

ENVIRONMENTAL CHECKLIST

A. BACKGROUND

1. Name of proposed project, if applicable:

Seahurst Park Master Plan

2. Name of applicant:

City of Burien Department of Parks, Recreation, and Cultural Services (City)

3. Address and phone number of applicant and contact person:

*City of Burien, Department of Parks, Recreation, and Cultural Services
425 S.W. 144th Street
Burien, WA 98166*

Point of Contact: Michael Young

4. Date checklist prepared:

March 15, 2005

5. Agency requesting checklist:

City of Burien

6. Proposed timing or schedule (including phasing, if applicable):

Implementation of the Seahurst Park Master Plan (Master Plan) will be phased and will occur as funding becomes available; most likely occurring over the course of approximately 10 years.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

Project specific State Environmental Policy Act (SEPA) Checklists will be submitted prior to the implementation of individual phases when additional design and construction details or site characteristics dictate the need for further project review. The purpose of the Master Plan is to guide future development of Seahurst Park.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

- *Seahurst Park Master Plan Summary Report (Anchor Environmental, 2002a)
Appendix A: Community Outreach Efforts
Appendix B: Site Background Information – Technical Memorandum
Appendix C: Stewardship and Monitoring Plan*

Appendix D: Integrated Artwork and Interpretation for Seahurst Park

- *Final Environmental Assessment for Nearshore Restoration at Seahurst Park, Burien, Washington (U.S. Army Corps of Engineers, August 2003)*
- *Pre-Construction Eelgrass Survey – Seahurst Park Nearshore Restoration Project. Prepared for U.S. Army Corps of Engineers Seattle District. (Anchor Environmental, 2005)*

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

There are no known pending governmental approvals that would affect Seahurst Park.

The U.S. Army Corps of Engineers (Corps) recently constructed the first phase of shoreline restoration improvements at the park. This restoration project was developed as a partnership between the City of Burien and the Corps. The work was carefully coordinated to be consistent with the Master Plan. An Environmental Assessment was prepared for the Corps' project to meet the requirements of the National Environmental Policy Act (NEPA).

The Corps' project consisted of removing 1,200 linear feet of the gabion seawall and gabion rock along the shoreline just south of the main stream to the south park boundary. A layer of washed coarse gravel was then placed on the beach to create an underlying beach surface. A second surface layer of mixed gravel and sand material was placed over the gravel. This material was designed to mimic reference beach surface substrates south of the project limits and provide forage fish spawning habitat. Refer to Photos 1 and 2 in Attachment B.

10. List any government approvals or permits that will be needed for your proposal, if known.

The Master Plan will require programmatic level review under the SEPA to determine the overall impacts associated with the park development concept and plan. This SEPA Checklist is being submitted to initiate this review process.

Individual components of the Master Plan may require project-specific permits and approvals prior to construction. The types of permits and approvals that may apply to the various elements of the Master Plan include the following:

- **Section 404 Permit:** *A Section 404 permit (promulgated under the Clean Water Act) would be required by the Corps for certain activities below the Mean Higher High Water (MHHW) line of the Puget Sound or any work in wetlands or waters of the state.*
- **Endangered Species Act (ESA) Consultation:** *Activities that receive federal funding or require a federal permit (such as a Corps Section 404) would trigger the need to address ESA requirements. If ESA compliance is required, either a No-Effects Determination Letter or a Biological Assessment (BA) would need to be prepared. If a BA is required, the lead federal agency would use it to initiate consultation with the National Oceanic and Atmospheric Administration (NOAA) Fisheries and the US Fish and Wildlife Service (collectively, the Services) under Section 7 of the ESA.*
- **Hydraulic Project Approval (HPA):** *A HPA would likely be required from the Washington Department of Fish and Wildlife (WDFW) for any work that uses, diverts, obstructs, or changes the natural flow or bed of state waters. A Joint Aquatic Resources Permit Application (JARPA) would be completed for such activities to apply for this permit.*

- **401 Water Quality Certification:** A 401 Water Quality Certification (promulgated under the Clean Water Act) is required from the Washington State Department of Ecology (Ecology) when applying for a federal permit to conduct any activity that might result in a discharge of dredge or fill material into water or wetlands, or any excavation in water or wetlands. The JARPA would be submitted to Ecology for this certification.
- **Environmentally Critical Area (ECA) Review:** Some areas of the park are designated as ECAs in accordance with the Growth Management Act (i.e., streams, wetlands, geologically hazardous areas, flood hazard areas). Special design criteria and permitted uses may be applicable in these areas as set forth in the City of Burien's Critical Areas Ordinance. Review under this ordinance would be required as part of the project-level SEPA review process. For activities that may affect an ECA, special study reports may be required to be submitted as attachments to project-specific SEPA Checklists.
- **Shoreline Permit/Exemption:** Under the Shoreline Management Act, activities within 200 feet of a state shoreline require a shoreline permit, unless specifically exempt. The City of Burien would be responsible for issuing the shoreline permit or exemption. Some of the primary activities in the Master Plan, such as shoreline habitat restoration, would qualify for an exemption.
- **Project-Level SEPA Review:** Individual SEPA review may be required for specific phases of the Master Plan when additional design, construction, or site details dictate further review.

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

Seahurst Park is a wooded 152-acre park located in the City of Burien on the shoreline of Puget Sound (see Figures 1 and 2 in Attachment A). Prior to its status as a public park beginning in 1972, Seahurst was used by the local community for shoreline recreation. In 1997, the City took over management and ownership of Seahurst Park from King County. In 2001, the Salmon Recovery Funding Board (SRFB) approved a bulkhead alternatives analysis to evaluate the entire park shoreline. In January 2002, the City began a master planning process, in a joint effort with the SRFB, to create a Master Plan that represents the City's vision and serves to guide investments for protection and enhancement of the park.

The Master Plan that was developed is based on the natural processes affecting the park and extensive community outreach. In order to provide a sound body of knowledge as a basis for decision-making, the master planning team provided special expertise in several areas. The team was comprised of a wide range of scientific and environmental professionals consisting of coastal and hillside geologists, coastal engineers, fisheries scientists, shoreline planners, and landscape architects. All of these members of the planning team worked together to share information with each other, the City staff, and the community.

A comprehensive community outreach strategy was developed that included a stakeholder committee of citizens, open public meetings, and input from local, state, and federal permit agencies, the Park Board, and City Council.

This programmatic SEPA Checklist describes the potential impacts associated with implementation of the Master Plan. The Master Plan provides guidance for future development of the park and recommends specific park improvements to be implemented. Therefore, the proposed project being described is the overall conceptual development approach and site plan provided in the Master Plan.

Design and construction of the various elements of the Master Plan will be phased and will occur as funding and approvals are obtained. Project-specific environmental review processes (including SEPA review) will be conducted prior to the implementation of these individual phases when additional design and construction details or site characteristics dictate the need for further project review.

MASTER PLAN ELEMENTS

The Master Plan was developed to respond to the themes repeatedly heard from the community: preserve the natural qualities of the park, improve the trail system, restore the beach and shoreline, provide more opportunities for education and interpretation, and deal with the problems of "safety and security." These themes are reflected in the following seven elements described in the Master Plan. (Figure 3 in Attachment A shows the overall park and the proposed improvements outlined in the Master Plan.)

1. Preservation of the Natural Environment

The users of Seahurst Park made it clear that preserving the natural character of the park should be the primary focus of the Master Plan. The park currently functions largely as a natural preserve and that function is considered very important.

There is also an emphasis on restoring the natural processes along the shoreline that have been interrupted. Historically, the steep bluffs above the beach would periodically slide down onto the beach and deposit sand and gravel. This process has been interrupted by the widening and filling of the shoreline behind bulkheads and seawalls. Now material slides down onto these upland park areas and must be disposed of off site at considerable cost and disruption to park use. Restoring the beaches below these steep slide-prone areas, and minimizing the width of the park between the beach and the toe of these slopes, will help restore the natural process that nourishes the beach with fresh sand and gravel. This will also help reduce maintenance costs and disruption to the park, and ensure that the beach restoration is successful and sustainable.

The forested fringe along the beaches and streams is exceedingly important for healthy ecosystems. The vegetation that grows along these land/water interfaces is called riparian vegetation. It plays an important role in providing nutrients to the water and minimizing erosion. Special emphasis in the Master Plan is focused on restoring these critical areas. In some cases, this restoration involves removing non-native invasive species (blackberry, ivy, etc.) and planting native trees and shrubs. In other cases, more extensive work is needed. This restoration will support fish populations in the streams and Puget Sound, and will provide plant diversity that supports numerous birds, mammals and amphibians.

2. Park Acquisitions

The Master Plan calls for two significant acquisitions totaling about 34 acres (See Table 1 below

and Figure 3 in Attachment A). One, known as the Brown property, is adjacent to the southern portion of the park. Several existing trails in the park cross onto this 10-acre property. The property contains mature conifer forests, springs, and wetlands that are important to maintaining the health of the southern stream. This property is currently often mistaken as part of the park because there are no signs indicating that it is private or that trail users are leaving or entering the park as they cross the property line.

The second large acquisition includes the Highline Senior Center (Senior Center), several large parcels adjacent to the park, and a few smaller private parcels within the park. These parcels total about 24 acres. Acquisition of these properties would provide pedestrian access to the park from the neighborhoods east of Ambaum Boulevard S.W. and the Senior Center. The Master Plan calls for formalizing the parking at the Senior Center to accommodate a modest number of park visitors in addition to the current Senior Center parking. To the west of the Senior Center buildings, a new entrance to the park would be created for those wishing to enter the park by foot. The most direct trail to the beach from this location would be rerouted and improved to avoid excessive steep grades and erosion.

Table 1
Property Acquisition Acreages

Seahurst Park	Highline Sr. Center	Brown Property	Total
152 acres	24 acres	10 acres	186 acres ¹

¹Total does not include conservation easements on private property proposed to total 28 acres.

In addition to acquisitions, the Master Plan proposes the use of voluntary conservation easements. The easements would be used to ensure that the park is not unreasonably encroached upon by residential development or other land use changes. The two large basins that make up the uplands of Seahurst Park function as both watersheds for its streams and viewsheds for park visitors. Along the top edges of these two basins, however, much of the land is part of smaller private parcels belonging to the homeowners living above the park. The Master Plan calls for conservation easements on the undeveloped portion of many of these parcels totaling 28 acres. Conservation easements result in lower property taxes for private property owners, giving them incentive to relinquish development rights on the steep forested slopes that are difficult to develop. This would help ensure that the views from the park continue to be of trees and that eroding soils stay out of the creeks in the park.

4. Parking and Vehicle Circulation

A key concern of the users of Seahurst Park is improving the parking and vehicle circulation (see Figure 4 in Attachment A). Many people conveyed that the upper parking lot is currently unsafe and is being used for illegal or unsavory activities. Car prowling and vandalism have been a perennial problem in the upper parking lot. The lower lot is preferred by all visitors. In fact, many people come to the park just to sit in their cars and look out across the Puget Sound and the beach. Others stated that they were concerned with the traffic speeding in the park and that adequate routes for emergency vehicles be provided.

Parking Facilities

Parking facilities in the Master Plan are reconfigured from existing facilities, although the total number of parking spaces will remain constant at 193 spaces. The lower parking lot would move slightly back up the hill and widen slightly to provide perpendicular parking for cars on both sides. School bus parking will be moved to the upper lot, where a turnaround is proposed. Approximately two thirds of the upper lot capacity would be removed and those spaces would be redistributed along the south side of the main access road (between the existing lower lot and the entrance to the upper lot). The Master Plan also proposes formalizing the parking at the Senior Center.

Vehicle Circulation

The new parking arrangement will add security by allowing visitors to park their cars in plain view of the main road and not where they are hidden away from most park activity. Traffic will circulate down the main access road to a turnaround circle at the end of the lower lot. From there, traffic will proceed up the hill to the first (lowest) available parking space. In addition to the perpendicular parking at the expanded lower lot, there will be angle and parallel parking along the south side of the road. Buses will be able to drop off passengers at the lower lot, park in the upper lot, and then return to the lower lot to reload passengers.

Emergency Access

Access for emergency vehicles to the park remains a priority in the Master Plan. The Marine Technology Lab operated by the Highline School District at the north end of the shoreline needs to have at least two routes of ingress and egress for emergency vehicles. This will ensure that even if a landslide closes the primary route, a back up option is available. Emergency vehicles would be able to remove bollards at the new turnaround circle and proceed northward along the shoreline. The 12-foot asphalt pathway along the central shoreline is wide enough for emergency vehicles, while the wide compacted gravel shoulders (4 feet on each side) would allow two such vehicles to pass one another. The existing one lane dirt road with pullouts, that connects the north shoreline to the Shorewood neighborhood at 16th Avenue S.W., would be maintained as a path and as emergency access to provide access to the north basin and Marine Technology Lab.

4. Park Entrances and Park Identity

Many users of the park noted that, even among Burien residents, there is a significant lack of awareness of Seahurst Park. Many long-time visitors of the park have been surprised to see the park boundary on a map. Others consider only the shoreline when they think of Seahurst Park. These identity issues are compounded by a lack of consistency in the signage at the entrances to the park. At some entrances, old King County Parks Department signs are still used. At the main entrance, newer City of Burien signs have been added. At many trail entrances to the park there are no signs. The Master Plan calls for unifying the appearance of all the entrances to lend a stronger sense of identity to the park. This identity will come in part from the use of integrated artwork that is used at these entrances and throughout the park.

5. Environmental Education and Stewardship

Many people expressed a concern that a lack of understanding of the park's ecology has resulted in undue impacts by visitors. There is currently very little information at the park to help

visitors understand the many natural features at the park. In addition, numerous large groups of school aged children visit the park to experience the natural beauty, but these visits are often destructive to the tidelands.

To address these issues, a series of outdoor shelters are planned in the area near the existing Marine Technology Center (operated by the Highline School District) (see Figure 5 in Attachment A). These shelters will surround a series of very diverse ecosystems that can be viewed from paths and from the shelters themselves. Interpretive information and artwork will be integrated into the design of these shelters. One shelter will look out over a newly constructed freshwater marsh fed by the springs in the bluffs above. Another will face the newly restored backshore and tidal beach. An existing picnic shelter will overlook a rehabilitated creek and salmon acclimation pond, which will be integrated into the design of the marsh. In addition, a large drift sill would be constructed to hold material added to the beach farther south. This has been designed to create tide pools on the north side that can be accessed from the existing Marine Technology Center boat ramp at low tides. The existing two-level Caretaker's Residence, which overlooks this area, is proposed to be renovated with an upstairs multi-purpose meeting room, American Disabilities Act (ADA)-accessible restrooms, and ground floor storage space.

The themes of interpretation and education will also be extended to the park's 152 acres of uplands. Along four of the major trails of the park, there are opportunities to provide information to hikers that give details about many of the natural features and processes of the park. The dirt road that serves as an emergency access to the north basin will be called the "Plant Community" trail because it traverses a wide variety of vegetation types from the dry madrone forest at the top of the park to the wetlands along the shore of the creek. A re-aligned trail from the Senior Center to the beach will be called the "Geology" trail because it will run near several geologically active areas and cross several geologic formations of interest. In the south basin, the new trail loop will pass a series of springs, creeks, wetlands, and other hydrologic features and will be named the "Water" trail. The "nearshore" trail along the shoreline from the lower parking lot to south park boundary provides an excellent opportunity to explain the relationship of the upland bluffs and vegetation to the beach below.

6. Shoreline Recreational Access

Prior to park development by King County, the south creek delta was the main attraction and continues to function as the "heart of the park" today. The existing facilities at the delta and central shoreline interrupt access to the beach and fail to provide adequate seating and usable lawn areas. The Master Plan addresses these issues by concentrating the most intensive park uses in the heart of the park, including the existing restrooms and lower parking lot (see Figure 5 in Attachment A). An intermediate level lawn terrace will be located between the level of the main path where restroom and parking are located, and the level of the wide, sandy beach. This intermediate lawn terrace will connect to the levels above and below by ramps, providing access for people using wheelchairs or carrying kayaks. This lawn area will be approximately the same size as existing bermed lawn areas, but will be far more useable because of its central location and flat slopes. Low, seating height walls and wide stairs will provide ample seating for viewing recreational use areas, the beach, and Puget Sound. The existing play structure will be moved to this area to provide easier access to the restrooms, parking, and beach.

Moving north from the delta, removal of the concrete bulkhead (see Photo 3 in Appendix B) will create a wide, sandy beach that will be available at all tidal stages ("backshore beach") up to the

northern creek area. This segment of shoreline will offer greatly enhanced beach use and access because the 12 foot wide, paved, ADA-accessible path/emergency access will be 3 feet above the level of the beach. Broad steps will link the path to the beach in several locations, with numerous viewing benches and native plantings provided between the steps. As a result of removing the concrete bulkhead and large rock revetments that currently line the beach and block access, use of the beach for recreation in this central segment will be significantly improved by widening the backshore sandy beach and by direct access to the water.

In addition to improving beach access, picnicking opportunities will be expanded. The two new and one existing shelter near the Marine Technology Lab provide excellent places for group or family picnics. A third new picnic shelter is also planned adjacent to the proposed lawn area and upper parking lot, increasing the total number of picnic shelters at the park from two to five. Just to the south of the central shoreline and south creek, the existing picnic shelter remains (see Figure 5 in Attachment A). A more usable lawn is proposed in front of the shelter as an amenity to those picnicking there. This new lawn replaces a rough turf area that is inundated at extreme high tides. This area is connected to the trail along the southern shoreline and picnic shelter by an existing ramp that will be improved for pedestrian access. New picnic tables are proposed in the vicinity of the south picnic shelter and under the trees along the edge of the new lawn so that there is no net reduction in picnic tables after shoreline restoration is completed.

7. Shoreline Restoration

The former owner, King County, armored the shoreline of Seahurst Park in the early 1970s. The result of this shoreline armoring has been to increase the erosive energy of waves moving sediment northward along the beach or into deeper water. At the same time, these seawalls have cut the beach off from one of its primary sources of sediment, the steep bluffs above the park. The results have been a dramatic drop in the beach elevation of approximately 3 to 4 feet over the past 30 years, plus a degradation of the beach as a habitat for salmon and the species they depend upon. Of particular concern and interest are two species of "forage fish," sand lance and surf smelt, which are a critical food resource for salmon. These two fish species depend on upper intertidal sandy/fine gravel beaches for spawning. While currently degraded, Seahurst Park is identified by the WDFW as spawning habitat for both forage fish species.

The shoreline restoration strategy that is proposed in the Master Plan is based on working with natural processes, not against them. Beach sand and gravel at Seahurst Park are part of a dynamic system that changes over time. Seahurst Park is situated near the south end of a longshore drift cell that transports material northward to Elliot Bay. Sustaining the restored beach at Seahurst Park is based on the following four concepts (see Figure 5 in Attachment A):

7.1. Remove Existing Shoreline Protection Structures

By removing 1,600 linear feet of concrete and rock used to harden and steepen the shoreline, the amount of wave energy reflected back onto the beach, which erodes sand and gravel sediment, will be reduced. Twelve hundred linear feet of gabions and rock was removed along the shoreline in the completed Corps project at the south end of the park.

7.2. Model Restored Beach Slopes and Substrates after Natural Condition

By using the natural shoreline south of the park, at the south creek delta, and at the

north end of the park as a model, much of the beach will be reconfigured. The existing natural beach slopes vary, but in general tend to be in the 7:1 (7 feet horizontal to 1 foot vertical) to 8:1 range. The slopes are flatter at the south creek delta. The backshore elevations are between 13 and 14 feet, Mean Lower Low Water (MLLW) datum. Substrate sizes include a range of sand and gravel.

7.3. Replenish Gravel and Sand Lost to Erosion

New imported coarse gravel (3/4 inch to 2-1/2 inch) and imported or on-site sand/gravel material (range of sizes from coarse sand to 3-inch gravel) will be used to bring the beach back to a more stable, natural slope and substrate. Replenishment is proposed along 1,700 linear feet of shoreline north of the creek delta. Twelve hundred linear feet of shoreline south of the delta has been restored by the Corps (completed February 2005). Both areas have extensive existing bulkhead and rock revetment structures. The material would be placed in two layers. The bottom layer would be approximately 2 to 3 feet thick and include imported coarse gravel at a 5:1 slope. The top layer consists of 1 foot of sand or sand and gravel in the backshore, and a layer of varying depth (2 to 3 feet maximum) at a 7:1 or 8:1 slope on the beach face or foreshore. A 7:1 slope would occur south of the delta and an 8:1 slope would occur north of the delta. A rock "drift sill" or "beach anchor" with constructed tidepools is proposed in front of the Marine Technology Lab to help hold the north segment of the beach in place. Once hard vertical structures are removed and a more natural beach profile and substrate are restored, the beach will be more resistant to erosion than it currently is. It will also provide excellent habitat for migrating juvenile salmon and forage fish spawning. Recreational use, as mentioned above, will also be greatly improved.

7.4 Restore and Protect the Natural Delivery Paths of Sediment

Natural sources of beach sediment take two paths of delivery: longshore drift and landslides. To make sure that the natural process of longshore drift from the south continues to deliver sand and gravel to the beach at the park, minimal bulkheading is recommended south of the park. The City has recently acquired the Branson property, which lies 1/2 mile south of the park, near the origin of the drift cell. In addition, the undeveloped shoreline immediately south of the park is recommended for conservation easements. These easements should have provisions to prevent any structures from being built that would interfere with the natural transport of material northward. The second natural source of beach material is landslide debris that is deposited directly on the beach. The Master Plan proposes minimizing the amount of lawn, road, trail, and other flat surfaces between the beaches and the actively sliding bluffs. Changes are proposed north and south of the creek delta to facilitate delivery of more landslide material directly to the beach. Landslide material will need to be moved from the shoreline pathways to the beach back shore (above MHHW) such that this material can re-enter the beach/longshore drift system.

PARK MANAGEMENT AND ACTIVITY ZONES

In order to ensure that the long-term planning and development at Seahurst Park is consistent with the elements and priorities described above, the Master Plan divides the park into four "zones," each with specific allowable park facilities and management levels (see Figure 6 in Attachment A). These

zones were defined based on physical processes and public outreach. The Master Plan focuses on preserving and restoring key natural areas across all of the 152 acres of existing park, with 96 percent of the park acreage proposed for preservation and restoration (Zones I and II). The qualifying characteristics and acceptable activities for each of these zones are provided below:

Zone I: Habitat Preservation Zone

Qualifying Characteristics:

- Geologic instability
- Steep slopes (greater than 40 percent)
- Forest wetlands
- Currently intact/high quality examples of forest or nearshore habitat with minimal to no human modifications

Acceptable Facilities and Activities:

- Nature observation/viewshed
- Emergency response (limited to existing roads)
- Native vegetation
- Trails for walking, hiking, jogging

Management and Maintenance Response:

- Low to None

Zone II: Habitat Restoration Zone

Qualifying Characteristics:

- Contributor to geologic processes that other habitats are dependant upon
- Strongly connected to intact/high quality examples of forest or nearshore habitat
- Provides buffer for Habitat Preservation Zone

Acceptable Facilities and Activities:

- Nature observation/viewshed
- Limited emergency access (limited to existing roads)
- Public access (trails and paths) in appropriate settings
- Community stewardship activities
- Limited educational information displays
- Native vegetation
- Removal of existing facilities (paths, trails, gabions, riprap) under appropriate circumstances

Management and Maintenance Response:

- Low following initial restoration period (1 to 5 years)

Zone III: Developed Park Zone-Low Intensity Use

Qualifying Characteristics:

- Relatively flat area (slopes approximately 5 percent or less).
- Good connection to roads, paths, or trails in neighborhood and park

Acceptable Facilities and Activities:

- Emergency access (road)

- Multi-use lawn area and other ornamental and native vegetation
- Picnic tables and benches
- Trails and pathways leading into the park
- Disabled accessible facilities
- Park entrance

Management and Maintenance Response

- Moderate to high-maintenance at levels consistent with other City passive parks

Zone IV: Developed Park Zone-High Intensity Use

Qualifying Characteristics:

- Located at the perimeter along the main road, or in the central waterfront
- Relatively flat area (slopes approximately 5 percent or less)

Acceptable Facilities and Activities:

- Main road and parking areas (existing)
- Disabled accessibility to the extent possible
- Puget Sound Shoreline Public Access (non-motorized)
- Large school group use for field trips
- Group use of reservation-based facilities such as group picnic shelters
- Special events such as festivals, weddings, etc.
- Paved pathways and loops providing representative views of park habitats (beach, forest, creek)
- Large restroom (existing)
- Educational facilities and displays
- Multi-use lawn areas and a mix of native and ornamental vegetation
- High level of emergency access-quick response
- Habitat restoration in appropriate circumstances

Management and Maintenance Response:

- High: Intensively used for some or all of the year

IMPLEMENTATION PHASES

The Master Plan identifies seven distinct areas for phased project implementation (see Figure 7 in Attachment A). In addition to these major implementation phases, ongoing park maintenance, habitat enhancement, and minor facility improvements (such as trails) would continue to be conducted at the site.

The seven implementation areas are listed and described below. No sequence of the implementation is intended, other than at the south shoreline (first phase):

1. Area A: South Shoreline

Area A includes restoration of the shoreline south of the south creek (see Figures 5 and 7 in Attachment A). As described in Section A.9 of this SEPA Checklist, the Corp' has completed their project to remove the gabion seawall and gabion rock that had spilled onto the beach in this portion of the shoreline. The gabion rock that was removed was re-used to construct 500 linear feet of the crushed rock trail leading toward the south end of the park. The Corps' project also

included adding sand and gravel to the beach to restore a natural profile based on the shoreline just south of the park (see Photos 1 and 2 in Attachment B). The City, as part of the Master Plan, proposes to restore native shoreline vegetation, redevelop the picnic area, install a new lawn, and relocate the south 300 feet of the trail in the area immediately upland from the Corps' project. The City will also complete the newly aligned crushed rock trail to the south end of the park.

2. Area B: Central Shoreline and Lower Parking

Area B includes redevelopment of the central shoreline (see Figures 5 and 7 in Attachment A). This consists of the demolition of approximately 1,100 linear feet of the pre-cast concrete seawall and removal of all of the large riprap, gabions, and other unnatural rock on the beach (see Photo 3 in Attachment B). New imported coarse gravel and on-site sand/gravel material (range of sizes from coarse sand to 3-inch gravel) will be used to bring the beach back to a more stable, natural slope and substrate. The lower parking lot will be expanded up the hill and the turnaround relocated. Three lawn terraces will be located in this area to provide shoreline recreational access. The children's play area will be relocated to this area.

3. Area C: North Shoreline

Area C includes a group of shoreline habitat restoration and creation projects at the north end of the shoreline (see Figures 5 and 7 in Attachment A). Shoreline restoration includes removal of approximately 500 linear feet of concrete seawall and rock riprap, and placement of gravel and sand/gravel mix along 650 linear feet of shoreline. A rock riprap drift sill and creation of a rocky tidal habitat is proposed along 250 linear feet of shoreline in front of the Marine Technology Lab. The seawall is proposed to remain in this area to protect this building and the picnic shelter. Naturalizing 100 linear feet of the stream and existing hatchery acclimation pond, building the freshwater marsh, creating one new picnic/interpretive shelter, and building a covered wetland viewing platform are included. Renovation of an existing former caretaker residence into a two level public building with a multi-purpose room, ADA-accessible restrooms, and storage is also proposed. Approximately 600 linear feet of sanitary sewer line will need to be relocated in order to construct the marsh, shoreline, and stream improvements (see Figure 5 in Attachment A).

4. Area D: Upper Parking, Main Access Road, and Parking

Area D includes demolishing approximately half of the upper parking lot and redistributing parking spaces to the lower part of the access road (see Figures 4 and 7 in Attachment A). The demolished parking would be replaced by a new picnic shelter, lawn area, new bus turnaround, and stream and wetland restoration. Improved trail access from the remaining parking area to the beach is proposed.

5. Highline Senior Center Site Redevelopment

The Master Plan proposes formalizing the parking at the Senior Center (see Figure 7 in Attachment A). Currently a large open unpaved area is used for parking without the benefit of parking stripes or wheel stops. Entry and exit points from this lot are unclear and the space available is unattractive and not used efficiently. The Master Plan proposes that this lot be paved and striped for parking, with improved stormwater collection and treatment. The new arrangement includes a simplified entrance and circulation as well as large areas of landscaping.

Development of the Senior Center includes formalizing the parking on the eastern portion of the site, and improving the trail into Seahurst Park.

6. Trail System within Park

The Master Plan proposes to improve the trail system throughout the entire park (see Figure 7 in Attachment A). This includes the improvement of existing trails, construction of new trails within the park, closure of redundant trails, and the reconfiguration of some trails that now cross through excessively steep or sensitive areas. An ADA-accessible path and trail system is proposed along the central and north shoreline, looping up from the shoreline and crossing the north creek on a bridge in the forest before returning to the shore path (see Table 2 below and Figure 5 in Attachment A).

**Table 2
ADA-Accessible Trails and Paths**

	Shoreline	Upland	Total
<i>Current</i>	2,000 feet	0 feet	2,000 feet
<i>Proposed</i>	2,000 feet	1,600 feet	3,600 feet

Several trails would be rerouted around excessively steep slopes to reduce hazards to hikers and erosion of the trail. Large hiking trails that loop through each of the two drainages at Seahurst Park are proposed. The proposed trail system is based largely on the use of appropriate existing trails with an emphasis on providing access to the wide variety of diverse forest types at the park. The loop trail systems in the park that circulate within the drainage basins will be integrated with existing physical and topographical barriers to provide buffers to private property, where practical. All hiking trails at the park, with the exception of the ADA-accessible trail and the emergency access road, will be constructed to US Department of Agriculture (USDA) Forest Service standards primarily by hand and with the use of small equipment. No heavy equipment or major grading would be required to establish these trails.

7. Restore and Reforest Upland Areas

Upland restoration and reforestation activities address the need to maintain the native flora of the park. Invasive species removal is needed to ensure the long-term survival of native species. Planting of native trees and shrubs will also help suppress future invasion of noxious exotic species. This effort is already underway and will be an ongoing activity. The City has established a nursery for native trees at the Senior Center site.

- 12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.**

The proposed project is located at Seahurst Park in the City of Burien (see Figure 1 in Attachment A). Specific location details are provided below:

- *Street Address – S.W. 140th Street at 16th Avenue S.W.*
- *Section, Township, Range – Section 24, Township 23N, Range 3E*

TO BE COMPLETED BY APPLICANT

B. ENVIRONMENTAL ELEMENTS

1. Earth

- a. **General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____.**

The Seahurst Park topography is dominated by steep slopes bordering the shoreline and two drainage basins that each contains multiple tributaries. Elevations range from sea level along the shoreline of Puget Sound to about 425 feet at the eastern edge of the northern drainage basin (see Figure 1 in Attachment A).

- b. **What is the steepest slope on the site (approximate percent slope)?**

Along the steep marine bluffs, the inclinations of the slopes range from about 50 to 75 percent on the lower slopes to 70 to 100 percent on the middle and upper slopes. Where landsliding is active or till is exposed, slopes are nearly vertical. In the drainage basins, the lower slopes are slightly flatter than the marine-facing slopes. The upper slopes range from 30 percent to 80 percent.

- c. **What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.**

The soils at Seahurst Park are a legacy of the last glacial incursion into the Puget Lowland and preceding glacial and nonglacial intervals. These deposits are overlain locally by post-glacial deposits such as fill, creek alluvium, beach deposits and colluvium. Based on exposures observed during a reconnaissance for this project, the following geologic units were recognized, from youngest to oldest (Anchor 2002b):

Holocene:

- *Fill*
- *Alluvium*
- *Beach deposits*
- *Colluvium*

Vashon Stade (Pleistocene):

- *Till*
- *Advance outwash*
- *Glaciolacustrine deposit*

Pre-Vashon Stade (Pleistocene):

- *Olympia formation*
- *Pre-Olympia deposits*

Although not dated, the deformed clay beds and overlying sand at the northern end of the park are likely to be Olympia (last interglacial period) and/or pre-Olympia deposits. The contact with

overlying Vashon glaciolacustrine deposit (Lawton Clay) is unknown, as it is covered with landslide deposits. Most of the glaciolacustrine sediment is very fine-grained glacial flour (silt and clay); however, some thin beds and lenses of sand indicate the influence of freshets carrying material from the margins of the basin or from gravity currents from the snout of the ice.

As the glacial ice shoaled, owing to increased deposition and proximity of the glacial sediment source, the sediments became increasingly coarser. Within Seahurst Park, the elevation of this transitional zone between the sand and clay units is between 130 and 150 feet. This advance outwash unit is very dense, having been overridden by about 3,000 feet of ice, and consists of fine and fine to medium sand, with varying percentages of gravel and cobbles.

Overlying the advance outwash, as it does throughout most of the Puget Lowland, is a layer of Vashon Till. The contact between the outwash and the till is relatively abrupt. The deposit consists of varying proportions of a very dense mixture of silt, sand, and gravel with scattered cobbles and boulders. It has the appearance of concrete and has a very low permeability. Till is locally referred to as "hardpan." It is exposed at the top of a landslide that occurred in the 1930s near the south end of the park and is indicated on the geologic map along the top of the bluff along 18th Avenue S.W. and 24th Avenue S.W.

Colluvium is a deposit that was placed by gravity. In the case of the Seahurst Park site, it consists mostly of previous landslide deposits. It exists on all of the slopes in the park, but is the thickest on the slopes that have the most active slope instability. Due to the chaotic manner of its deposition, it is a heterogeneous mixture of the soil types on and above the bench. It is loose and wet, not having been overridden by glacial ice.

Beach deposits are located along the shoreline. They are reworked materials that originated on the slopes at the south of the park and from a creek delta north of the park. They are also supplemented by alluvium that is delivered to the small deltas at the marine edge of the two creek systems within the park.

Alluvium consisting of loose sand (scattered gravel) is found along the beds of each of the creeks. The fine-grained particles are winnowed out of the deposits and carried to the shoreline, leaving behind the sand and gravel. Fill is found along most of the roadways and along the shoreline. One significant deposit, comprised of landslide deposits from various parts of the park, is located just north of the Marine Technology Center.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Yes, there are surface indications and a history of unstable slopes at Seahurst Park. The stability of the slopes in the park is dependent on four factors:

- Geology
- Seepage or other sources of water
- Slope inclination
- Human activity

For any particular landslide, the causes are likely to be a combination of some or all of these factors, but in different orders of importance for different landslides. Landsliding is particularly common at

the contact of sand overlying a less permeable layer, such as silt or clay. At Seahurst Park, landsliding is common where this contact is exposed on the west-facing marine bluffs. Such instability can start as a small rotational slump in the sand above the contact or a shallow slide of colluvial soil or intact clay at or below the contact, but can also develop into a debris flow or avalanche. Such an event occurred on December 17, 2001, about 200 feet north of the park restroom.

The colluvium that accumulates on the flatter slopes (below the bluffs) can also become unstable and move slowly or quickly if it becomes saturated. Where colluvium is concentrated to significant depths in natural swales, it commonly exhibits accelerated creep, typically demonstrated by jackstrawed or severely bowed trees. Such colluvium-filled swales are marginally stable.

The only recorded slope instability originating from the top of the slope was a debris flow that was generated from the steep slope west of 24th Avenue S.W. near the south end of the park. Aerial photographs taken in 1936 indicate that the debris reached the beach. Other information indicates that this area was unstable again in the 1950s, reportedly caused by stormwater that was directed toward the slope during construction activity in that area. Subsequent aerial photographs do not indicate further significant instability in this area.

Although not actively unstable at this time, there are several areas in the park where heavy seepage and loose colluvial soil have combined to create large zones of mobile soil that are creeping. Creep is the imperceptible movement of surficial soils (generally less than about 10 feet thick). The bowing of trees is one method of identifying the presence of creeping soil.

Two forms of erosion are active in Seahurst Park: along the two creeks and along the shoreline. Channel incision is occurring near the intersection of S.W. 144th Street and 13th Avenue S.W. The channel is deepened by 4 to 6 feet below the channel fill for a distance of 200 to 300 feet and, in some locations, is eroding into the sidewalls of the channel, causing instability of the colluvial slope base.

Sidewall channel erosion is also active at about elevation 50 feet and 125 feet along the edges of the mainstem of the northern drainage basin. At about 50 feet, the erosion is entraining silt and fine sand from the channel sides and clay from the channel bed. At about elevation 125 feet, sand and gravel is sloughing into the channel and being entrained by the creek waters.

Much of the central and northern park shoreline is armored with rock riprap and a concrete bulkhead. Prior to construction of the bulkheads, the two modes of natural sediment delivery to the beach would have been from: (1) debris flows from the slopes above the beach; and, (2) periodic erosion of colluvium from beach-adjacent slopes that are undermined during storms. With the installation of the bulkheads, erosion of the beach slopes was eliminated and the delivery of soils from upland landslides was substantially reduced in the areas protected by armoring. Another result of this armoring of the shoreline has been to increase the erosive energy of waves moving sediment northward along the beach or into deeper water.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

The park improvements proposed in the Master Plan would require various levels of filling and grading. These activities can be categorized by demolition (approximately 21,000 cy), earthwork (including cut and fill; approximately 43,000 cy), and imported beach restoration material (approximately 21,000 cy). The total for all these activities is approximately 85,000 cy. Materials

that will be imported or exported to/from the site will be transported via truck or barge.

Proposed grading and filling activities would be associated with trail improvements and installation, shoreline restoration and development, and parking improvements. One area of significant cut and fill activity would be located along the north/central shoreline in areas where existing bulkheads are removed and beach material is placed at a grade consistent with natural conditions. In addition, the upper parking lot will be reduced in size and much of the existing soils removed will be disposed of off site. To the extent possible, material that is removed will be re-used on site. Beach material and topsoils will come from a commercially available source.

ADA-accessible pathways will require grading to achieve the necessary slopes. The remaining upland trails will also require some minor re-grading, but this would be accomplished by hand or using small equipment; no major earthwork activities would be conducted.

Master Plan implementation phases that require significant levels of grading or cut and fill (particularly in the nearshore area and upper parking lot) will undergo individual environmental review after project design details are more thoroughly defined so that volumes can be quantified more accurately.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Given the known slope stability issues at Seahurst Park, the master planning process took into consideration the physical characteristics and related attributes of the site to provide recommendations on site development considerations and restrictions that avoid unnecessary impacts to unstable slopes. The completed project will result in improved beach conditions due to imported and on-site sediment supply.

In order to aid in the master planning activities of the park, four slope stability zones were roughly delineated. They are described as follows, with their physical characteristics and other related attributes.

1. Actively unstable, toe protected

- Actively unstable slopes protected by existing concrete bulkhead along the shoreline of Puget Sound.*
- Instability caused by seepage at sand/clay contact resulting in small rotational failures in sand above the contact or debris flows in colluvium below contact.*
- Commonly repeated failures at some location in troughs.*
- Formerly supplied beach with fine and coarse-grained sediment, but now interrupted by concrete bulkhead.*
- Removal of concrete bulkhead may result in an increase in the recurrence interval of colluvial slides, but not substantially change regression of the upper bluff line.*
- Mostly deciduous forest below approximately elevation 160 feet in colluvium due to recurring movement of soils and wet soil conditions. Mixed forest 160 to 200 feet. Coniferous forest, including madrona, in sand or higher slopes.*

2. Actively unstable, unprotected toe

- Actively unstable slope with unprotected toe, except for groins perpendicular to the shoreline.*

- Toe is being undercut by wave action, so slumping and block-calving is occurring regularly, providing mostly sand and silt to the beach.
- Evidence of an old debris flow at the park's north edge indicates other means of sediment delivery of sand to the beach.
- Very steep to precipitous slopes.
- Very little vegetation due to very active instability of slopes. Vegetation, where present, is mainly alder.

3. Wet, mobile ground

- Very active creep to actively unstable slopes with widespread seepage.
- Mostly shallow soil movement, exacerbated by heavy, perennial seepage.
- Vegetation primarily deciduous, and bent and bowed due to constant shifting of soil. Cedars are located in the wet areas.

4. Local colluvial-filled swales

- Troughs filled with colluvium, exhibiting surficial signs of ground movement or recent failure.

During construction activities (i.e., bank excavation, bulkhead removal, clearing and grading) some temporary erosion could occur.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

The activities proposed in the Master Plan would result in a 40,000 square feet (0.9 acre) decrease in vehicle-accessible impervious surface from existing conditions. Modifications to vehicle-accessible impervious surfaces located in the lower, shoreline portion of the park would mostly entail re-alignment of existing paved areas and would create a 20,000 square feet (0.45 acre) decrease in vehicle-accessible impervious surface. Approximately half of the existing upper parking lot is proposed to be removed. Approximately 18,000 square feet of paving is proposed to be added at the existing Senior Center parking area. Less than 5 percent of the site would consist of impervious surfaces after completion of the proposed Master Plan activities.

h. Proposed measures to reduce or control erosion, or other impacts to the earth if any:

For each of the slope stability zones described above, the Master Plan provides recommendations on site development to reduce the potential for erosion or slides:

1. Actively unstable, toe protected

- *Leave as-is and do not disturb, except for primitive trails that are informal.*

2. Actively unstable, unprotected toe

- *No trails or recreational opportunities due to danger.*
- *Very little vegetation due to very active instability of slopes. Vegetation, where present, is mainly alder. May want to plant heavy vegetation at entrance to high bluff to discourage visitors.*

3. Wet, mobile ground

- Trails would be acceptable, but will require constant maintenance and bridges locally. No structures acceptable in this zone due to seepage and mobile ground.

4. Local colluvial-filled swales

- Trails are acceptable, but drainage should be directed away from swales. Periodic maintenance may be necessary. No structures acceptable in or at the toe of this zone due to seepage and mobile ground.

One of the key elements of the Master Plan is to restore the beach at the park to prevent further erosion of beach material that is currently occurring. Therefore, shoreline sediment supply at the site is expected to improve with implementation of the Master Plan elements.

Some temporary erosion could occur during construction activities (i.e., bulkhead removal, clearing and grading, excavation). During construction activities, temporary Best Management Practices (consistent with the "King County Stormwater Pollution Prevention Manual") would be used to prevent erosion. Temporary Erosion and Sediment Control (TESC) plans will be completed prior to construction phases that involve clearing, grading, or alterations that could result in temporary erosion. Cleared areas that are disrupted during construction would be re-vegetated to prevent erosion.

2. Air

- a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.**

During construction, there would be diesel emissions from construction equipment. Most of these short-term air quality impacts would be localized and would consist of particulate matter or slight increases in carbon monoxide during the construction phase.

As described in the Transportation Impact Analysis (see Attachment C, Heffron Transportation, 2005), the proposed Master Plan project is not expected to increase peak period traffic generated at Seahurst Park. No long-term adverse impacts to air quality are anticipated.

- b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.**

No.

- c. Proposed measures to reduce or control emissions or other impacts to air, if any:**

Minimal air quality impacts are anticipated from diesel-powered equipment during construction and no long-term impacts are anticipated; therefore, no measures are proposed to reduce or control emissions.

3. Water

a. Surface

- 1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.**

Seahurst Park is located on the shoreline of Puget Sound. There are two main streams at the park which flow directly into nearshore waters. One stream enters in the north and one enters in the south central section of the park (see Figure 1 in Attachment A and Photo 4 in Attachment B). Both of these streams flow year round (perennial streams). These streams are part of the two drainage basins (north and south for purposes of this report) found within the park. The basins and other areas along the shoreline also support several other smaller tributaries.

Along the marine bluffs, springs emerging from the steep hillside coalesce and flow in very small channels 6 to 12 inches wide toward the shoreline. These springs are seasonal in some places carrying no water, are running downhill for a distance which infiltrates into the colluvium in some place, and in other places reaching the shoreline, particularly in the winter and early spring. Water in these channels is locally supplemented by plastic pipes that carry stormwater runoff from residences on the plateau to the east.

Water in the two large drainage basins is also spring-fed. Due to multiple sources of water, there is enough water to make these two streams perennial in their lower elevations. The north drainage basin contains five subbasins, each of which has minor springs that contribute to flow of the mainstem.

The south drainage basin has five subbasins, one of which is primarily located in the Hurstwood residential area and partially culverted. The lower reach of the south drainage basin is significantly modified by human activity from roads and parking lot construction for the park. Storm drainage pipes are located in portions of the channel and culverts are installed beneath the parking lot and road fill embankments. Approximately half of the upper parking lot is proposed to be removed to restore some of the south stream and associated wetlands.

There is also a diverse variety of small forested wetlands at Seahurst Park.

- 2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.**

Because the project site is located along the shoreline and contains several streams and wetlands, most of the proposed activities will occur within 200 feet of these water bodies. Figure 5 shows the details of activities proposed in the shoreline portion of Seahurst Park (as described in Section A.11 of this document). Figure 4 shows upper parking lot removal, and stream and wetland restoration.

- 3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.**

The beach restoration activities proposed at the park will include the removal of gabions, riprap and

concrete bulkheads, and placement of beach material that will extend below the Ordinary High Water (OHW). The total volume of material to be removed below the OHW is approximately 11,500 cubic yards. The volume of sand and gravel material proposed to be placed below the OHW for beach restoration is approximately 18,000 cubic yards. Project elements that involve work below the OHW will require individual permits, and specific volumes will be provided during that review process once design details have been developed.

Project elements that may or may not impact wetland or stream areas will also undergo further environmental review prior to implementation. If necessary, wetland delineations will be performed to determine the extent of jurisdictional wetlands in the vicinity of specific proposed activities. When impacts to jurisdictional wetlands or streams are proposed, mitigation will be negotiated and implemented to meet the standards of the appropriate regulatory authorities (i.e., Corps, WDFW, Ecology, City).

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

One hundred linear feet of the north stream will be realigned and some concrete and pipe structures removed. Approximately 400 linear feet of the south stream and tributary that is currently culverted under the upper parking lot is proposed to be daylighted to restore more natural conditions. This will help restore the drainage system at the park to more natural conditions.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

Yes, the shoreline portion of the park is within a coastal floodplain.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No.

b. Ground:

1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.

No.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals . . .; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

No waste material would be discharged.

c. Water Runoff (including storm water):

- 1) **Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

Stormwater collection and treatment from vehicle accessible impervious areas at the park would be retrofitted to be consistent with the requirements of the "King County Surface Water Design Manual." Currently stormwater drains from the site directly into the on-site creeks or the Puget Sound. Because the amount of proposed impervious surface would decrease, the Master Plan is not expected to result in an increase in stormwater quantities generated at the site. Flow patterns would also not be significantly altered.

As described above, an existing stormwater culvert will be removed and the creek daylighted in the upper parking lot area.

- 2) **Could waste materials enter ground or surface waters? If so, generally describe.**

It is unlikely that waste materials would enter ground or surface waters from diesel-powered construction equipment at the site, although there is a chance that a minor fuel spill could occur during construction.

- d. **Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:**

The Master Plan for Seahurst Park establishes the priority to maintain and restore the natural processes that occur at the site. The City is committed to avoiding any unnecessary impacts to surface waters or wetlands found at the park. Overall, the Master Plan elements were designed to improve the natural conditions at the site, which would most likely result in a long-term improvement to water quality and runoff conditions. The new paved area at the Senior Center will have stormwater controls meeting current City requirements. No increase in runoff is anticipated

An emergency spill kit will be at the site during construction.

4. Plants

- a. **Check or circle types of vegetation found on the site:**

deciduous tree: alder, maple, aspen, other, madrone
 evergreen tree: fir, cedar, pine, other
 shrubs
 grass
 pasture
 crop or grain
 wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
 water plants: water lily, eelgrass, milfoil, other
 other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

Some clearing may be required in areas where construction activities will occur, such as realignment of parking area or paths. Invasive species will also continue to be removed throughout the park site and replanted with native vegetation. The total estimated area to be cleared and grubbed in developed areas of the park and for trails is about 37,000 square feet. This primarily occurs in areas of existing non-native vegetation. In addition, 0.8 acres of forest with invasive species infestations are proposed to be cleared and replanted with native species.

c. List threatened or endangered species known to be on or near the site.

No.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Zones I and II of the Master Plan designate 96 percent of the park to be used for preservation and restoration activities. Within these zones, development and use is limited and native vegetation preservation/restoration is a priority. Special emphasis in the Master Plan is given to restoring native vegetation within riparian zones found at Seahurst Park. In some cases, this restoration involves removing non-native invasive species (blackberry, ivy, etc.) and planting native trees and shrubs. In other cases, more extensive work is needed. This restoration will support fish populations in the streams and Puget Sound, and will provide plant diversity that supports numerous birds, mammals, and amphibians.

5. Animals

a. Circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

birds: hawk, heron, eagle, songbirds, other:
 mammals: deer, bear, elk, beaver, other: red fox, rodents, racoon
 fish: bass, salmon, trout, herring, shellfish, other:

b. List any threatened or endangered species known to be on or near the site.

In accordance with Section 7(a)(2) of the ESA, as amended, federally funded, constructed, permitted, or licensed projects must take into consideration impacts to federally listed and proposed threatened or endangered species. Several species protected under the ESA are potentially found in Puget Sound in the Greater Seattle area (Table 3).

**Table 3
 ESA Protected Species Potentially Occurring in the Project Vicinity**

Species	Listing Status	Critical Habitat
Bald Eagle <i>Haliaeetus leucocephalus</i>	Threatened	—

Marbled Murrelet <i>Brachyramphus marmoratus</i>	Threatened	Designated
Coastal/Puget Sound Bull Trout <i>Salvelinus confluentus</i>	Threatened	Designated
Puget Sound Chinook Salmon <i>Oncorhynchus tshawytscha</i>	Threatened	—
Steller Sea Lion <i>Eumetopias jubatus</i>	Threatened	Designated
Humpback Whale <i>Megaptera novaeangliae</i>	Endangered	—
Leatherback Sea Turtle <i>Dermochelys coriacea</i>	Endangered	Designated
Puget Sound/Strait of Georgia Coho Salmon <i>Oncorhynchus kisutch</i>	Candidate	—
Killer Whales <i>Orcinus orca</i>	Candidate	—

Salmonids sampled in the nearshore area of Seahurst Park during 1982 and/or 1983 included chum salmon (Donnelly et al., 1984). The Marine Technology Center conducts annual beach seines in the nearshore areas of Seahurst Park and has consistently caught coho and cutthroat, and inconsistently caught chinook salmon (Weiss, 2002a). The presence of these species indicates use of the park shoreline for migration and/or rearing purposes. A hatchery, which is part of the OSC Marine Technology Project, is run by the Highline School District and is located near the north stream. The hatchery was started in 1970 and raises coho smolts, which are released directly into Puget Sound in front of the Marine Technology Lab (Weiss, 2002b). Each year, approximately 10,000 coho smolts are released and approximately 80 adults return. Additionally, the King County State of the Nearshore report (Williams et al., 2001) indicates adult and juvenile salmonid presence along the Seahurst Park shoreline. Species expected to use this area based on knowledge of species life history include chinook, chum, coho, pink, sockeye, cutthroat, steelhead, and native char salmon (adults only). The adult and juvenile timing of each species in the nearshore environment is detailed below.

Based on the Priority Habitat Species maps provided by WDFW (2005) the closest bald eagle's nest is located approximately a quarter of a mile to the south of the park.

Occurrences of marbled murrelet, steller sea lions, humpback whales, killer whales, or leatherback sea turtles are all expected to be rare.

c. Is the site part of a migration route? If so, explain.

Burien lies underneath the Pacific Flyway for migrating waterfowl, so during migratory season the park, which is located on water, could conceivably contain migrating waterfowl.

In the Puget Sound, juvenile salmon are known to migrate along the nearshore.

d. Proposed measures to preserve or enhance wildlife, if any:

The shoreline and riparian zone restoration activities that are proposed at Seahurst Park as part of the Master Plan will improve wildlife habitat at the site for both aquatic and upland species. Wildlife species diversity and abundance is influenced by the composition and continuity of vegetation, and

the proximity to riparian areas and to the marine environment. The Master Plan for Seahurst Park proposes to set aside 96 percent of the park for preservation or restoration activities. Implementation of the Master Plan will help to preserve and enhance wildlife at the site.

Of particular concern and interest within the nearshore portion of the park are two species of forage fish (sand lance and surf smelt) that are a critical food resource for salmon. These two fish species depend on upper intertidal sandy/fine gravel beaches for spawning. Therefore, restoration of the shoreline at the park will provide improved forage fish habitat conditions.

In-water construction activities will occur within approved work windows when juvenile salmonid species are not anticipated to be present.

Permitting activities for the specific implementation phases will further address specific measures required to avoid impacts to endangered and threatened wildlife species.

6. Energy and Natural Resources

- a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.**

Electricity will continue to be used on the site, primarily to provide lighting. The completed project is not anticipated to impact energy needs at Seahurst Park.

- b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.**

No.

- c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:**

No additional or significant energy needs or issues are anticipated.

7. Environmental Health

- a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.**

No environmental health hazards are anticipated as a result of this proposal.

- 1) Describe special emergency services that might be required.**

It is not anticipated that additional emergency services would be required at the site.

- 2) Proposed measures to reduce or control environmental health hazards, if any:**

None.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic equipment, operation, other)?

No significant noise exists in the area that would affect the proposed project.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Equipment used during construction would result in minimal, short-term and localized increases in noise levels. Construction would comply with the City of Burien Noise Ordinance.

Following construction, low volume vehicle traffic and people using the viewpoint would be the primary sources of noise generated at the site during operation.

3) Proposed measures to reduce or control noise impacts, if any:

Construction and operations would be accomplished in compliance with the City of Burien Noise Ordinance and would not impact local noise levels.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties?

With 152 acres and 0.75 miles of shoreline, Seahurst Park is the City's most heavily used park, and a regional attraction. The park is described as a regional park in the City's Comprehensive Park and Open Space Plan because of its size, extensive Puget Sound shoreline access, hiking trails, and picnic facilities. A survey on the use of parks, arts, and recreation facilities that included responses from about one-half of the City's residents indicated heavy recreational use of the site and its facilities (City of Burien, 2000). The attractions at Seahurst clearly include the natural environment, the shoreline, streams, and forests.

Seahurst Park abuts Puget Sound to the west and is surrounded on all other sides by residential neighborhoods (see Figure 2 in Attachment A). These neighborhoods include:

- Shorewood: North of the park*
- Hurstwood: East Central (surrounded by the park on three sides)*
- Seahurst: South of the park*

b. Has the site been used for agriculture? If so, describe.

The site has not been used for agriculture.

c. Describe any structures on the site.

Current park facilities include:

- *Paved entrance road and parking*
- *Unpaved access road/path (north end of site)*
- *Shoreline paved and crushed rock paths (approximately 4,400 linear feet)*
- *Hiking trails (approximately 9,500 linear feet)*
- *Two covered picnic shelters (north and south ends of park; 800 square feet north and 600 square feet south)*
- *Benches and picnic tables*
- *Children's play area*
- *Public restroom building (1,100 square feet)*
- *Marine technology lab (2,700 square feet)*
- *Former caretaker's residence (850 square feet)*

The Marine Technology Lab is operated by the Highline School District and is a vocational program for high school students (Weiss, 2002b). It was originally built in its current location prior to 1972 when the rest of the park was developed, and then replaced in conjunction with park construction (Quinton Budlong, 1973). The lab contains a hatchery that raises coho salmon. This facility is not open to the public and is leased from the City.

Shoreline protection structures at the park include a concrete revetment along the middle portion of the shoreline. The northern most part of the park consists of a beach protected by two groins that extend offshore. No walls or revetments exist parallel to the shore at the northernmost end of the park.

d. Will any structures be demolished? If so, what?

The concrete bulkhead located along the shoreline at the park will be demolished and replaced with a sloping shoreline.

Approximately half of the upper parking lot will be removed and replaced by a new picnic shelter, lawn area, new bus turnaround, stream and wetland restoration with trail, are included.

The former caretaker's residence will be partially demolished and rebuilt using the existing foundation. No other structures are proposed to be demolished.

e. What is the current zoning classification of the site?

Residential, Single-Family.

f. What is the current comprehensive plan designation of the site?

Public Parks/Schools/Recreation/Open Space.

g. If applicable, what is the current shoreline master program designation of the site?

Conservancy.

- h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.**

The City of Burien has designated the site to be within the Landslide Prone/Steep Slopes critical area designation. A Flooding critical area designation is also shown for a small area along the beach (presumably associated with coastal flooding potential).

Streams and wetlands are also often considered to be "environmentally sensitive" areas.

- i. Approximately how many people would reside or work in the completed project?**

One person currently works at the Marine Technology Lab, this is not anticipated to change as a result of implementation of the Master Plan.

When the Senior Center property is acquired, it will become a part of the park facilities. Use of these facilities is not anticipated to change. The center currently employs four people.

- j. Approximately how many people would the completed project displace?**

None.

- k. Proposed measures to avoid or reduce displacement impacts, if any:**

No displacement impacts are anticipated.

- l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:**

The proposed improvements for Seahurt Park are consistent with the City of Burien's Shoreline Master Program designation for the site (Conservancy).

9. Housing

- a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.**

None.

- b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.**

None.

- c. Proposed measures to reduce or control housing impacts, if any:**

No housing impacts are anticipated.

10. Aesthetics

- a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?**

New or modified structures proposed at the site will consist of renovation of the existing caretaker residence, two new picnic shelters, and one wetland viewing platform. These structures will be constructed of wood and masonry. The existing Marine Technology Lab is 30 feet high and is the highest existing structure at the site.

- b. What views in the immediate vicinity would be altered or obstructed?**

No views would be altered or obstructed as part of the proposed project.

- c. Proposed measures to reduce or control aesthetic impacts, if any:**

The aesthetics at Seahurst Park are expected to improve over existing conditions with the removal of the existing concrete bulkhead and invasive plant species.

11. Light and Glare

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur?**

Lighting will continue to be used to light the parking areas at the site. Existing road and parking lot lighting at the park is non-functional and is proposed to be replaced.

- b. Could light or glare from the finished project be a safety hazard or interfere with views?**

No. The parking area lights are designed to produce very little glare.

- c. What existing off-site sources of light or glare may affect your proposal?**

No existing off-site sources of light or glare would affect the proposed project.

- d. Proposed measures to reduce or control light and glare impacts, if any:**

No measures to control or reduce light and glare have been proposed because no impacts are anticipated.

12. Recreation

- a. What designated and informal recreational opportunities are in the immediate vicinity?**

Seahurst Park is a regional park facility that provides significant recreational opportunities, as previously described. Activities that occur at the site include beachcombing, picnicking, and hiking.

- b. Would the proposed project displace any existing recreational uses? If so, describe.**

Existing recreational facilities may be re-located or realigned (i.e., trails, picnic areas, children's play area, lawn areas) within the park to enhance public access and shoreline recreation, but no recreational uses will be lost.

c. Proposed measures to reduce or control impacts, if any:

Implementation of the Master Plan will improve the recreational facilities provided at Seahurst Park. These improvements include an increased lawn area, improved shoreline access, improved ADA-access to trails and forested areas, and increased picnic areas/shelters. The Master Plan incorporates elements of public education and stewardship to encourage awareness of the natural processes occurring at the site and the potential impacts that use of the site may have. Shoreline recreational access will also be improved and controlled in a way to protect valuable nearshore resources. Overall, the Master Plan will improve recreational opportunities at the site while at the same time helping to reduce the impact this use may have on the environment.

13. Historic and Cultural Preservation

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

There are no known listed or proposed historical resources on the site.

b. Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.

The park's beaches were used by Native Americans for summer clam digging and fishing (McDonald and Whitney, 1997). Shell midden has been documented in the northern portion of the park. The site was logged in the early 20th century and the current forest is considered second growth (Macdonald and Whitney, 1997). A local lumber and construction "baron" by the name of Mr. Fox built a residence near the current picnic shelter and Marine Technology Lab in the 1930s that had a wood bulkhead with a special gate to allow "rum runners" to clandestinely off load their contraband at night during high tides (McDonald and Whitney, 1997). The alcohol was then hidden in hillside caves near the beach. The garage from this house is still located at the base of the hill and the swimming pool is beneath the north picnic shelter where it holds water for the Marine Technology Lab's hatchery. The residence was kept intact while the park was constructed but later removed. The south end of the park site (south/central creek basin) remained relatively undeveloped until the second half of the 20th century. The south subbasin of the creek was used as the water supply for the Seahurst neighborhood until fairly recently. Some of the infrastructure for the water supply system can still found on the Brown/Water District 85 property just south of the park boundary. Aerial photography from 1946 indicates no roads or structures in the south portion of the park. A 1965 air photo shows the completion of a road along the south creek to the delta and some fill placement along the north side. The Hurstwood Community Club owned this portion of the site when King County purchased it for park use in the late 1960s. A 1970 aerial photo and the park construction as-built drawings show significant fill was placed at the base of the hillside and upper beach prior to park construction. It is unclear whether this material was placed by the county or Hurstwood Community Club. This photo also shows an octagonal bathhouse structure was located where the lower parking lot is currently located (Quinton Budlong, 1973). This structure was probably built by the Hurstwood Community Club and was removed as part of park construction.

c. Proposed measures to reduce or control impacts, if any:

Communications with the State Historic Preservation Office will be conducted prior to any earth-disturbing activities at the park that may impact known cultural or archeological resources.

14. Transportation

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

Visitors to the park generally access Seahurst Park by car through the main entrance road also known as Southwest Seahurst Park Drive. The park is fairly well connected to the state highway system and is relatively easy to access from State Routes 509 and 518 via the S.W. 148th Street exit to Ambaum Boulevard S.W. However, there is no signage from S.W. 148th Street or the two state highways to the park. Signs lead to the park from Ambaum Boulevard, a major north/south thoroughfare through the city, at the S.W. 144th Street intersection. Three blocks west, S.W. 144th Street intersects with 13th Avenue S.W., which becomes S.W. 140th Street and leads into the park. Within the park there are two parking areas on this road described below.

At S.W. 136th Street (Senior Center) there is a single trail leading to the park that is less than 200 yards from a bus route on Ambaum Boulevard. The park is also accessible by walking from the bus stop on Ambaum Boulevard on the sidewalk along the main entrance road described above. These park access routes are between 1/2 to 1 mile from the bus route on Ambaum Boulevard to the beach.

Residents of the surrounding neighborhoods are able to access the park on foot from several small trailheads. In some cases these trails start outside the park and travel across undeveloped parcels into the park itself. Shorewood neighborhood residents use the dirt road or trails that start at 16th Avenue S.W. and Shorewood Drive at the northeast edge of the park. Access from the Senior Center and S.W. 136th near Ambaum Boulevard is available via a trail that crosses private land before entering the park. It should be noted that the undeveloped right-of-way for S.W. 136th Street continues into the park. From the Hurstwood neighborhood residents can either walk into the park along Seahurst Park Drive (the main vehicle entrance) or they can access the park's trail network from 17th Avenue S.W. Access to the park from the Seahurst neighborhood is possible by using one of the routes that connect to the park's southern drainage through undeveloped forested private property. These trails (two connected trails) access 18th Avenue S.W. and S.W. 146th Street.

b. Is the site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

Seahurst Park is not directly served by transit, but transit service is provided in the vicinity by King County's Metro Transit. Bus stops are located on Ambaum Boulevard SW at the SW 144th Street intersection (northbound buses stop on the south side of the intersection; southbound buses stop on the north side) and less than 200 yards from the Senior Center where there is a trail that leads to the park. These stops are served by Metro Transit Routes 120 and 133. The stop on the

east side (northbound direction) of Ambaum Boulevard SW has a shelter. (See Attachment C, Heffron Transportation, 2005)

- c. How many parking spaces would the completed project have? How many would the project eliminate?**

Parking facilities at the park are proposed to be reconfigured but the total number of parking spaces will remain constant at 193 spaces.

- d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not including driveways? If so, generally describe (indicate whether public or private).**

No new roads or streets are proposed to be constructed.

- e. Will the project use (or occur in immediate vicinity of) water, rail, or air transportation? If so, generally describe.**

No.

- f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.**

During peak summertime use in June, Seahurst Park generates about 1,200 trips (600 in, 600 out) on weekdays. During traditional weekday peak commute hours (typically between 7:00 and 8:00 A.M. and between 5:00 and 6:00 P.M.), the park generates about 11 A.M. peak hour trips and 95 P.M. peak hour trips. The weekday peak hour for the park occurs between 1:00 and 2:00 P.M. when about 119 trips occur. The weekend peak hour occurs between 3:00 and 4:00 P.M. on a Sunday when about 144 trips occur. (See Attachment C, Heffron Transportation, 2005).

The proposed Master Plan project is not expected to increase peak period traffic generated by Seahurst Park. The improvements proposed are expected to enhance the user's experience and may increase activity at the park during off-peak times. (See Attachment C, Heffron Transportation, 2005).

- g. Proposed measures to reduce or control transportation impacts, if any:**

No adverse impacts to the roadway network, traffic volumes, parking demand, transit, or non-motorized facilities are anticipated. The project would improve site access through better signage and identity. (See Attachment C, Heffron Transportation, 2005).

During the more intense periods of construction on the site, the export and import of material could generate a noticeable amount of truck traffic on local roadways. Therefore, it is recommended that for these periods, a construction management plan (CMP) be developed that addresses truck traffic and pedestrian control. It would identify truck routes, lane closures, parking closures, and trail and sidewalk closures, if any are required. To the extent possible, the CMP would direct trucks away from residential streets to avoid unnecessary conflicts with resident and pedestrian activity. (See Attachment C, Heffron Transportation, 2005).

15. Public Services

- a. **Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.**

The implementation of the Master Plan at Seahurst Park would not increase the need for public services at the site.

- b. **Proposed measures to reduce or control direct impacts on public services, if any.**

The new parking arrangement will add security by allowing visitors to park their cars in plain view of the main road and not where they are hidden away from most park activity. This should reduce the amount of vandalism and theft that currently occurs at the site.

Access for emergency vehicles to the park remains a priority in the Master Plan. The Marine Technology Lab at the north end of the shoreline needs to have at least two routes of ingress and egress for emergency vehicles. This will ensure that even if a landslide closes the primary route, a back up option is available. Emergency vehicles would be able to remove bollards at the new turnaround circle and proceed northward along the shoreline. The 12-foot asphalt pathway along the central shoreline is wide enough for emergency vehicles, while the wide compacted gravel shoulders (4 feet on each side) would allow two such vehicles to pass one another. The existing one lane dirt road with pullouts that connects the north shoreline to the Shorewood neighborhood at 16th Avenue S.W. would be maintained as a path and emergency access to provide access to the north basin and Marine Technology Lab.

16. Utilities

- a. **Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.**

- *Underground power exists for street lights and bathroom use, presumably provided by Seattle City Light.*
- *Lighting along 13th Avenue S.W. is provided to the lower parking lot with shoe box lights, many of which appear broken and inoperable.*
- *It is assumed that Qwest provides telephone service to the Marine Technology Center. There are no public telephones in the park.*
- *There is a storm drain system for 13th Avenue S.W. and the parking lots that conveys drainage to an outfall discharging into Puget Sound.*
- *Historic roadway plans show natural gas feeding the adjacent neighborhoods, but not the park. It is presumed that Puget Sound Energy provides natural gas to the adjacent neighborhoods.*
- *Water service within Seahurst Park is provided by Seattle Public Utilities. The system is looped and connects with the main system located on Ambaum Blvd. Within the park, water lines consist of 6-inch cast iron and 8-inch ductile iron pipes that run north-south along the shoreline, behind (east of) the bulkhead structure. The north end of the line continues onto Standring Lane S.W. The south end of the line turns to the east and connects to S.W. 140th Street.*
- *Sewer service within Seahurst Park is provided by S.W. Suburban Sewer District and also runs north-south along the shoreline behind (east of) the bulkhead concrete*

bulkhead structure. The upstream end of the line lies just south of S.W. 140th Street. The 8-inch asbestos concrete gravity sewer line runs west towards Puget Sound and then continues north to a lift station located at 12550 Shorewood Land S.W.. The sewage is then pumped to the Salmon Creek Treatment Plant located at 12550 Shorewood Drive S.W.

b. Describe the utilities that are proposed for the project, the utility providing the service and the general construction activities on the site or in the immediate vicinity that might be needed.

No additional utilities would be required as a result of implementation of the Master Plan. A portion of an existing sewer line that runs along the shoreline would need to be realigned, but this would not affect the sewer service provided to the park.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Date Submitted: _____

REFERENCES

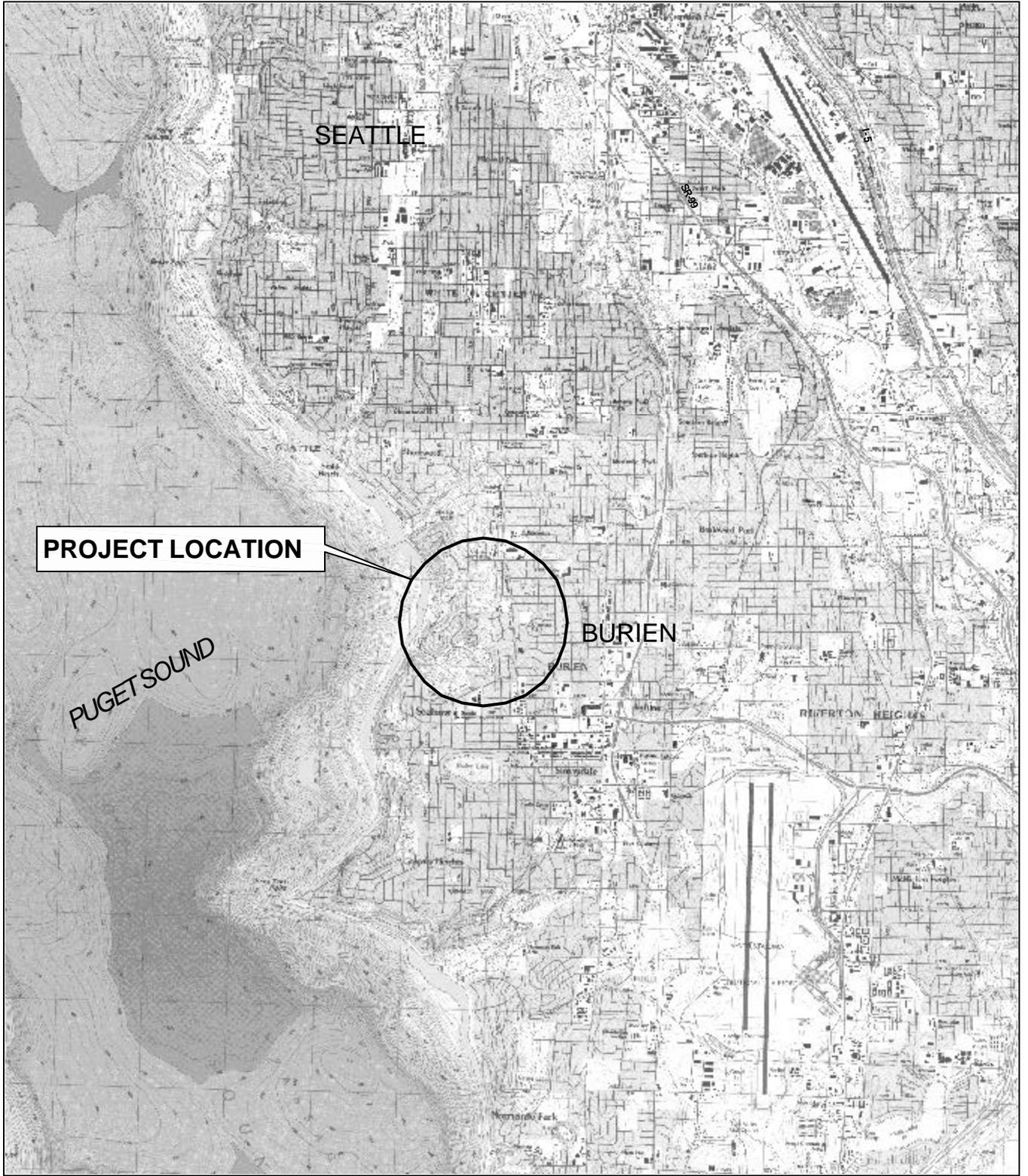
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ATTACHMENT A

Figures

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Jan 19, 2005 2:11pm cdauidson



Note: Base map prepared from Terrain Navigator Pro USGS 7.5 minute quadrangle map(s) of Seattle South and Burien, Washington.

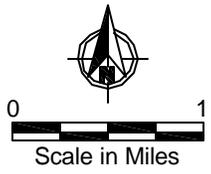


Figure 1
Vicinity Map
Seahurst Park Master Plan SEPA Checklist
Burien, Washington

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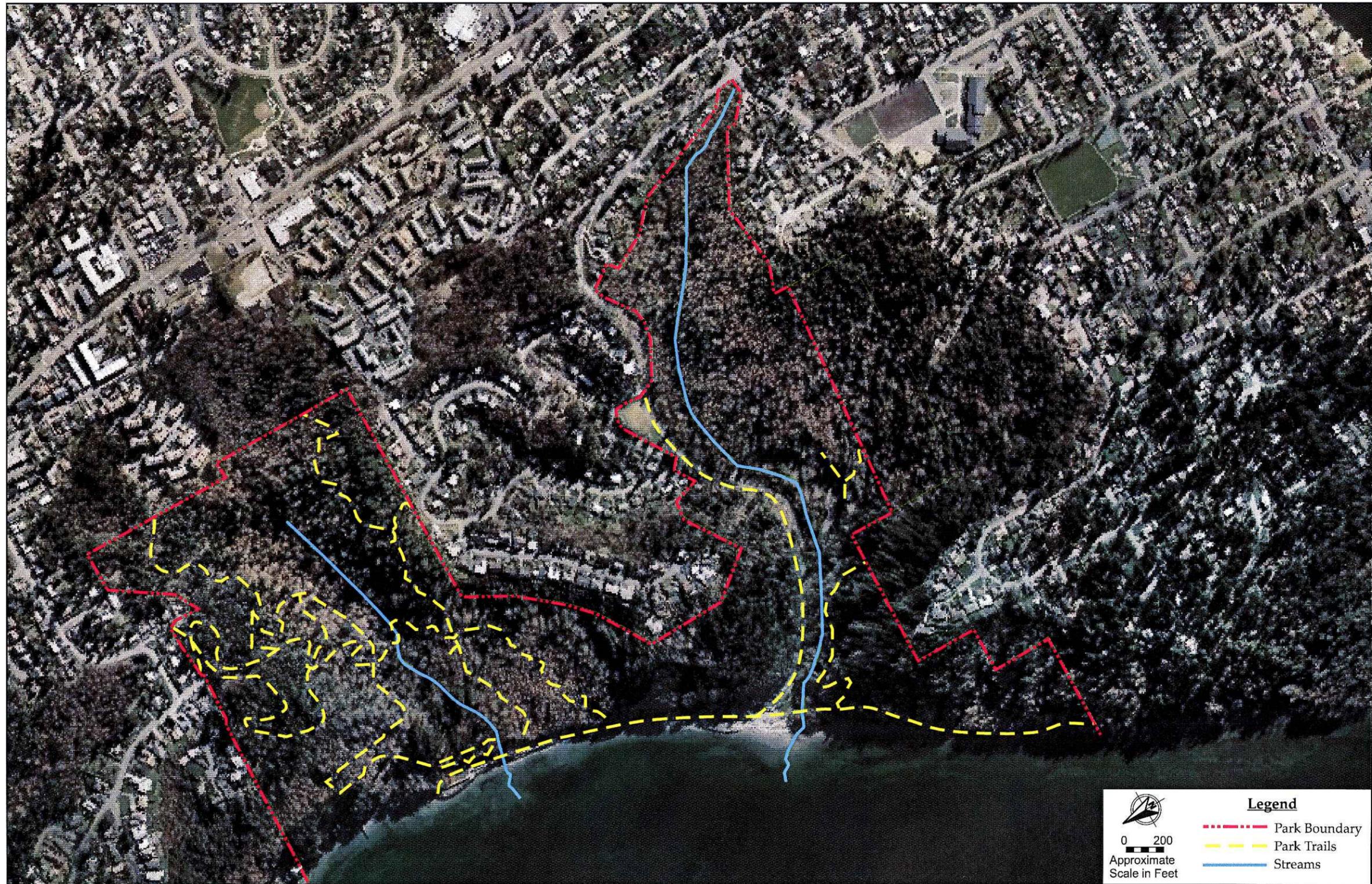
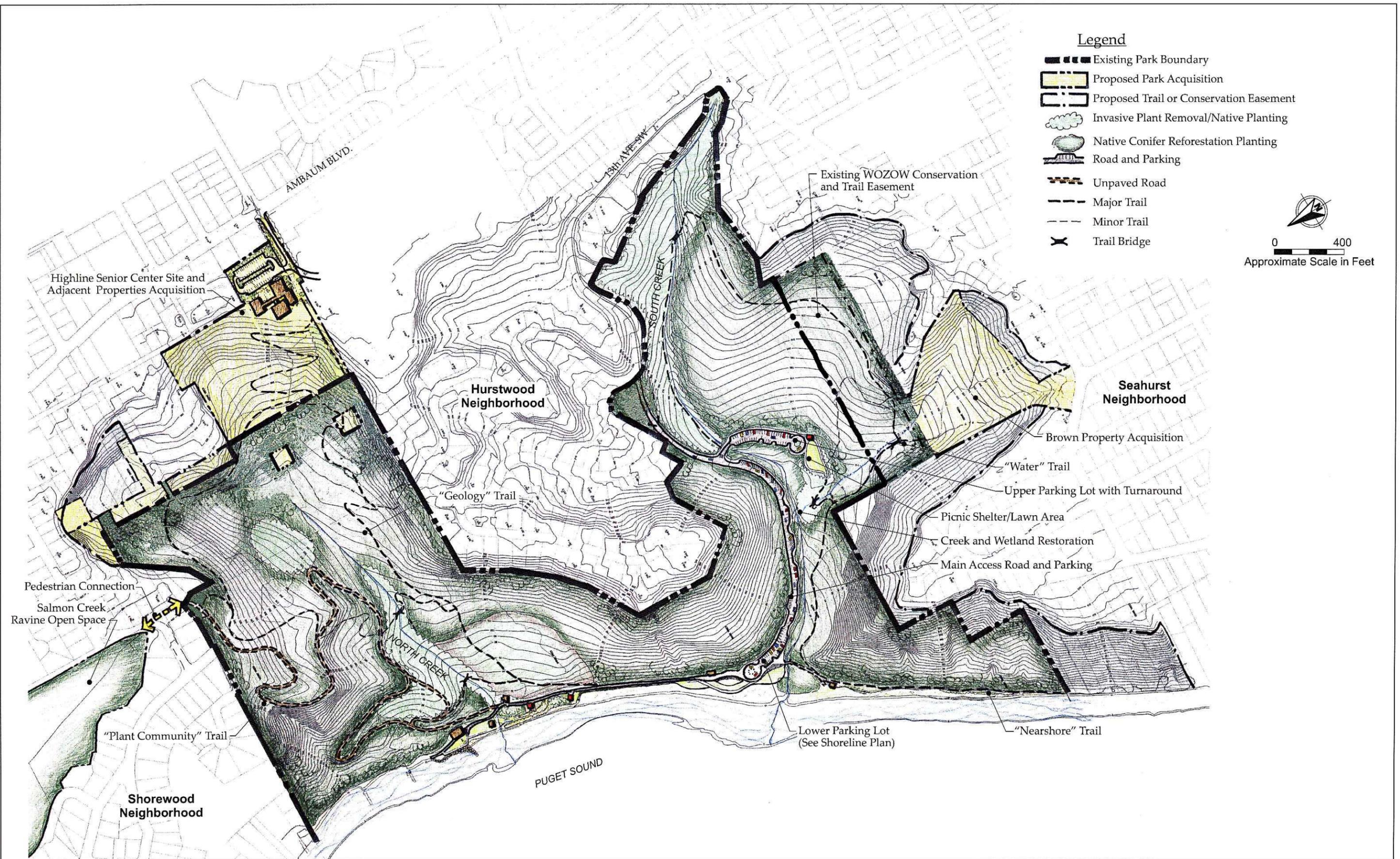
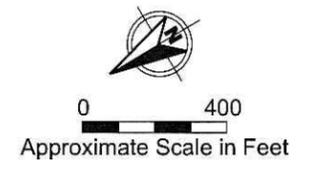


Figure 2
Existing Conditions - Aerial Photo
Seahurst Park Master Plan SEPA Checklist
Burien, Washington

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- Legend**
- Existing Park Boundary
 - Proposed Park Acquisition
 - Proposed Trail or Conservation Easement
 - Invasive Plant Removal/Native Planting
 - Native Conifer Reforestation Planting
 - Road and Parking
 - Unpaved Road
 - Major Trail
 - Minor Trail
 - Trail Bridge



Highline Senior Center Site and Adjacent Properties Acquisition

Hurstwood Neighborhood

Seahurst Neighborhood

Pedestrian Connection
Salmon Creek Ravine Open Space

Shorewood Neighborhood

Existing Wozow Conservation and Trail Easement

Brown Property Acquisition

"Geology" Trail

"Water" Trail

Upper Parking Lot with Turnaround

Picnic Shelter/Lawn Area

Creek and Wetland Restoration

Main Access Road and Parking

"Plant Community" Trail

Lower Parking Lot (See Shoreline Plan)

"Nearshore" Trail

AMBAUM BLVD.

13th AVE SW

SOUTH CREEK

NORTH CREEK

PUGET SOUND



Figure 3
Master Plan - Overall Park
Seahurst Park Master Plan SEPA Checklist
Burien, Washington

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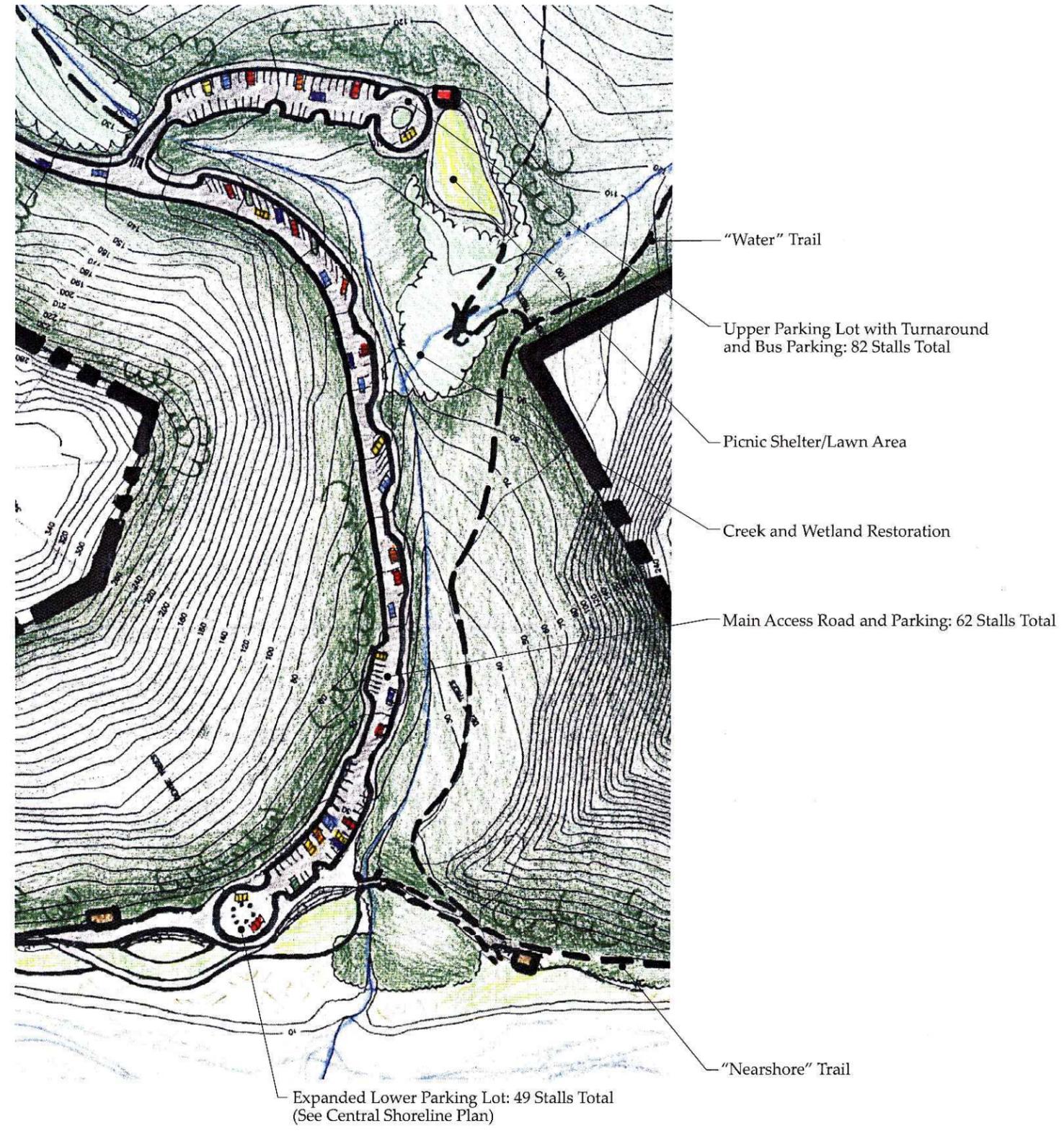
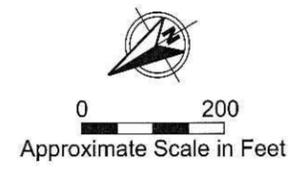
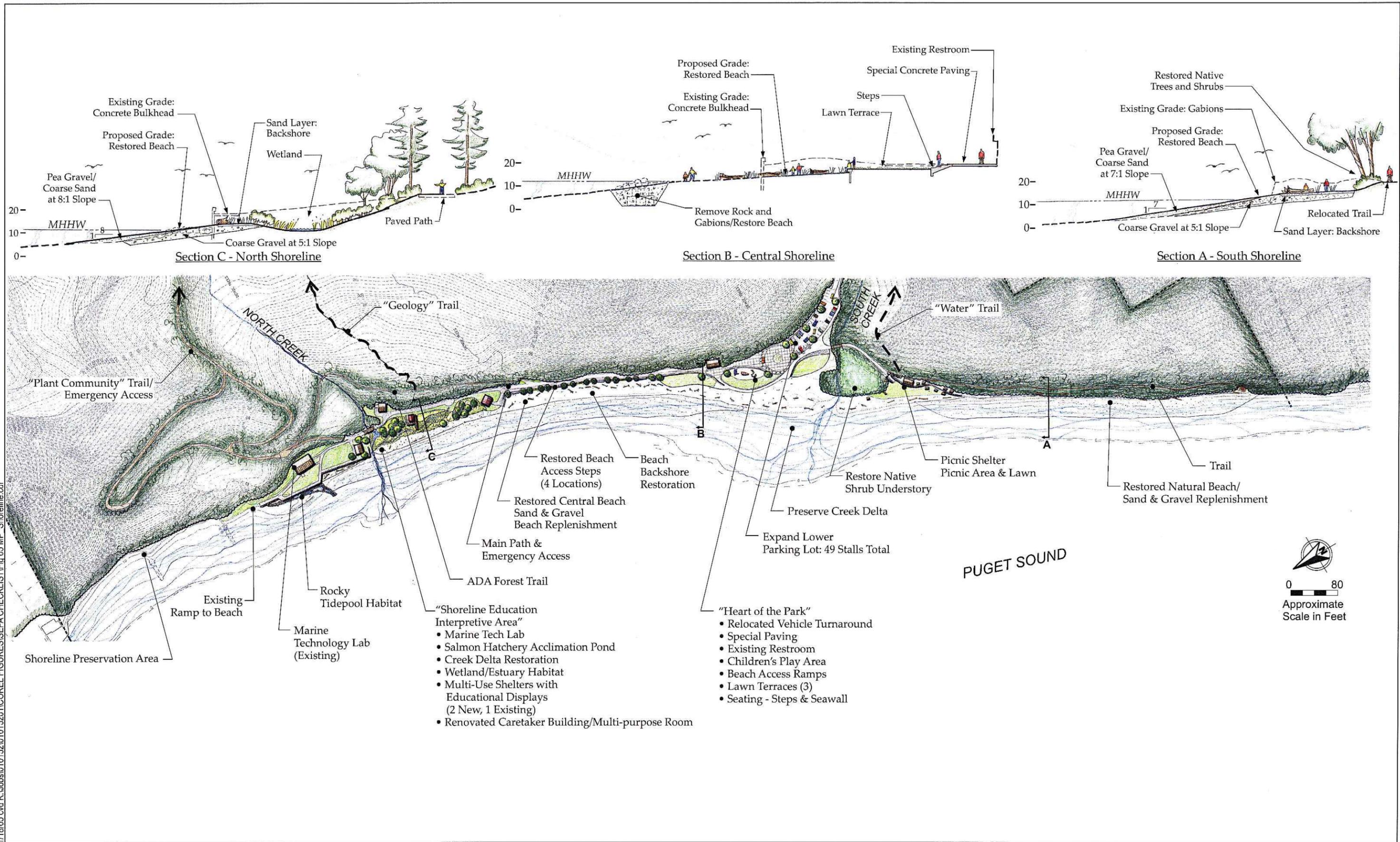


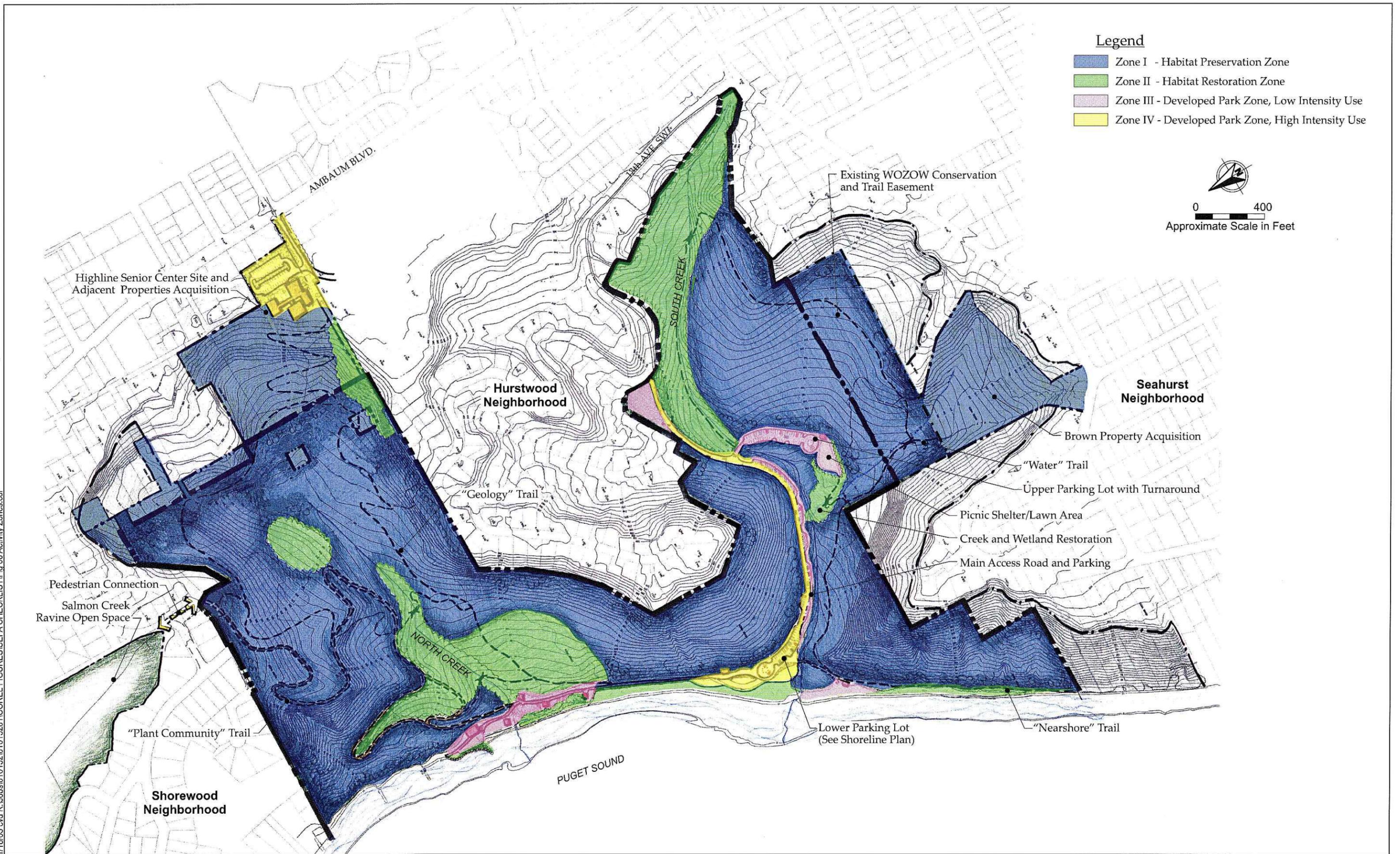
Figure 4
 Master Plan - Parking Area
 Seahurst Park Master Plan SEPA Checklist
 Burien, Washington



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Figure 5
Master Plan - Shoreline Portion
Seahurst Park Master Plan SEPA Checklist
Burien, Washington

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ATTACHMENT B

Photos



Photo 1

South Shoreline Before U.S. Army Corps of Engineers Project



Photo 2

South Shoreline After U.S. Army Corps of Engineers Project



Photo 3
Middle to North Shoreline, Existing Concrete Bulkhead and Ripraps



Photo 4
South Central Stream

ATTACHMENT C

Transportation Analysis

MEMORANDUM

Date: February 8, 2005

To: Michael Young, City of Burien

CC: Peter Hummel, Anchor Environmental
Holly Mergler, Anchor Environmental

From: Tod S. McBryan, P.E. 

Subject: Seahurst Park Master Plan – SEPA Checklist
Transportation Impact Analysis

This memorandum summarizes the transportation analyses prepared for the Seahurst Park Master Plan SEPA Checklist. It provides a brief summary of the proposed project elements, documents the existing traffic and parking demand at the park, and evaluates the anticipated impacts to the surrounding transportation system.

Project Description

Seahurst Park is a wooded 152-acre park located in the City of Burien on the shoreline of Puget Sound. The project location is shown on Figure 1 (included with the SEPA Checklist). In January 2002, the City began creating a master plan to represent the City's vision and to guide investments for protection and enhancement of the park. In general, the Master Plan was developed to preserve the natural qualities of the park, improve the trail system, restore the beach and shoreline, provide more opportunities for education and interpretation, and address problems of "safety and security." The Master Plan has seven primary elements:

1. Preservation of the Natural Environment – The Master Plan focuses on preserving and restoring key natural areas across all of the 152 acres of existing park.
2. Park Acquisitions – The Master Plan calls for two acquisitions totaling about 34 acres. One, the Brown property, is a 10-acre parcel adjacent to the southern portion of the park. Many existing trails cross onto this property and the property is often mistaken as being part of the park because there are no signs identifying the property line. The second acquisition includes the Highline Senior Center, several parcels adjacent to the park, and a few smaller private parcels within the park totaling about 24 acres. The acquisitions would provide pedestrian access to the park from the neighborhoods east of Ambaum Boulevard SW and the Senior Center. The Master Plan calls for formalizing existing parking at the senior center to accommodate a modest number of park visitors in addition to the current senior center

parking demand. To the west of the Senior Center buildings, a new pedestrian entrance to the park would be created. The most direct trail to the beach from this location would be rerouted and improved for grades and erosion.

In addition to acquisitions, the Master Plan proposes the use of voluntary conservation easements. The easements would be used to ensure that the park is not unreasonably encroached on by residential development or other land use changes.

3. Parking and Vehicle Circulation – Parking facilities would be reconfigured with no change to the total number of parking (the site has 193 spaces). The lower parking lot would be relocated and widened to provide perpendicular parking for cars on both sides and school bus parking would be moved to the upper lot. Approximately two-thirds of the parking capacity of the upper lot would be removed and replaced along the south side of the main access road between the lower lot and the upper lot. There would be angle and parallel parking along the south side of the access road. Bus drop-off/loading would occur at the lower lot, with bus parking in the upper lot. Emergency vehicle ingress and egress would be enhanced with two potential routes for the Marine Technology Lab (operated by the Highline School District).

4. Park Entrances and Park Identity – The Master Plan calls for unifying the appearance of all entrances through the use of integrated artwork.

5. Environmental Education and Stewardship – The Master Plan would create a series of outdoor shelters in the area near the existing Marine Technology Center. The existing two-level Caretaker’s Residence is proposed to be renovated with an upstairs multi-purpose meeting room, ADA accessible restrooms, and ground floor storage space.

6. Shoreline Recreational Access – The most intensive park uses would be concentrated in the “heart of the park.” An intermediate-level lawn terrace would connect to the levels above and below by ramps. This lawn area would be approximately the same size as existing bermed lawn areas, but would be more useable because of location and flat slopes. Low, seating-height walls and wide stairs would provide seating to view recreational use areas. Removal of the concrete bulkhead would create a wider beach that will be available at all tidal stages. This segment of shoreline would offer greatly enhanced beach use and access because the 12-foot wide, ADA accessible path/emergency access would be just three feet above the level of the beach. With improved beach access, picnicking opportunities would also be expanded. Two new picnic shelters (in addition to the one existing) are proposed near the Marine Technology Lab. A third new shelter is planned adjacent to the proposed lawn area and upper parking lot, increasing the total number of picnic shelters at the park from two to five. Additional picnic tables are proposed above and below the remnant of the gabion wall so that there is no net reduction in picnic tables after shoreline restoration is completed.

7. Shoreline Restoration – As part of the major shoreline restoration process, the Master Plan strategy includes: removing concrete seawalls, gabions, and rock used to harden and steepen the shoreline; restoring the beach slopes and substrates; replenishing gravel and sand lost to erosion; and restoring and protecting the natural delivery paths of sediment.

Overall, the seven elements of the Master Plan are expected to enhance the quality of the park and improve the user’s experience, security, safety, and convenience. As a result, it is likely that the Master Plan improvements would result in increased use of the park. However, as will be described in

subsequent sections of this memorandum, the park is currently well used during the peak times such as late spring, summer, and when tides are very low. As a result, the number of users and peak traffic during these times are not expected to change substantially. Rather, the improvements may result in increased activity during off-peak times.

Existing Conditions

Roadway Network

The vehicular entrance to Seahurst Park is located near the southeastern edge of the park. It is accessed via local neighborhood roadways which connect to a main north-south arterial serving the City of Burien. The following describes these existing roadways.

Ambaum Boulevard SW is the main north-south arterial in west Burien. To the south of Burien, it joins SR-509 providing access to the Cities of SeaTac and Des Moines. To the north, Ambaum Boulevard SW becomes 16th Avenue SW and then continues as Delridge Way SW through West Seattle to the West Seattle Bridge. In the site vicinity, it is a five-lane roadway with two lanes in each direction and a center-two-way-left-turn lane. Its intersections with SW 144th Street and SW 146th Street are both signalized. There are curbs, gutters, and sidewalks on both sides of the roadway. The posted speed limit is 35 mph.

SW 144th Street provides east-west access from Ambaum Boulevard SW to local residential areas. It is a two-lane roadway with a designated bike lane on both sides of the road from Ambaum Boulevard SW to just west of 12th Avenue SW. West of 12th Avenue SW to 21st Avenue SW, there are striped shoulders on both sides of the road, but they are not designated specifically as bike lanes. Based on field observations, the shoulders are also used for on-street parking. The paved shoulders vary in width with intermittent grass or gravel sections. In the site vicinity, there are no curbs, gutters, or sidewalks and the posted speed limit is 25 mph.

Vehicle Traffic Generated by the Park

The City of Burien commissioned 24-hour machine traffic counts at the park's entrance that covered the period from June 8 through July 9, 2002. The machine traffic counters were placed to capture all traffic entering and exiting the park during this period. These counts represent the time of year when park use is near its peak and in early June when school field trips are still occurring. The counts were compiled by Heffron Transportation to determine the average and peak traffic and parking generation of the park. Figure 1 graphically illustrates the average daily traffic volume by day of the week. It shows that daily volumes were highest on Sundays, but Wednesday and Thursday volumes were also above the average daily volume of 1,225 vehicles per day. Figure 2 shows the average peak hour volumes by day of the week. Again, the largest hourly volume of traffic (180 trips) occurred on Sundays, but peak hour volumes on Wednesdays and Thursdays were also slightly above the overall average peak hour volume.

The average weekday traffic volumes were compiled to document how traffic entered and exited the park throughout the day. It should be noted that the data for a small number of days appeared to be inaccurate—exiting volumes were much greater than entering volumes. These counting errors can

occur for a variety of reasons including tampering, vehicles crossing at angles, and/or parked vehicles on or near the tubes. Data for those few days that appeared incorrect were excluded from the analysis.

As shown in Figure 3, hourly traffic gradually builds beginning in the morning at about 7:00 A.M. and increases to a midday peak that occurs around 1:00 P.M. There is also a small peak in the early evening. Traffic volume drops substantially after about 8:30 P.M. Weekend traffic has a slightly different hourly profile with volume steadily building throughout the day to a peak at about 3:00 P.M. It then declines rapidly after about 8:30 P.M. Figure 4 shows the average weekend day traffic by hour.

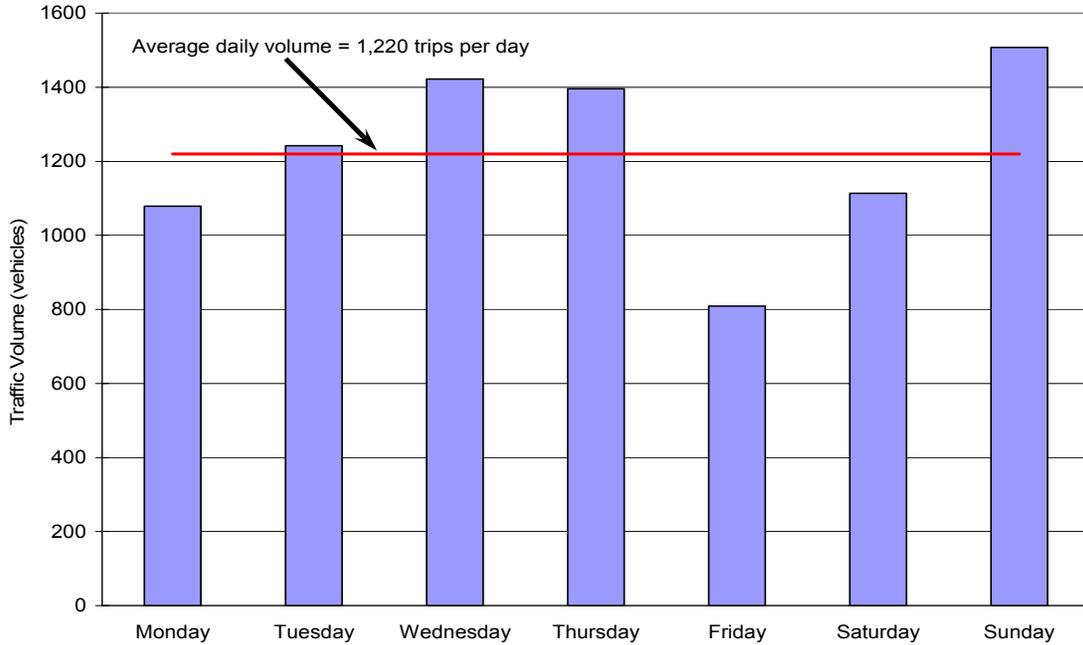
Table 1 summarizes the key trip generation results for Seahurst Park based on the month-long counts performed in June 2002. During peak summertime use in June, Seahurst Park generates about 1,200 trips (600 in, 600 out) on weekdays. During traditional weekday peak commute hours (typically between 7:00 and 8:00 A.M. and between 5:00 and 6:00 P.M.), the park generates about 11 AM peak hour trips and 95 PM peak hour trips. The weekday peak hour for the park occurs between 1:00 and 2:00 P.M. when about 119 trips occur. The weekend peak hour occurs between 3:00 and 4:00 P.M. on a Sunday when about 144 trips occur.

Table 1. Seahurst Park – Existing Peak Season Trip Generation (Average of June 8 thru July 9, 2002)

Weekday Traffic Conditions	Time of Day	Vehicular Traffic Volume		
		In	Out	Total
AM Peak Hour of Adjacent Streets	Typically 7:00 to 8:00 A.M.	7	4	11
Peak hour of Seahurst Park	1:00 to 2:00 P.M.	56	63	119
PM Peak Hour of Adjacent Streets	Typically 5:00 to 6:00 P.M.	52	43	95
Average Weekday Traffic	24-hour total	600	600	1,200
Weekend Day Traffic Conditions	Time of Day	In	Out	Total
Peak hour of Seahurst Park	3:00 to 4:00 P.M.	75	69	144
Average Daily Traffic on Weekends	24-hour total	655	655	1,310

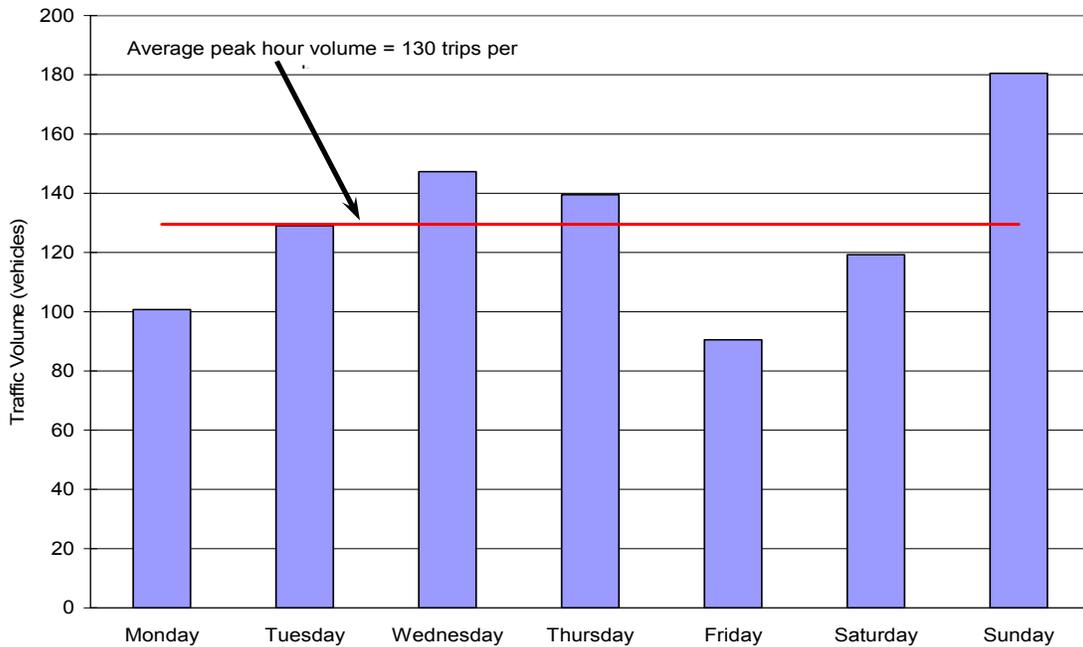
Source: Machine traffic counts commissioned by City of Burien, June 8 – July 9, 2002.

Figure 1. Seahurst Park – Average Daily Traffic by Day of the Week



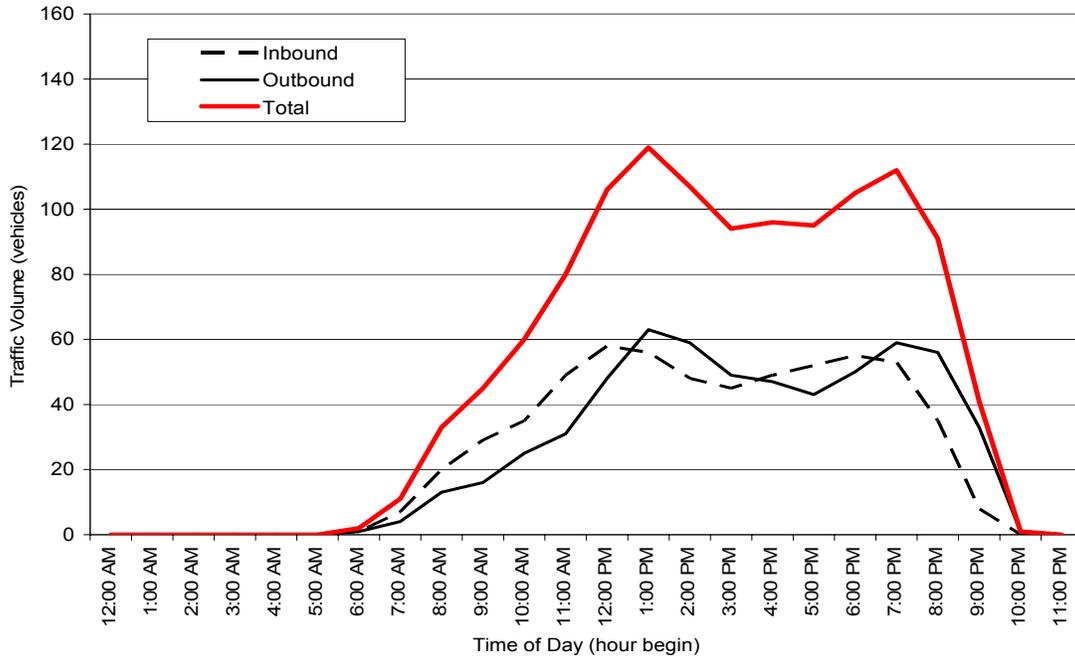
Source: Machine traffic counts commissioned by City of Burien, June 8 – July 9, 2002.

Figure 2. Seahurst Park – Average Peak Hour Traffic by Day of the Week



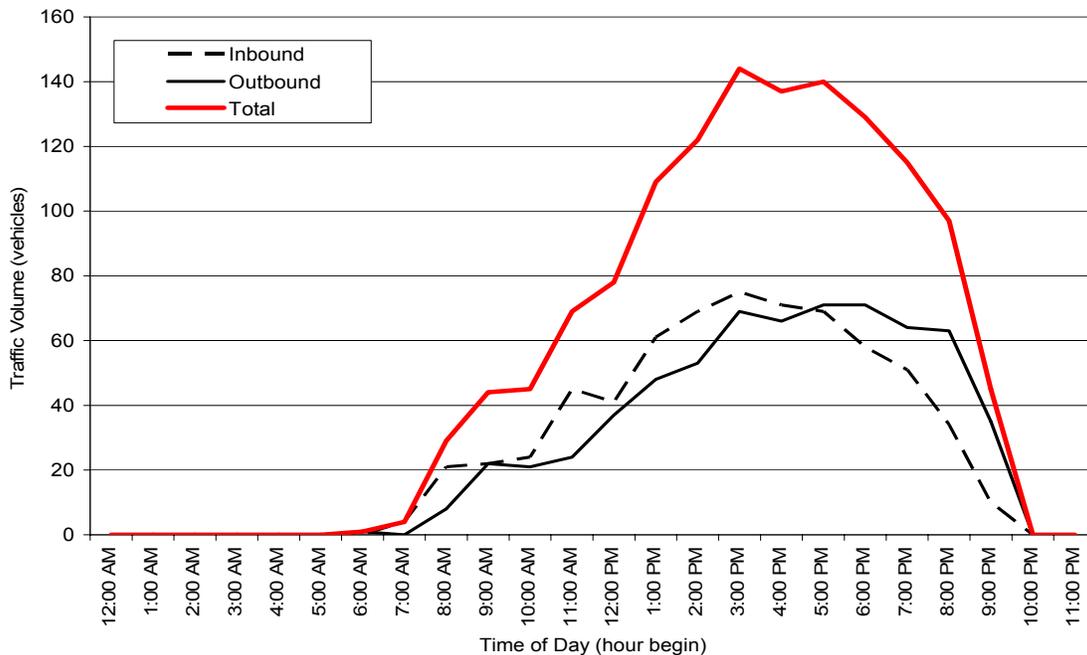
Source: Machine traffic counts commissioned by City of Burien, June 8 – July 9, 2002.

Figure 3. Seahurst Park – Average Weekday Traffic by Hour of the Day



Source: Machine traffic counts commissioned by City of Burien, June 8 – July 9, 2002.

Figure 4. Seahurst Park – Average Weekend Day Traffic by Hour of the Day



Source: Machine traffic counts commissioned by City of Burien, June 8 – July 9, 2002.

Parking Supply and Demand in the Park

Seahurst Park currently has a total of 193 parking spaces located in two main parking lots. The lower lot near the shoreline has 25 spaces, of which three (3) are marked for handicap use; the larger upper lot has 168 total spaces. There is also one space in the lower lot reserved for emergency vehicles only. It is recognized that the most desirable parking areas are closer to the shoreline and the upper lot is less convenient and provides less security than the lower lot. As a result, the upper lot typically has much lower utilization than the lower lot.

The month-long machine traffic count data were used to estimate parking demand within the park. This was accomplished by compiling the vehicle accumulation throughout each day—adding the estimated number of vehicles in the park to the number that enters during each hour, and subtracting the number that exits during each hour. Based on these parking accumulation estimates, the park generated a peak weekday parking demand of 124 vehicles at 12:00 noon on Thursday, June 13, 2002. The park generated a peak-weekend-day parking demand of 153 vehicles at 4:00 P.M. on Sunday, June 9, 2002. On most days, the peak parking demand was lower than these peak days. Parking demand during off-peak months is typically much lower. For example, a parking count at noon on Friday, January 14, 2005 found only 21 vehicles in the park (5 in the upper lot, and 16 in the lower lot).

While there could be a few days with higher levels of use during the year, the data and peak demand levels reported above represent typical peak season conditions. The existing parking supply of 193 spaces is more than the peak demand observed on any day during the data collection effort. While it is recognized that many of the existing parking spaces are not located in the most desirable or convenient areas of the park, the total supply is adequate to meet peak demand.

Site Access

Access to the park entrance occurs from a local two-lane neighborhood street north of SW 144th Street. From SW 144th Street to the park entrance the street name changes as the roadway direction changes. **12th Avenue SW** provides a direct north-south connection to SW 144th Street. The northbound (easternmost) lane is 11 feet wide and the southbound (westernmost) lane is approximately 17 feet wide and provides room for on-street parking. There are sidewalks, curbs, and gutters on both sides and the speed limit is 25 mph. As the road veers northwest it becomes **13th Avenue SW** and eventually becomes the east-west street—**SW 140th Street**—connecting to the park access. Along this section of the roadway both lanes are 11 feet wide and there are curbs and gutters on both sides of the street. There is a sidewalk along one side of the street and there is a flat grassy area that is well maintained for non-motorized use on the other side. There is a pedestrian crosswalk across SW 140th Street prior to the park entrance. The road winds and slopes downhill into the park and the speed limit is reduced to 15 mph.

Transit

Seahurst Park is not directly served by transit, but transit service is provided in the vicinity by King County’s Metro Transit. Bus stops are located on Ambaum Boulevard SW at the SW 144th Street intersection (northbound buses stop on the south side of the intersection; southbound buses stop on the north side). These stops are served by Metro Transit Routes 120 and 133. The stop on the east side (northbound direction) of Ambaum Boulevard SW has a shelter. Table 2 summarizes the Metro Transit bus service in the immediate site vicinity.

Table 2. Metro Routes Serving the Seahurst Park Site Vicinity

Route	Destinations Served	Operating Days	Peak Period Frequency	Off-Peak Frequency
120	Downtown Seattle, West Seattle, White Center, Burien Transit Center	7-days/week	10-15 minutes	30 minutes
133	University District, White Center, Burien Transit Center	Weekdays To University District in the AM To Burien in the PM	30 minutes 30-60 minutes	n/a n/a

Source: King County Metro Online Schedule Effective September 25, 2004 through February 25, 2005.
 N/A = Not applicable, no off-peak period service.

Non-Motorized Transportation Facilities

As described in the *Roadway Network* section above, all roadways in the immediate site vicinity provide non-motorized access. The sidewalks along Ambaum Boulevard SW are a minimum of five-feet in width. These sidewalks extend from SW 149th Street to the north city limits. The bicycle path on SW 144th Street is well marked with roadway stripes and signage. It is in good condition.

The City of Burien has developed a plan for a system of walkways, bikeways and trails for the community to provide greater continuity among the existing non-motorized facilities. It is simply titled “The Plan” and was adopted by the City Council as of June 2004. In “The Plan” there are many improvement projects for sidewalks and bicycles proposed to be completed in the next 20 to 30 years. However, twenty-two projects are listed as high priority and are proposed to be completed within the next ten years. The continuation of the designated bicycle path along SW 144th Street is listed in “The Plan” as a high priority project.

“The Plan” outlines thirteen pedestrian, bicycle and trail facility types. Two path alternatives are offered along SW 144th Street. For one option, the proposed continued path would have five-foot wide bike lanes on each side of the roadway. Additionally, there would be an eight-foot wide parking lane on one side. Walking paths would also be provided on both sides of the roadway. The other alternative would provide a five-foot wide pedestrian-only sidewalk separated from the street by a planting strip or swale.

Project Impacts

Short-Term Construction Traffic Impacts

The Master Plan is expected to be implemented over a long period of time—over approximately 10 years—and the associated construction activity is anticipated to occur sporadically over that period. There may be occasional periods of more active construction activity followed by long periods of no construction. The construction-related traffic impacts of the proposed action would also vary throughout the construction process. Most construction activity and related impacts would occur within the project site boundaries. However, some activities will require use of the local roadways and intersections surrounding the site.

The City and the US Army Corps of Engineers (Corps) have already completed construction of some elements of the Master Plan near the shoreline. This activity was permitted separately through the Corps. The import and export of materials for this activity has been occurring by barge, in part, to minimize the impacts to traffic and the nearby residential neighborhood. It is expected that major future import and export activities along the shoreline will continue to occur by barge. However, it is likely a portion of the construction activity will generate truck traffic for portions of the project.

The types of construction activity that would be most noticeable and that would generate truck traffic are likely to be associated with five elements of construction: demolition and clearing, earthwork, asphalt and concrete paving, shoreline protection, and planting/topsoil. The total amount of truck traffic was estimated based on potential quantity estimates likely to be accommodated by truck prepared for each of these elements. In total, the five elements are estimated to require trucks for about 27,200 cubic yards (cy) of material (about 20% would be imported and about 80% would be expected). The largest portion of the import/export effort would likely be related to redevelopment of the Area D parking lot. This effort is expected to require excavation and export of about 15,200 cy and most of this activity is expected to occur at one time. The potential impact from trucks associated with this portion of the project was estimated to determine the likely worst-case truck-traffic impacts.

The exported materials are expected to be moved using dump trucks with trailers (carrying and average of 15 cy each) or larger belly dump trucks (carrying 20 cy each). Assuming the average truck size is 15 cy, the Area D parking lot excavation would require about 1,015 truck loads. If the efforts were consolidated to a two-month period (42 working days), the export could generate about 24 truck loads per day. Each truckload would generate two trips (one inbound and one outbound) and would most likely occur during daytime hours (8:00 A.M. through 4:00 P.M.). Most construction transportation is stopped by 4:00 P.M. to avoid unnecessary delay to truck drivers from peak hour congestion. Assuming transportation occurs over eight hours each workday, the export efforts would generate an average of 6 truck trips per hour (3 inbound, 3 outbound). The other activities would generate much lower levels of truck traffic and are not expected to occur simultaneously. Since timing of the work will depend on an overall implementation and funding schedule, it is unknown at this time how much of each effort will occur during any one time.

Based on the above estimates, the proposed project would likely generate a noticeable amount of construction traffic on surrounding roadways during the most intense construction activity. Trucks carrying material from the site would be most noticeable and would likely use SW 140th Street, 13th Avenue SW, and SW 144th Street to access Ambaum Boulevard SW. Although the truck traffic would be noticeable, the increase would represent a small percentage of traffic volumes on arterials such as Ambaum Boulevard SW. The truck traffic is not expected to degrade operations of local area

intersections during off-peak hours and impacts during peak hours are expected to be reduced since construction transportation is reduced during these times. However, the truck activity and construction could disrupt some on-site parking.

A construction management plan (CMP) addressing traffic and pedestrian control within the park should be prepared to address truck routes, access, and facility closures, if necessary. This CMP should address lane closures, parking lot closures, and trail or sidewalk closures where required. To the extent possible, the CMP should direct trucks away from residential streets to avoid unnecessary conflicts with resident and pedestrian activity.

The presence of a temporary construction work force would also generate demand for parking spaces within the park. However, the number of construction workers on-site at any one time is expected to be relatively small. Since the site currently has some excess parking supply (even during peak season periods), there should be adequate parking supply to accommodate the construction related demand.

Roadway Network

The proposed Master Plan is not proposing changes to the off-site roadway network. However, it would include new pedestrian access to park from Ambaum Boulevard SW and residential neighborhoods to the north. No adverse impacts to the roadway network are anticipated from the project.

Traffic Volumes

The proposed Master Plan is expected to enhance the quality of the park and improve the user's experience, security, safety, and convenience. As a result, it is likely that the Master Plan improvements will result in increased use of the park. However, as demonstrated by the peak season traffic data presented previously, the park is currently well used during the peak times such late spring, summer, and when tides are very low. As a result, the number of users and peak traffic during these times are not expected to change substantially. Rather, the improvements may result in increased activity during off-peak times. The project is not expected to adversely impact traffic volumes in the local site vicinity.

Safety

The proposed project is not anticipated to result in any changes that would adversely affect local traffic safety conditions. The improvements to parking and the access driveway within the parking are expected to further slow traffic speeds and calm traffic during peak use times.

Parking Supply

The proposed Master Plan would maintain the same number of parking spaces (193) as currently exists in the park. The location, access, and security of the parking spaces would be improved. Based on the analysis of existing conditions, the park generated a peak parking demand of 153 spaces on Sunday, June 9, 2002. While these counts were not performed at the very lowest tide of the year

(when peak park use often occurs) they were performed during high use and provide a good estimate of typical peak conditions. Parking demand during off-peak periods is much lower.

The peak parking demand determined from the June 2002 counts is lower than the parking supply that would be maintained in the park. While it is possible that during some low-tide conditions, the peak parking demand on one or two days per year may exceed this level, the proposed parking supply would accommodate the peak demand on nearly all days of the year. The reallocated parking lots and improved security would increase the likelihood that spaces would be utilized. During peak-use periods, the parking along the main access roadway would serve to calm and slow traffic and improve the safety of vehicular and pedestrian access within the park. If peak parking demand were ever to exceed the supply provided, overflow parking could occur just to the north of the park entrance and along 16th Avenue SW on the east side of the road, at the Senior Center Parking lot, or in areas near pedestrian access points. The proposed Master Plan is not expected to adversely impact parking conditions in the local area.

Site Access

The proposed Master Plan elements would reconfigure parking within the site and along the main site access drive. Overall, the proposed parking lot and access revisions are expected to improve accessibility and provide more convenient access between the parking lots and destinations within the park. The element that would provide signage and consistent identity to park entrances would also improve access and would reduce the amount of unnecessary extra travel that may occur when visitors miss the entrance or are confused about its location. No major changes are proposed for the main vehicular site access and no adverse impacts from the Master Plan improvements are expected.

The Master Plan would include a new pedestrian-only access to the park from the neighborhoods east of Ambaum Boulevard SW and from the Senior Center. These new pedestrian-only access points may reduce the amount of vehicular traffic at the main entry since some local visitors that might otherwise drive to the site would be able to walk.

Transit

The project site area has limited transit service. While some park users could arrive at the site on King County Metro Routes 120 and 133, this is not expected to be a primary mode of travel for park users. The proposed Master Plan would not adversely impact transit facilities or service in the area.

Non-Motorized Transportation Facilities

A major element of the proposed Master Plan is to improve and enhance pedestrian access to and through Seahurst Park. Trails and walkways within the park would be improved, and where necessary, the grades of many walkways would be reduced and/or the surface condition upgraded. New pedestrian access points would allow more local residents to access trails and areas of the park that are likely now only accessed by vehicle. The project would improve and enhance pedestrian access in the area.

Summary & Mitigation

The proposed Master Plan project is not expected to increase peak period traffic generated by Seahurst Park. The improvements proposed are expected to enhance the user's experience and may increase activity at the park during off-peak times. The Master Plan would also improve pedestrian access and overall security in the park. No adverse impacts to the roadway network, traffic volumes, parking demand, transit, or non-motorized facilities are anticipated. The project would improve site access through better signage and identity.

During the more intense periods of construction on the site, the export and import of material could generate a noticeable amount of truck traffic on local roadways. Therefore, it is recommended that for these periods, a construction management plan (CMP) be developed that addresses truck traffic and pedestrian control. It would identify truck routes lane closures, parking closures, and trail and sidewalk closures, if any are required. To the extent possible, the CMP would direct trucks away from residential streets to avoid unnecessary conflicts with resident and pedestrian activity.

No other transportation-related mitigation would be required to accommodate the proposed Seahurst Park Master Plan improvements.

TSM/tsm