from existing conditions.

3.4 Alternative D - No Action Alternative

3.4.1 Cost

No costs are anticipated under this alternative.

3.4.2 Permit Feasibility

No permits would be required under this alternative.

3.4.3 Benefit to Salmon

As described in Appendix B, Background Information Technical Memo, the current configuration of the Seahurst Park shoreline provides impaired habitat function for salmon. The shoreline armoring encroaches into the intertidal zone, thus limiting the

amount of upper intertidal habitat, salmon prey production, access to refuge habitats from predators, and forage fish spawning. As a result, the park shoreline does not function fully for juvenile salmonids and forage fish.

Alternative D will likely lead to progressively worse conditions as the coastal processes that caused the significant beach elevation reductions since the bulkhead was constructed will continue to remove sediment from the area. Continued drops in beach elevation as the supply of sediment from the south is further depleted will further limit intertidal habitat access and function for salmon by creating wider tidal elevation ranges where the tide washes against the shoreline armoring.

3.4.4 Other Considerations

This alternative does not improve habitat or any of the other considerations except that it does not disrupt existing educational programs. It is the least sustainable habitat because the existing shoreline armoring is continuing to degrade the habitat. It also offers the least opportunity for expanding environmental education programs.

3.5 Cost Comparison Summary

The costs in Table 3-2 were prepared by Anchor Environmental and are based on a conceptual level of design and given in 2002 dollars. Other costs associated with construction of shoreline habitat improvements are included as well.

Unit costs were developed for each of the items based on our experience with similar projects, best professional judgment, recent construction bid data, and discussions with other consultants and construction companies. Quantities are derived from the plan drawings and are based on average material thicknesses. No engineering drawings were developed to aid in quantity take-offs. Therefore, many uncertainties exist and a contingency is applied to all costs (30 percent design contingency and 10 percent construction contingency). Further design and engineering is needed to refine these costs up or down.

Table 3-2
Cost Comparison Summary

Item	Alternative			
	A. Recommended	B. Maximum Restoration	C. Minimum Intervention	D. No Action
Demolition & Clearing	$735,604	$829,325	$87,481	
Temporary Facilities	$ 96,000	$107,600	$ 30,300	
Earthwork	$449,841	$ 564,395	$225,627	
Water System	$40,650	$51,150		
Sanitary Sewer	$34,200	$34,200		
Shoreline Protection	$665,881	$772,240	$258,277	
Planting and Irrigation	$454,022	$454,022	$137,445	
Subtotal Construction	$2,476,198	$2,813,000	$739,130	
Mobilization (7%)	$173,300	$196,900	$51,700	
Design Contingency (30%)	$795,000	$903,000	$237,000	
Const. Contingency (10%)	$344,400	$391,300	$102,800	
Sales Tax (8.8%)	$333,400	$378,800	$99,500	
Total Estimated Construction Cost	$4,122,300	$4,683,000	$1,230,130	
Survey, engineering, construction administration, and testing (25%)	$1,031,000	$1,171,000	$307,530	
GRAND TOTAL	$5,153,300	$5,854,000	$1,538,000	

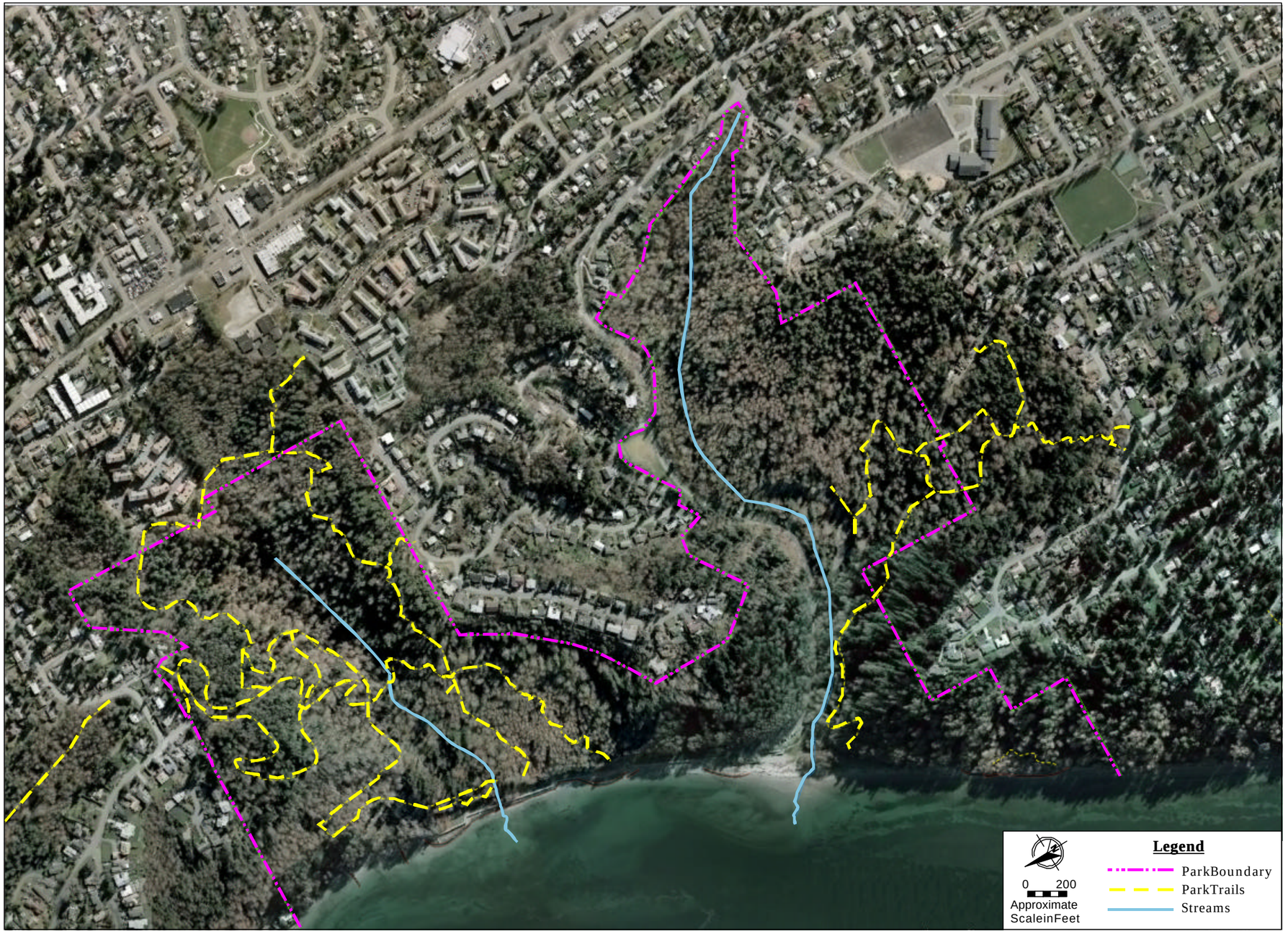
4 CONCLUSIONS AND RECOMMENDATIONS

Alternative A is recommended because it accomplishes significant and sustainable habitat improvements, but also is responsive to important issues that the public raised. It is feasible to permit and costs less than the Maximum Restoration Alternative. It also is not disruptive to the ongoing educational programs at the Marine Technology Lab.

While Alternative B offers the greatest habitat benefit, it comes at the highest cost and may not be feasible to implement in an existing urban park setting where ongoing recreational use and educational programs must be accommodated. Alternative C while changing the shoreline less and costing less, also provides significantly less benefit to salmon and benefit to the public in terms of shoreline access and environmental education. Alternative D while costing nothing also offers no benefit to salmon and should not be considered further in the context of salmon habitat restoration. Table 4-1 below provides a summary of the alternatives and the factors considered in the analysis.

Table 4-1
Summary Evaluation of Alternatives

Feature	Alternative A Preferred Alternative	Alternative B Maximum Restoration Alternative	Alternative C Minimum Intervention Alternative	Alternative D No Action Alternative
Benefits to Salmon				
Increase invertebrate prey production	Extensive improvement	Maximum improvement	Limited improvement	No improvement
Increase refuge from predators	Extensive improvement	Maximum improvement	Limited improvement	No improvement
Improve forage fish spawning habitat	Extensive improvement	Maximum improvement	Limited improvement	No improvement
Connect riparian habitat to nearshore	Extensive improvement	Extensive improvement	Limited improvement	No improvement
Permitting				
Number of permits required	▪ 8 approvals likely	▪ 8 approvals likely	▪ 8 approvals likely	▪ None
Potential for controversy/ permit appeals	▪ Little controversy anticipated during permit negotiations due to benefits provided from project that would offset potential impacts. ▪ Low probability for appeal on environmental basis	▪ Little controversy anticipated during permit negotiations due to benefits provided from project that would offset potential impacts. ▪ Low probability for appeal on environmental basis	▪ Some controversy during permit negotiations associated with placing fill in-water without offsetting habitat benefits ▪ Low probability for appeal on environmental basis	▪ N/A
Potential mitigation requirements	▪ Low potential for requiring replacement of lost aquatic habitat associated with fill	▪ Low potential for requiring replacement of lost aquatic habitat associated with fill	▪ Some potential for requiring replacement of lost aquatic habitat associated with fill	▪ N/A
Cost	$5,153,300	$5,854,000	$1,538,000	$0
Other Considerations	▪ Balances recreational shoreline public access with habitat enhancement ▪ Significant improvement of environmental education opportunities ▪ No disruption to ongoing educational programs	▪ Significantly limits public access ▪ Disrupts ongoing educational programs ▪ Limited improvements to environmental education programs	▪ Limited improvement to public access ▪ No disruption to educational programs ▪ Limited improvements to environmental education opportunities	▪ N/A



Existing Conditions

City of Burien Parks, Recreation & Cultural Services

Seahurst Park Master Plan

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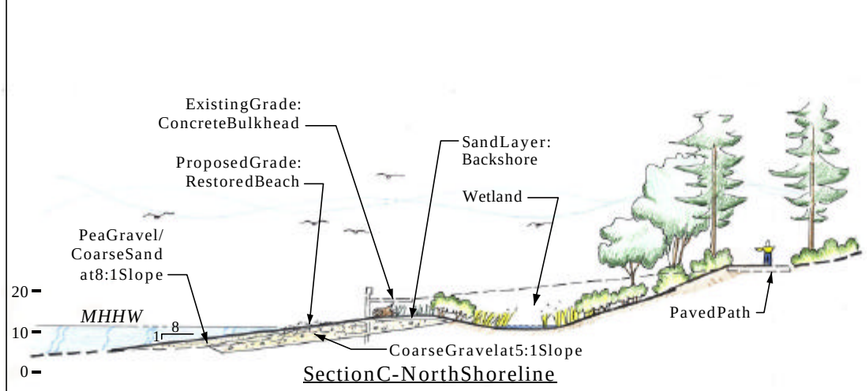
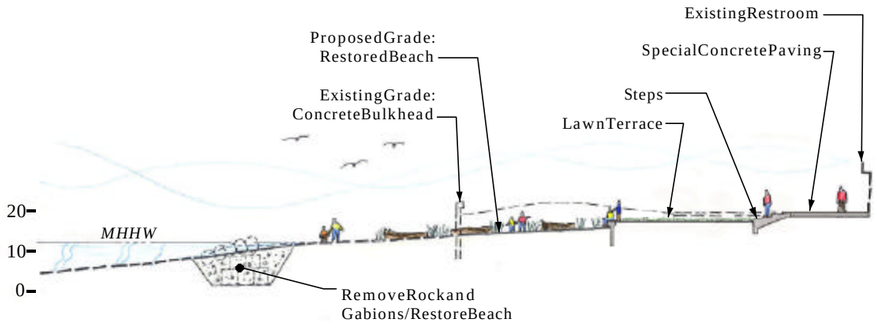
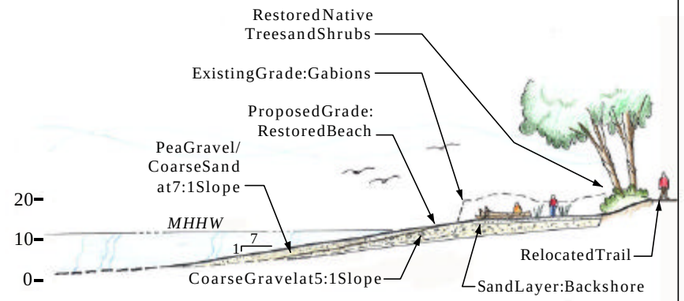
Figure1.1



SectionC-NorthShoreline



SectionB - CentralShoreline



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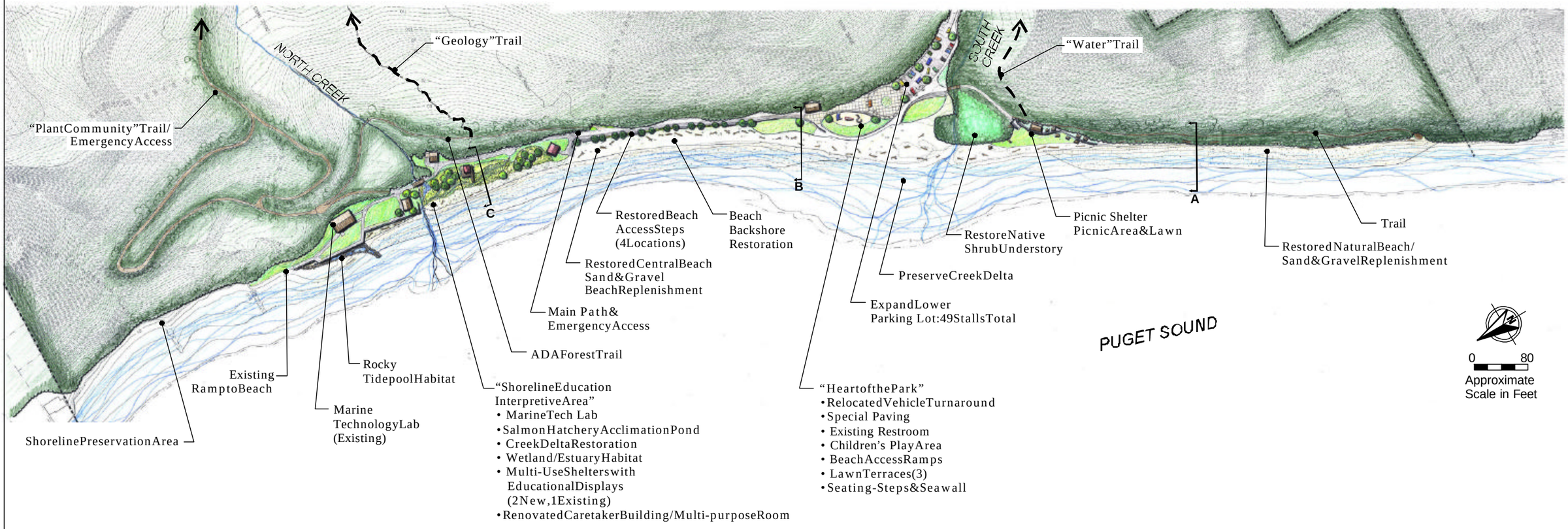

Alternative A - Recommended Alternative

City of Burien Parks, Recreation & Cultural Services

Seahurst Park Master Plan

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WolfBauer,P.E.

Seahurst Park\001\52-01\Shoreline02.cdr

Figure2.1

Alternative B- Maximum Restoration

Seahurst Park Master Plan

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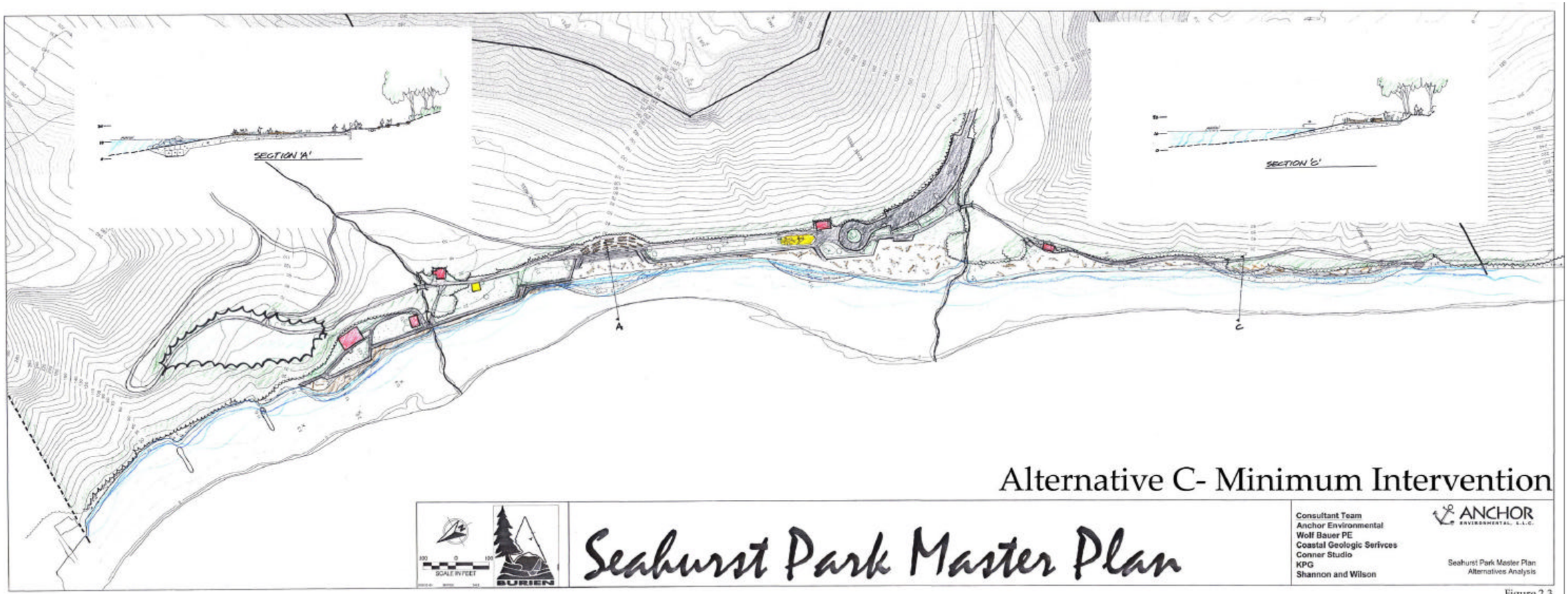
Opportunities and Constraints
Seahurst Park Master Plan
Alternatives Analysis

Figure 2.2



Alternative C- Minimum Intervention

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Seahurst Park Master Plan
Alternatives Analysis

Figure 2.3