

Semiahmoo Bay - Marine Park Wildlife Protection Plan

for: **City of Blaine**
Department of Community Development
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Thank you to all,

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INTRODUCTION

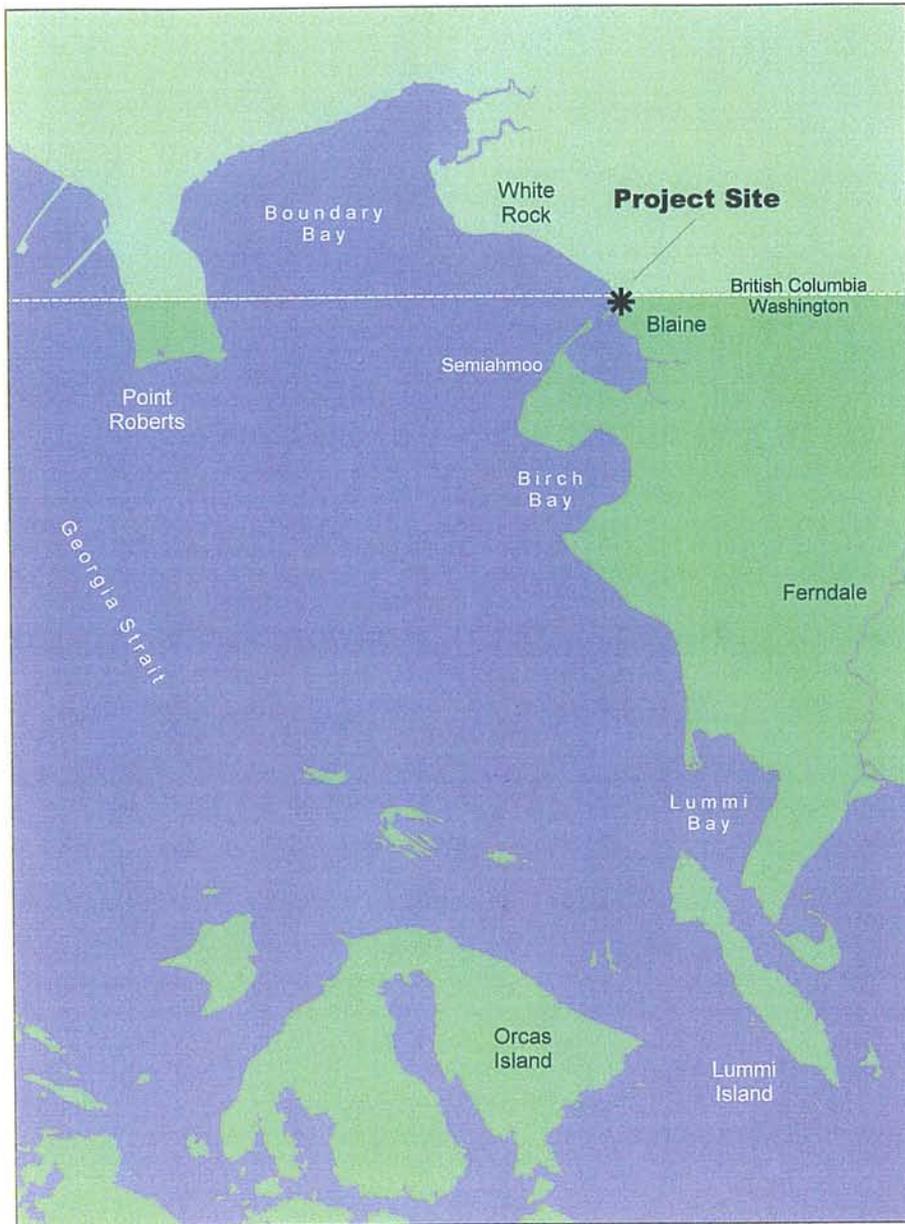
The City of Blaine is in the process of long-term plan development for Marine Park situated on the shore of Semiahmoo Bay. Semiahmoo Bay extends north and west, across the United States - Canada international boundary. As a shallow embayment, Semiahmoo harbors rich habitat and diverse wildlife. The park is one of two City owned shoreline parks, including Monfort Park and one of two public shoreline areas in the City, the other being Semiahmoo County Park located on Semiahmoo Spit. Marine Park, a previous landfill site, is now a pleasant open park with lawn, native vegetation, picnic areas and trails. Situated just north of the Blaine Harbor marina and associated development, the park offers a natural setting with unobstructed views, beach access and has become a popular bird watching destination.

Marine Park has undergone previous planning processes. The most recent plan for Marine Park was the result of over ten years of citizen effort and included a Marine Education and Resource Center to help educate the public about the local history, the fishing industry, marine natural history and wildlife. Although the Marine Education and Resource Center was planned and supported by citizens, it did not receive the funding necessary for the entire construction project. However, portions of the original plan were funded and completed as of December 2001 including: an entry sign and salmon wall, orca sculptures, amphitheater, four picnic shelters, a large viewing platform, a network of trails, interpretive signage and landscaping. The park to-date is popular for dog walking, bird watching, picnics and summer civic events.

As use of the site increases and public shoreline access becomes more in demand within the region, the need to define long-term management of the site and its use is necessary. Due to the rich wildlife attributes of Marine Park and Semiahmoo Bay, attracting international recreational birders, it has become increasingly important to protect wildlife concentrations from human disturbance, while providing viewing opportunities and other non-related public use features and facilities. With proper planning, primary uses at the park and adjacent areas will be identified and potentially conflicting uses can be separated to protect sensitive wildlife and habitats. In addition, recommended habitat enhancement measures would benefit existing wildlife and likely attract greater diversity.

Purpose

The purpose of this Protection and Management Plan is to provide directives for the protection and enhancement of wildlife and its habitat within the park and associated tidelands. This will be accomplished by assessing the wildlife and habitats, as well as the public use potential of the site, and devise methods to protect wildlife, and enhance habitat while providing viewing and educational opportunities and shoreline access. The planning process has incorporated citizen input and community involvement and is intended to balance wildlife needs with public use and education with the ultimate goal to build an appreciation for the uniqueness of the site and maintain and enhance the area's natural attributes.



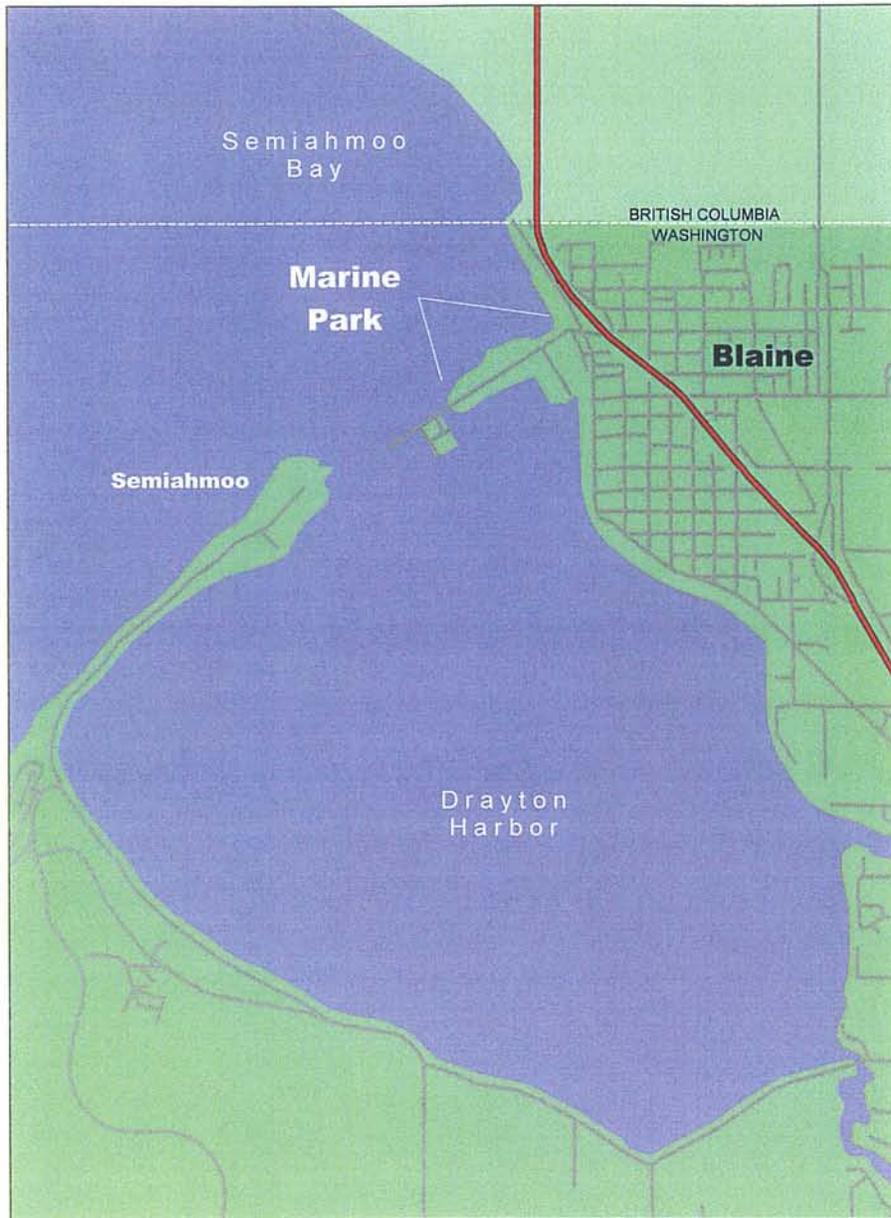
Semiahmoo Bay Wildlife Protection Plan

City of Blaine

Project Vicinity



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Semiahmoo Bay Wildlife Protection Plan

City of Blaine

Marine Park Project Area



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Land Ownership Map



SETTING

Marine Park is a shoreline public use area located in the City of Blaine, near the U.S.-Canada border in the northwestern corner of Washington State. The location is described as Township 41N, Range 1W, Section 36. According to the 2000 census, Blaine has a population of 3,770 and has no major industry or business (MacGregor's 2001). Marine Park is a 7-acre site situated on a peninsula of land west of the downtown core (see map). Semiahmoo Bay lies to the north and Drayton Harbor to the south of the peninsula. The peninsula is bisected east-west by Marine Drive with the park to the north and Port of Blaine facilities, marina and fish packing and processing to the south (photo 7). This separation of use allows for a clear division of activity and helps avoid conflicting uses. The proposed division is, wildlife activities on the north side of the road and tourist activities on the south.

Marine Park is a 1,625 foot (0.308 mi) long strip of upland and shoreline stretched along the southeast shore of Semiahmoo Bay. The current park is primarily open space with development limited to walkways, picnic tables, small picnic shelters, a raised deck - viewing area and an amphitheater (photos 1-5, 15). City maintained restroom facilities are limited to public use between the months of May-September. Parking is available both at the park and across Marine Drive at the Port of Blaine, where additional public restrooms facilities are also located (Blaine 2001).

Although the Park is owned by the City of Blaine, ownership of the tidelands is mixed with City, State (Washington Department of Natural Resources) and private holdings (see ownership map). In addition, the eastern edge of the Park and shoreline is controlled by a railroad right-of-way owned by Great Northern Railway Company. The Marine Park upland is designated park-open space and managed for that purpose by the City of Blaine, however the zoning is Marine Commercial.

Habitat within the park and adjacent area consists of low gradient shoreline with a relatively level upland (photo 15). The upland is dominated by mowed lawn with a small fallow wet-meadow at the center and some rough fallow edges, primarily along berms and the shoreline (photos 15, 18, 19, 20). The upland-shoreline interface ranges from fallow grasses to mixed shrubs and small trees. Sand and soft-sediment intertidal habitat extends north and west from the shoreline edge to the international boundary.

At the eastern limit of the park is the outflow of Cain Creek, forming a willow-lined estuary and sinuous channel leading into Semiahmoo Bay (photos 11 & 12). The tidelands extending from the shoreline are vast and when exposed during low tide provide contiguous intertidal habitat north to White Rock, British Columbia (photo 16, 17). It is this estuary and associated intertidal mudflats that provides the park with its rich wildlife habitat and significant sensitivity due to the large avian concentrations and rare species occurrence. These features, combined

with the location of the park along the Pacific Flyway (a major north-south bird migration route) add to the attractiveness, drawing large flocks of migrating and wintering birds to the area (photo 13).

The western edge of the park ends with the merging of the upland and shoreline with the jetty supporting Marine Drive (photo 22). Access further west is limited to the roadway. The park and public access could be extended by a proposed 1,262 foot (0.239 miles) board walk on the north side of Marine Drive along the jetty. The walkway would connect the park to the public pier and Plover Ferry dock. The Plover, an historic boat built in 1944, and currently provides service to foot passengers from Blaine to Semiahmoo Spit on weekends from May to September (MacGregor 2001).

To the south of Marine Park, the Blaine Harbor provides moorage for up to 182 commercial fishing boats and 863 pleasure boats. The primary use of the remaining filled in land along Marine Drive is commercial marine fisheries support and industry. The Seafarer's Memorial is also part of the harbor facilities. Other services provided by the Blaine Harbor are public boat launch facilities and marine dry storage (Blaine 2001). In 1990, the marina was expanded by 13.85 acres (Adolfson 1990). The dredging of the shallow tidal flats in the marina displaced shorebirds by removing a prime feeding habitat. Many of these birds now likely use the Semiahmoo Bay side of Marine Park for foraging and rest.

Drayton Harbor and Semiahmoo Bay are the two primary waterbodies associated with Marine Park. Semiahmoo Bay to the north, is a large embayment open to the west directly to the Strait of Georgia, and is bisected by the U.S. - Canada international boundary. Drayton Harbor is a 2,500 acre estuarine embayment south of Marine Park. The natural setting of Drayton Harbor is best described as marine shoreline and intertidal area. Fifty percent of the bay is intertidal (+10.0 feet to -3.0 feet (Kozloff 1983)) and the rest is less than 30 feet deep. The Blaine harbor is linked to Semiahmoo Bay through a narrow inlet between Semiahmoo Spit and the Blaine Harbor marina. Fresh water from Dakota and California Creeks empty into Drayton Harbor creating a rich estuarine habitat (Eissinger 1994). While Cain Creek empties into Semiahmoo Bay on its southeast corner adjacent to the east side of Marine Park (photo 11).

Drayton Harbor and Semiahmoo Bay have a history of fecal coliform (f.c.) pollution which finally closed the area to shellfish harvest in 1999. In 1995, a pollution study of Semiahmoo Bay and Drayton Harbor attempted to pinpoint the sources of fecal coliform. Cain Creek was one of the sites sampled. It's f.c. levels during a low flow event (June) fell in the 1,000 to 9,999 col/100 mL division where as after a heavy rain (July) the f.c levels rose to the <10,000 col/100 mL division. Both times the sites were considered high priority for the addition of pollution into Semiahmoo Bay (Matthews 2001). The source of the pollution continues to be investigated. This pollution could affect the health of wildlife using the intertidal area near Cain Creek as it could bioaccumulate in prey items.

The central portion of Drayton Harbor and the shallow edges of Semiahmoo Bay are filled with eelgrass meadows and macro algae beds making them prime rearing habitat for juvenile anadromous and marine fish. The eelgrass meadows and macro algae beds are known herring spawning areas. Semiahmoo spit also contains both surf smelt (*Hypomesus pretiosus pretiosus*) and Pacific sand lance (*Ammodytes hexapterus*) spawning beaches. Since spawning beaches are found on Semiahmoo Spit directly across from Marine Park and the jetty contain both species, it is therefore likely, that spawning occurs on the gravel beaches along Marine Park as well. Marine birds use Semiahmoo Bay and Drayton Harbor for feeding and rest during migration as well as a year-round home. They feed on the fish and intertidal organisms in the bay. Further degradation of intertidal habitat will decrease the diversity of habitat and the type of available marine invertebrates for shorebirds to feed on.

Adolfson (1990) states the considerable interchange of birds between Drayton Harbor and Semiahmoo, Boundary and Birch Bays and into nearby farm fields is important and should be recognized. These movements are influenced by tide, season, weather and daily activity patterns and as a result of this flux, the seasonal and daily habitat use, wildlife distribution and concentration will vary. However certain habitats or areas will maintain consistent use and concentrations, these areas include: creek mouths, wildlife colony sites such as the Semiahmoo seal colony and cormorant roosts and bald eagle nest territories. In addition, creek channels, protected shoreline and specific substrates will continue to provide high quality habitat.

BACKGROUND INFORMATION

Area History

The area history was provided by Jan Hrutford of Blaine, from articles previously published in the Blaine Banner and Northern Light, as well as, a yet to be published site history based on an interview with Travis Skallman also of Blaine.

The first people to live in the area surrounding Drayton Harbor and Semiahmoo Bay were the peaceful Semiahmoo people. They were a member of the Salishan tribes which draw their name from the common language that was used for trade throughout the inland sea, now referred to as the Salish Sea. The Salish Sea includes Puget Sound, the Strait of Juan de Fuca and the Strait of Georgia and all waters in between. The Semiahmoo's hunted in the upland for elk and deer and along the shoreline for clams, oysters, crabs and other marine creatures. During the large runs of salmon, they fished in Dakota and California Creeks. They also gathered berries and other greens from the local hills. Although a peaceful people, they were raided by war-like tribes in the north (such as the Haida) and had to defend themselves. Unfortunately, their defenses were largely unsuccessful and the Semiahmoo's were decimated by the raids. By 1909, the tribe had only about 38 members.

In the mid-1700's, Spanish and English explorers began to chart and write about the Pacific Northwest. Between 1792 and 1793, Captain George Vancouver explored and charted the Strait of Georgia and adjacent waters. At that time, the many locations within the area were given names including Point Roberts and Birch Bay. In 1841, Lieutenant Charles Wilkes was surveying this area for President Martin Van Buren. He named Drayton Harbor after Joseph Drayton, one of the civilian artists in the crew who was charting the land and wildlife present. First, the two water bodies were known as Drayton's Cove and Drayton's Bay.

In 1858, the United States and Great Britain were surveying the 49th parallel in order to mark the division of the U.S. and Britain (Canada). At this time, Drayton's Bay was renamed Semiahmoo Bay and Drayton's Cove was renamed Drayton Harbor. During this time, two towns, both named Semiahmoo, sprouted up. One town was located on the spit and the other on the mainland where the City of Blaine now stands. Farming, logging and fishing were the primary industries supporting these two towns. Settlers came by ship, but due to the lack of docking facilities, they had to be rowed ashore with their belongings while their livestock was forced to swim. By 1884, the Semiahmoo town on the mainland had been named Concord. However, the Republican presidential candidate of that year was named James Blaine. Since everyone in the community supported him, the town was renamed Blaine. James Blaine lost to Grover Cleveland, but the City of Blaine retained its name with James Cain as the first mayor. At this time the area surrounding the town was heavily forested. Settlers cleared the land for farming and sold the timber to the sawmills.

In the early 1870's, a salmon barrelling facility was built at Semiahmoo and was the first fishery industry in Puget Sound or the Strait of Georgia. This plant was only open for two years. Then in 1881, the first cannery was built in Whatcom County. In 1888 the first wharf was completed and two others followed a short time later. In 1892, D. Drysdale opened the first modern fish cannery in Whatcom County at Semiahmoo. In 1893, a second cannery was built on Point Roberts. Alaska Packers Assn, bought both canneries in 1894 and built the largest cannery in the world at the time on Semiahmoo Spit. By 1897, four canneries had been established either at Semiahmoo or Blaine. For a few years, the City of Blaine was a bustling community of around 18,000 people.

Marine Park Site History

As the sawmills moved inland with the forest edge, the canneries became the main industry in Blaine. In 1935, the Army Corps of Engineers filled in a wharf located under the now existing Marine Drive to create the roadway. They did not remove the pilings which have since rotted or settled creating the bumpy portions of Marine Drive. Marine Park was originally the site of the Morrison Mill. After the mill closed, it became the city dump. The oldest part of the dump was located where the old sewage treatment plant is. The dump expanded eastward to the edge of Cain Creek. On the north side of the terminus dock, a layer of scrap metal from the old canneries is rusting to form a solid tin layer.

Around the time the I-5 was being built, a twenty-five foot wide berm was created around the dump because the City of White Rock complained of garbage floating their way. Clay removed from between H and D streets where the freeway runs is the primary component of this berm. The dump was filled with gravel and dirt to neaten its appearance. In the 1960's, a storm carried the fill at the end of Marine Drive away. It was decided to barge rock in from Lummi Island to fill in the areas washed away. The fill process is being repeated after a storm in December of 2001 washed away more of the fill.

Many of the existing deck structures are located on the clay berm while the salmon wall and auditorium are located on the filled portion of the dump. The totem was raised in 1995. The carving was started by local teacher Phil Claymore. Phil was a enthusiastic marine biology instructor and spent many hours sharing his knowledge with his students on the beaches of Marine Park. In 1990, after his death, some of his former students finished carving the last third of the pole as per Phil's design. The pole was raised with traditional native American prayers, songs and dances and serves as an important reminder to an exceptional teacher (photo 5, 18).

A History of the Blaine Marine Education and Resource Center

The City of Blaine and the Marine Education Foundation began the process of planning the development Marine Park in 1986. The Foundation was organized in 1987 and a conceptual Interpretive Exhibit Program and Design plan was submitted in July of 1988 by Vincent Balinsky and Associates, a Seattle based design firm. Permits for the project and preliminary construction drawings were submitted in June of 1990. By 1990, some of the funding was obtained and portions of the original project were completed as of 2001. The project consisted of two phases, Phase 1 was Marine Park and Phase 2 was the Marine Education and Resource Center to be located on the park grounds.

In 1991, an investigation into the project commenced due to concerns about toxic substances leaching into the park and adjacent waters or being disturbed during construction of the Marine Education and Resource Center. High levels of organotins and heavy metals were found and it was recommended to keep the cap on the landfill intact and take care with building ventilation in the proposed facility to decrease exposure to the toxic substances by employees and visitors.

In spite of public support, full funding for the project was not attained and only portions of the project had been completed as of December 2001. Phase 1 contained three parts the amphitheater, observation tower and picnic area. Only the amphitheater and picnic area were completed. The original design for the picnic area was to include only the west end of the park. However, four picnic shelters were completed along the shoreline and picnic tables were located at the west end of the park. At the west end picnic area, a totem pole was added in 1995. Phase 2 consisted of educational and art exhibits. The orca sculptures and salmon wall were the only two portions of this plan to be fully completed. Also a portion of the interpretive signage was completed and placed along the shoreline path where they stand today.

Current Use and Management

Park Use

Marine Park currently has two types of uses, general day use and planned events. Day use brings the most people to the park. Day use activities include bird watching, kite flying, picnicking, walking, jogging, in-line skating and bicycling. Many people also bring their dogs to the park for exercise. The park also hosts scheduled events including the largest scheduled event, the Skywater festival in mid-June. This community fair brings thousands of people to the park over a two-day period. Other events include the Fourth of July fireworks display and festivities, K-9 unit demonstrations, concerts and memorial and church services. Unfortunately, no numbers for the types of use and visitorship are available.

The park is open to the general public, allowing a variety of people to use its facilities and learn about its habitats through the educational signage available. The walkways and trails are consistently used by walkers, joggers, bicyclists, skaters, site seeks, birds watchers and probably most of all dog walkers (photos 1-5). Seasonal use likely changes frequency and abundance of trail use. In addition people use the trails to access the public beach and picnic areas.

The current path network in the park provides excellent separation of activities. Bicycles and in-line skaters use the paved path along Marine Drive, while walkers and joggers can avoid these speedier sports by using the gravel path along the water (photo 9). It is recommended that the internal park paths be maintained as gravel to prevent future use conflicts between wheeled and non-wheeled humans.

Beach access is limited to shoreline areas at the west end of that park. Two protected pocket beaches make up the public use area and one trail provides a direct connection to the beach. Signage is clearly posted to prevent access to other beaches and intertidal areas east of Shelter #3 (photo 4, 17).

Park Facilities

The picnic shelters are nice covered, open-walled facilities, that can be reserved. There are four shelters and these may also be used by birders in the fall and winter, when demands for picnic space have diminished. Picnic tables are also available on the bluff and offer a quiet, secluded picnic experience.

The amphitheater on-site receives little use. Concerts or community events should be scheduled regularly for this facility as it holds great potential for hosting community educational and arts events. An excellent use for the amphitheater would be nature and history

programs, folk musicians and summer theater. The public could be informed and entertained so that their appreciation for the wildlife, habitats and history of Marine Park and surrounding uplands is increased.

The large deck platform area provides excellent views and seating for visitors. It is however, under-utilized and could be a central location for interpretive and educational signage. By centralizing additional interpretive signage, clutter of the view and the devaluation of the natural setting is avoided.

The interpretive signs, already in place, inform the public of the park's history and habitats; however, interpretive and enforcement signage could be increased. The current interpretive signage have been enjoyed and are frequently used by new visitors. A plan to rotate the signs would make them more interesting for frequent users. The regulatory signs are located at the entries to the park and along the shoreline fence to limit access to sensitive beach and intertidal areas. The signs restricting access are effective in part by their placement and also by supportive fencing.

On-site restroom facilities are limited to use from May to September. However, excellent restroom facilities are available directly across Marine Drive at the Blaine Harbor marina and provide for use year-round. The addition of crosswalks to Marine Drive for pedestrian crossing is necessary for public safety.

Park Use and Wildlife Conflicts

Negative impacts by users of the Park pose management concerns and concerns for wildlife. First and foremost is the use by dog owners. Dogs are required to be on leash or voice command. Unfortunately, dog owners allow their pets to run free on the tidal flats. This results in the direct disturbance and harassment of wildlife which was witnessed repeatedly by the Biologist during the preparation of this report. In addition many dogs are allowed to deposit feces at will without clean up. This has led to a park littered with fecal matter, as few of the owners clean up after their pets even though pooper scooper bags are provided at the park entrances. Unaccompanied children are also allowed on tidelands, this presents safety issues for those children and any wildlife they may contact. Small craft, such as personal watercraft that can enter shallow areas and move at high speeds, have the documented potential to significantly disturb and injure wildlife. Observations were made of personal watercraft users flushing cormorants and gulls from nesting sites along the breakwater and herons from foraging areas.

With the permanent loss of key habitats in Semiahmoo Bay and Drayton Harbor, wildlife concentrations have had to adapt and in some cases crowd into areas that make them more vulnerable. As a result, mishaps and negative human-animal interactions have become

intensified.

It is well documented that uninformed boaters may approach animals too close, as was witnessed at the Semiahmoo Marina, while a motorized boat came within feet of the harbor seal colony, to allow a grandchild to "see and possible pet" the harbor seals! In the process the boat caused a panic in the colony and flushed most of the seals (many of which are pregnant), plus a large flock (several hundred) of migrating common terns, from their resting place on the floats. If this had taken place one month later, during pupping season, pups could have been killed or injured in the panic. This was not only misguided, but a violation of federal law.

The Fourth of July fireworks display over Semiahmoo Bay, may stress wildlife and introduces trash and debris from the explosives into the marine environment. The fireworks can be especially stressful to the harbor seals as they are in the middle of their pupping season and abandoned pups could result from the noise.

Finally, enforcement of the park policies does not seem to be present as there is no permanent staff. The dog and wildlife harassment policies are especially important and should be enforced in order for the wildlife management policies to be effective.

Park Management and Regulations

Management of Marine Park is the responsibility of the City of Blaine. Currently, the City supports the maintenance of the park, yet little on-site management. Enforcement of the Park's regulations is performed by the Blaine Police and concerned citizens. Planning and management of the Park is directed by the City of Blaine Department of Planning and the Blaine Parks Board.

The City of Blaine has a set of regulations in place and have been included in this report on the following pages.

Blaine City Park Regulations:

This is an abridged list of the City Park regulations Chapter 12.32 Blaine Municiple Code.

1. The park is closed one hour after sunset to one hour before sunrise, except for special scheduled events.
2. Prohibited activities include:
 - a. alcohol and drug consumption or possession,
 - b. selling articles without permission from the City,
 - c. posting or distributing flyers regarding goods for sale, events or meetings,
 - d. soliciting or interfering with others for selling, begging or immoral acts,
 - e. vandalism of any structure, vegetation, wildlife or vehicle on the site,
 - f. planting or placing structures, monuments or vegetation,
 - g. the use of plastic flowers or glass containers in a cemetery between April and October,
 - h. discarding of household garbage,
 - i. using all terrain vehicles,
 - j. riding horses except in designated areas, providing the animal is under control at all times.
3. The city or police department is responsible for enforcing all codes, rules or regulations regarding the park. The city can designate a public safety officer to enforce the park codes.
4. Permanent signage or structures cannot be posted in the park without written consent of the city manager or designee. Approved temporary signage and decorations for scheduled events may be placed in the park for the duration of the event. After said event, all signage and structures must be removed.
5. Firearms and explosives are not allowed in the park except for the city sponsored Fourth of July display.
6. Dogs or other animals may not run at large throughout the park, except guide, service or law enforcement dogs. Animals must be controlled and fecal matter removed by owner or handler. Animals may not disturb park personnel.
7. Wildlife must not be molested, harassed, disturbed, injured, captured or handled by persons and their dogs or other pets in the park and associated land.
8. Camping is not permitted except in designated camp areas.
9. Littering or dumping is not allowed. All refuse must be deposited in the containers provided. Litter receptacles are for park users only.
10. Fires are not allowed in parks except for designated firepits.
11. Organized events are regulated by the parks and cemetery board for the safety, comfort and convenience of the public and to allow the maximum use of the facility. Individual

- and family activities must be allowed in the park during organized events.
12. A written application is required for a scheduled event permit. This permit holds the city harmless for loss, damage or injury for persons attending the event. A permit may be revoked if regulations are violated.
 13. Consumption of alcoholic beverages and open containers are prohibited in any city park or city park area.
 14. The city manager may close any section of the park at any time either temporarily or for state intervals. Permanent changes require a recommendation from the park and cemetery board to the city council.
 15. Violations of these regulations are misdemeanors and carry a maximum sentence of 90 days in jail or \$1,000 fine.

DESCRIPTION OF BASELINE CONDITIONS

Water Resources and Nearshore Habitat

The primary waterbodies associated with the project area are Semiahmoo Bay and Drayton Harbor. Information is limited on Semiahmoo Bay because much of the bay lies within Canadian waters. Drayton Harbor on the other hand has been studied frequently. Due to its proximity and similar habitat to Semiahmoo Bay, much of the ecological information for Drayton Harbor can be extrapolated to the Semiahmoo Side of Marine Drive. Both bays are estuarine marine embayments, with significant intertidal area.

Although Drayton Harbor offers habitat opportunities for numerous species, the water quality is impaired. Semiahmoo Bay faces similar pollution issues, although more of the pollution sources stem from the Canadian side of the bay (Goble 2001) and thus are out of the City of Blaine's hands. Past water pollution in Drayton Harbor has stemmed from leaking septic systems, urban runoff, marina and industrial pollution and agricultural runoff (Webber et al. 1990). According to a more recent study (DHSPDAC 2000), high fecal-coliform levels in Drayton Harbor rise primarily from the City of Blaine's sewer system and the fish processing plants along Marine Drive. Site specific conditions are being studied and corrections made to improve water quality. Semiahmoo Bay is more open to water exchange from the Strait of Georgia and thus has less concentrated pollution, however still exceeds safe limits for shellfish gathering. Both bays have significant eelgrass meadows and marine algae beds which are used extensively by fish and birds.

One permanent freshwater natural stream, Cain Creek, empties into Semiahmoo Bay adjacent to the east side of Marine Park. Campbell Creek also flows Semiahmoo Bay from just north of the international boundary. Dakota and California Creeks are located south 1.88 and 2.55 miles respectively from Marine Park in Drayton Harbor. These streams provide both bays with estuarine habitat which is utilized by dependent wildlife species. The latter three streams are particularly important because they contain anadromous fish populations which may migrate and rear near the park .

Nearshore wetlands and salt marsh occur in patches throughout Drayton Harbor and Semiahmoo Bay. Although, many of the saltmarsh areas have been filled or disturbed, several pocket shoreline saltmarshes exist near or along Marine Park. One such site is south of Marine Drive, adjacent to the boat launch facility and parallels the railroad tracks (Photo 10). This site was likely a remnant of the historical estuary of Cain Creek, and now is a disturbed freshwater wetland strip from Marine Drive extending south to Drayton Harbor where it transforms into a functional saltmarsh. Restoration of the fresh water (upland) portion of this wetland would greatly benefit the habitat value.

Vegetation

Upland vegetation associated with the southeast corner of Semiahmoo Bay, including Marine Park is primarily four plant communities: shrub, wetland shrub, fallow field and cultivated lawn. The shrub community includes the willow dominated mouth of Cain Creek and shrubby shoreline edges along Marine Park (Photo 12); shrub dominated (*Spiraea sp.*) wetland is located south of Marine Drive, east of the Marina (Photo. 10). The fallow field located in the center of Marine Park is dominated by a variety of grasses and herbaceous plants (Photo 20). The cultivated lawn is the area maintained by mowing. Other areas include fallow edges, salt marsh and both native and non-native trees. There is no forest, however the trees that are present offer significant habitat features including, perching, nesting, shelter, food and soil nutrients.

An inventory of plant species occurring at Marine Park and associated shorelines is needed and should be compiled during the growing/flowering season. A list of potential plant species present on site was adapted from a 1990 permit application document for the Marine Education and Resource Center (Associated Project Consultants, Inc.). The adapted plant list is included in this document in Attachment D.

Semiahmoo Bay and Drayton Harbor both have extensive eelgrass beds. These areas contain both native and nonnative species, *Zostera marina* and *Z. japonica*. Eelgrass is essential rearing habitat for salmonids and provides herring a place to spawn. It is also a vital food source for birds particularly the brant. Other marine related vegetation includes the salt marsh plants such as *Salicornia*, which is found between Shelters #1 and #2 (Photo 13).

Native Semiahmoo Bay upland vegetation on the U.S. side has been replaced with buildings and pavement. At the southern end of Drayton Harbor, fallow fields, native grasses and forest still occur.

Soils and Hydrology

According to the Soil Survey of Whatcom County Area, Washington, (Goldin 1992) three types of soils are found near the project area. The soil in the project area is Blainegate-Urban land complex (16). Hydraquents, tidal (75) and Yelm-Urban land complex (192) are adjacent to the project area).

The soils directly under Marine Park are deposits from when the area was a landfill. The primary natural soil is quite deep, poorly drained and has very slow permeability. The adjacent soils on the Blaine Marina side are poorly drained with a very high water capacity. The upland soils for the project area produce very slow run-off and low erosion danger. The upland soils

are moderately well drained with rapid permeability and high water capacity. All soils have a seasonally high water table due to their proximity to the bays.

Wildlife Occurrence and Seasonality

The vertebrate wildlife occurrence at Marine Park is predominately avian due to the restricted nature of the upland habitat and lack of adequate wildlife travel corridors linking Semiahmoo Bay to natural areas to the uplands east. As a result of the existing habitat conditions, marine associated birds occur in the greatest numbers and concentrations along or near the park. These species are supported by the intertidal habitat and associated invertebrate organisms utilized as food. The most notable and sensitive species occurrence are migrating shorebirds, many of which are unusual or rare. Upland birds are limited by habitat availability, but do occur in lesser concentrations. Other wildlife including amphibians, reptiles and mammals may also occur on site, however little is known about species specific occurrence, abundance and frequency within the upland areas. Marine and anadromous fish and marine mammals are also an important faunal components of the area's wildlife list, and although restricted to in-water habitat, fish play a significant role in the overall ecosystem of Semiahmoo Bay and Drayton Harbor.

Terrestrial Habitat and Associated Species

Terrestrial habitat and species of Marine Park and Semiahmoo Bay are those areas and animals which primarily dwell on land. The upland area of the park is a mix of maintained lawn, few trees, fallow field/wet meadow and rough/fallow edges particularly at the shoreline-upland interface with grasses and shrubs. The habitat value of the upland with the exception of the fallow field and edges is low. Habitat requirements for wildlife include water, food, shelter and space. Terrestrial species diversity of Marine Park in particular is limited, given the recent history of the site used as a garbage dump (1970's) and the lack of well vegetated upland corridor for wildlife to travel.

Lawn, in habitat terms, is popularly referred to as "desert" or an area lacking structural value and necessary features to support the basic survival of most wildlife. Species utilizing lawns are ubiquitous American robins, starlings, crows and gulls. Moles also will utilize lawn areas if more optimal habitat is lacking.

The best terrestrial habitat at Marine Park is its vegetated edges along the shoreline which offers the greatest habitat value with structural cover, food and connectivity along the shoreline-upland interface. Even with the shrub component, the habitat is degraded in areas with invasive weeds (reed canary grass, Scot's broom and japanese knot weed) and lacks an overstory or quality vertical habitat structure for nesting and perching. The shrubby edge at the outfall of Cain Creek is a good example of native habitat, that would optimize wildlife use for that location. The wetland area south of Marine Drive, east of the marina, is well vegetated with shrubs and some trees, however it is also somewhat isolated and therefore has reduced habitat value.

Habitat features lacking in the upland are native trees and shrubs. The existing trees are either ornamental or poorly suited for wildlife due to vertical branching (poplars). The addition of perch trees would greatly enhance the site for raptors, passerines and woodpeckers. A few added evergreen trees such as native Douglas fir would tolerate the shallow soils and wind swept environment. Madrone would also offer a native feature that is valuable to wildlife and very aesthetically pleasing. Shrubs offer excellent habitat and can be low growing so as not to interrupt views. Fruit bearing native plants are essential for birds and other wildlife and can offer an added aesthetic value as well. The use of native rose along the edges in association with or in place of fencing, would enhance the edges and make it impenetrable to humans. Adding structural diversity to the upland habitat should result in added species diversity and richness. Habitat enhancement also could attract and support more upland migrant species

Species occurrence in the upland has not been studied. Complete species inventory requires a minimum of one year and specific methods to record each species. A systematic species inventory has not been conducted for Semiahmoo Bay or Marine Park, however, marine species monitoring has resulted in relatively complete avian species documentation. Common species occurring in the upland include birds which are listed in the attached wildlife list (Attachment C). Mammals within the upland are restricted to ground dwelling rodents, mice, moles and voles, eastern cotton-tailed rabbits, and possible weasel, mink, raccoon, skunk, opossum, coyote and beaver. The latter larger mammals would likely wander into the area from outside the park. River otter and a commonly occurring marine and fresh water species occurring throughout the shoreline area. Black-tailed deer have been known to wander on to the tidal flats, likely via Canada. The Park currently lacks area and supporting habitat for most medium to large mammals.

Intertidal Habitat and Associated Species

Semiahmoo Bay and Drayton Harbor are low gradient mudflat estuaries rich in intertidal life. According to Kruckeberg (1991), marine birds are found in greater numbers in mudflats and saltmarshes than rocky or sandy beaches. Marine birds in the inland waters of Washington are now restricted to a few natural mud flats and saltmarshes because many have been filled in and developed, the loss was especially felt with the loss of the Snohomish and Duwamish river deltas to development. Northern deltas and mudflats are the last vestiges of good marine bird habitat, and as such, should be protected. However, with the permanent loss of key intertidal habitats in Semiahmoo Bay and Drayton Harbor, wildlife concentrations have had to adapt and in some cases crowd into areas that make them more vulnerable. As a result, mishaps and negative human-animal interactions have become intensified.

Semiahmoo Bay and Drayton Harbor are part of a regional habitat mosaic for wintering and migratory waterbirds and raptors. The Fraser River to the northwest feeds nutrients into this whole system and serves as the center of this wildlife concentration area. The significance of this habitat area is nothing less than global in scale, as Canadian biologists have petitioned for Global Biosphere status. As Butler and Campbell (1987) state the Fraser River delta and associated areas support an average of 1.4 million birds each year. These include 300,000-750,000 waterfowl, 200,000-600,000 shorebirds and 60,000 gulls. No other area north of California on the Pacific Coast has such large bird populations in the winter.

In estuarine areas, marine and freshwater birds can feed on marine vegetation and innumerable invertebrates including, crustaceans, mollusks and marine worms. Both migratory and resident bird populations use these areas extensively. At least 10 species of shorebirds frequent the intertidal mudflats of Semiahmoo Bay and Drayton Harbor. Of these species, several are rare and/or highly sought after by recreational birders. These include the whimbrels, dowitchers and godwits which are dependent on mudflat crustaceans, mollusk and worms for food (Ehrlich et al 1988). The large flocks of smaller shorebirds are also dependent on intertidal invertebrates and provide spectacular aerial displays for visitors. Together, this seasonal occurrence and concentration of shorebirds acts not only as a recreational draw, but also serves an important ecological role as prey for raptors including peregrine falcons and merlins. The 27 or more species of dabbling ducks and diving birds feeding in this area provide prey for bald eagles and other large raptors. The ducks and divers make up one of the most abundant avian groups frequenting Semiahmoo Bay, including: loons (1,929 in 1995 and 1996), grebes (1,235 between 1994 and 1996), scoters (4,039 in 1995 and 1997), ruddy duck (658 in February 1996) and scaups (1,917 in November of 1995). Between 1995 and 1998, a total of 61,051 diving and dabbling ducks were seen off White Rock, British Columbia. The data was collected up to four times per month from the eastern portion of the White Rock shoreline (Bird 2002).

Certain species of shorebird are seen in significant numbers along Semiahmoo Bay. High counts of dunlin (9,474 between 1984 and 1988), marbled godwit (82 in 1960) and black turnstone (12 between 1984 and 1988) have been observed near White Rock, British Columbia and Blaine, Washington (Paulson 1993). Whimbrel have been seen in flocks of approximately 50 on the mudflat near the Blaine marina. Marbled godwits have been seen in 3 places in Whatcom County. Drayton Harbor has had sightings 3 separate times. In 1994, an estimated 50,000 Dunlin were seen in Drayton Harbor. As many as 19 marbled murrelets have been seen in the Drayton Harbor channel (Wahl 1995).

The northwestern great blue heron (*Ardea herodias fannini*) ranges throughout the Salish Sea, with the largest concentrations occurring between Padilla Bay and Point Roberts. Great blue herons are colonial breeders who gather in large numbers to nest. The northwestern group, build their nests in a variety of mature trees within coastal forests. Colonies are found in

isolated near-shore forests and islands with low human disturbance. The breeding season for herons of the northwest coast extends over a six month period from late February or March till the young fledge from the beginning of July to the end of August (Eissinger 1996 (1996a, 1996b)).

Great blue herons feed on fish, particularly sculpins, perch and gunnels, invertebrates, small mammals and occasionally amphibians and reptiles. Marine foraging areas are vital in the successful reproduction of coastal great blue herons. These include shorelines, sloughs, intertidal and subtidal areas. Large eelgrass meadows are favored by herons for feeding during the breeding season. Marshes provide year-round foraging opportunities. Saltwater and freshwater marshes are frequented by great blue herons. In addition to marine areas, heron also depend on freshwater marshes, shorelines and upland field habitats. Terrestrial areas offer another year-round foraging area by providing optimal habitat for small mammals, one of the most important components of the great blue heron diet, particularly field voles (*Microtus townsendii*).

The Birch Bay heron colony, one of the largest in the state, is approximately 5 miles south of Drayton Harbor and in 2000, contained 250 nests (Eissinger 2000). Another smaller colony is located at Campbell Creek .5 mile north of Marine Park. Drayton Harbor and Semiahmoo Bays are prime feeding and fledging ground for great blue herons due to plentiful eelgrass and prey in the form of marine fish. Fallow fields in the upland , particularly Semiahmoo Spit and the edges of Drayton Harbor provide excellent roosting habitat and the small mammal component of heron diet. Large flocks of great blue heron, particularly juveniles, are known to roost and forage on Semiahmoo Spit in the coastal meadow and are easily disturbed by humans and dogs.

Drayton Harbor has extensive use by herons for foraging, including tideflats and creek channels. Similar habitat in Semiahmoo Bay also supports large numbers of herons in their feeding activities, but are more diffuse. Herons utilize the tidal flats near Cain Creek, which is potentially good foraging habitat for them. However, the perched (raised) culvert at the outfall of Cain Creek prevents access of the creek by anadromous fish and thus the estuary likely lacks that prey component.

The Semiahmoo Bay's tide flats were once contiguous from White Rock to the base of Semiahmoo Spit. This entire area would have been used extensively by shorebirds and other water birds, had portions of it not been dredged and filled for port and industrial development. With the historic dredging and filling of the Cain Creek alluvial fan, which has become the Marine Drive peninsula, the intertidal mudflats were divided and habitat was lost, forcing dependent species to concentrate more heavily in other areas. The shorebirds were displaced again with the expansion of the Blaine Harbor marina. This historical occurrence has compounded the value of the intertidal habitats both in Drayton Harbor and Semiahmoo Bay.

Since, many of the shorebirds follow the tides in and out across the tide flats, it is difficult to define a protection zone without designating the entire intertidal zone of Semiahmoo Bay as protected. The greatest protection for shorebirds, therefore, would be to designate the whole inner bay as a protected, no access area. The frequent concentration of both shorebirds and other waterfowl occurring in association with the Cain Creek outfall and associated channel, and within the protected inner bay area along Marine Park, increases the sensitivity of these areas and increases the area's need for protection over time.

Marine Habitat and Associated Species

Semiahmoo Bay and Drayton Harbor have extensive marine habitat available when the tide is high. One of the most important features of these two water bodies are the eelgrass meadows which provides substantial amounts of food and shelter. Eelgrass meadows and macro algae beds are both essential habitat for many species of fish. Sandlance and surfsmelt spawn on local gravelly beaches rear in eelgrass. Herring use eelgrass as a substrate to spawn upon. Dungeness and at least 5 other species of crab are known to frequent eelgrass meadows. Eelgrass stabilizes the substrate with its extensive root and rhizome systems (Kozloff 1983) allowing clams, oysters, small fish and invertebrates to have shelter and feed on the plankton when the tide is in. These species in turn provide food for crabs, shorebirds, diving ducks and larger fish. The harbor seal in the Drayton Harbor colony will also feed on small fish during high tide.

Intertidal rearing grounds like Semiahmoo Bay provide food for species associated with deeper water. Orcas, seals and sea lions feed on salmon, herring and other fish reared in these shallow bays. Rich, protected marine waters are essential to the endangered Stellar sea lion. After spending the summer, guarding their harems, male Stellar's come to the inland waters to rest and regain the weight they lost. Three communities of orca depend on fish and smaller marine mammals living in the inland waters. Currently, one orca population, the Southern Resident Community, which depends heavily on salmon as a source of food, is declining. Speculations regarding the decline include high pollution levels working with low food supplies to weaken the orcas' immune systems and prevent calf survival. Marine associated birds like herons pigeon guillemots and cormorants depend on small herring, smelt and other baitfish to feed their growing chicks.

Another important function of eelgrass meadows and algae beds is to provide food for detritivores. Blades slough from the main grass or algae and float out with the tide. Some of them will fall into the subtidal zone and provide food for the invertebrates and small fishes living there. The small organisms in turn feed rockfish, cabezons, lingcod and other medium to large bottom fish who then are prey for larger fish, marine mammals and humans. As defined above, increased loss of intertidal habitat affects open water associated species and may eventually lower the inland waters' biodiversity.

Other important marine bird features include the double-crested cormorant nesting colonies on the metal and concrete channel markers/navigational beacons in Semiahmoo Bay and concrete ruins in Drayton Harbor. Gulls also nest in the vicinity, mainly on the breakwater around the marina. Humans on foot or in boats and their pets should not approach the colonies so close that they flush the birds. If parent birds leave the nests, gulls may predate the eggs.

Other species of interest occurring in the marine waters of Semiahmoo Bay include the following (Eissinger, 1995).

Common loon (*Gavia immer*) and Pacific Loon (*Gavia pacifica*): widespread winter visitor, loons are diving birds which forage for small fish, largest regional winter concentration of this species is recorded for Drayton Harbor. Both species occur in large flotillas, particularly Pacific loons, throughout the winter, with flocks reaching 400 or more individuals.

Horned grebe (*Podiceps auritus*): common winter visitor, diver, forages for small fish, largest regional winter concentration of this species is recorded for Drayton Harbor.

Western grebe (*Aechmophorus occidentalis*): common winter visitor, diver, forages in large flocks, feeds on small fish, high numbers (3,015) were recorded for Semiahmoo Spit.

Red-necked grebe (*Podiceps grisegena*): common winter visitor, diver; forages in small flocks, feeds on small fish, locally significant numbers during winter.

Harlequin ducks (*Histrionicus histrionicus*): is a regular winter resident, utilizing the outside shoreline along the spit and at the entry to Drayton Harbor, a high number of 10 was recorded for Semiahmoo Spit.

Shorebirds: several species of common, unusual and rare shorebirds occur in-migration seasonally throughout Semiahmoo Bay. These include, dunlin, sandpipers, plovers, turnstone, dowitchers and godwits. These birds feed in the intertidal areas, generally following the waterline as it ebbs and floods. Feeding is of particular importance, due to their high metabolism and need to refuel to continue in their long migration. Disturbance of these birds is of particular concern.

Brant (*Branta bernicla*): a state priority/game species, migratory, concentrations of brant winter in Drayton Harbor, and Semiahmoo Bay primarily associated with intertidal gravel beaches and both sea lettuce and eelgrass which provides their primary food source, locally significant and declining, large concentrations occur during migration particularly in spring April and May (Pacific subspecies). Grazing brant occur nearshore and are easy targets of off-leash dogs. Habitat for this declining brant population has also diminished with the

development of Semiahmoo spit, the dredging of their primary feeding area, where the Semiahmoo marina now lies, and with the greater number of people and dogs utilizing the beaches, resulting in the disturbance of brant during critical feeding opportunities.

Caspian tern (*Sterna caspia*): summer resident, expanding range, becoming more abundant, forages for fish near waters surface.

California sea lion (*Zalophus californianus*): a large pinniped, forages primarily on fish, which appears to be expanding its range and becoming a regular occurrence in Whatcom County waters, occasionally haul-out on Semiahmoo marina float.

Harbor seal (*Phoca vitulina*): a large colony of harbor seal occur on the Semiahmoo marine floats and are here year round including breeding and pupping. The colony is estimated to be currently between 100-200 individuals.

Cain Creek: Freshwater-Estuarine Habitat

Cain Creek is the primary freshwater stream within the central city of Blaine. As such, it provides vital habitat for urban associated riparian species as well as providing a corridor connecting the upland to the shoreline. Historically, Cain Creek created an alluvial fan which separated Drayton Harbor and Semiahmoo Bay. Campbell Creek, near White Rock in British Columbia, Cain, Dakota and California Creeks created extensive estuarine tide flats in Drayton Harbor and Semiahmoo Bay. These areas, in addition to the 33,000 acres of intertidal area of Boundary Bay, create extensive tide flats that have become one of the most important feeding, resting and wintering areas for waterfowl, shorebirds and raptors along the Pacific Flyway. Resting locations with good food supplies are essential for migratory bird refueling.

Originally, Cain Creek was a meandering stream whose delta was located where the Blaine Harbor marina and Marine Park now lie. Sometime in the mid to late 1800's, a pier was built where Marine Drive runs. This area was then filled. The pier likely disrupted the stream outfall and associated estuary. Eventually, Cain Creek was re-routed into Semiahmoo Bay. With the loss of the complex marsh and estuary features, in addition to the dredging of the marinas, shorebird and brant habitat, as well as eelgrass meadows were lost. A remanent of the Cain Creek estuary to the south exist today from Marine Drive south to Drayton Harbor along the railroad berm and consists of a disturbed wetland and salt marsh corridor.

Current conditions at the Cain Creek outfall prevent fish and other estuarine species from accessing the stream. A perched or raised culvert empties into Semiahmoo Bay, allowing fish access only at extreme high tides, if at all. Before reaching the perched culvert, Cain Creek flows underground at least three times. From the outfall to Portal Way, the stream flows underground for approximately 162 feet. It then is diverted approximately 56 feet through a culvert to flow under the intersection of F street and 3rd street. And finally, it flows briefly under 4th street. As a result of the routing and past manipulations of this stream course, it is presently unfavorable for supporting anadromous fish. Unfavorable conditions to support anadromous fish was evidenced by the planting of 2,000 coho salmon fry in the stream system in 1988-89, from which no adults returned. No known anadromous fish populations exist in Cain Creek, however further survey is needed.

Restoration of Cain Creek is recommended and includes the following. First, the stream needs an evaluation for water quality, flow, in-stream habitat and enhancement potential. Given the sighting of beaver and other aquatic mammals along the creek is an indicator that it is still functioning as a wildlife corridor. Many animals following this corridor attempt to emerge and cross Interstate-5 and as a result are killed. This too needs evaluation and recommendations for safe passage. The potential enhancements should include recommendations on day-lighting the stream course, improving habitat quality and connectivity, and modifying the outfall so that it may function as a natural stream estuary, with direct tidal influence. Native vegetation enhancement and in-stream restoration for anadromous fish habitat are also essential.

No existing fish or wildlife data was found for Cain Creek.

Endangered Species and Species of Concern

Several endangered species and species of concern occur within the vicinity of Marine Park and Semiahmoo Bay. These are defined as species protected under the U.S. Endangered Species Act either as listed species or species in review for listing. These species are given specific attention due to their protected status and required consideration under all environmental review processes. Also included in this section are harbor seals which are protected under the Maine Mammal Protection Act of 1972.

Bald Eagle

Bald eagles (*Haliaeetus leucocephalus*) occur in Western Washington throughout the year as both resident and wintering populations. The bald eagle is a protected species under the Endangered Species Act due to declining populations resulting from environmental toxins and loss of habitat. Winter concentrations are situated primarily along the Nooksack River corridor in association with salmon spawning areas. Summers find bald eagle breeding pairs in their nesting territories and home ranges. The nesting territory, usually situated close to water, allows the eagles a monopoly on area resources and isolates their nest from neighboring nests. It is defended aggressively from other birds especially other eagles and ospreys. The home range is not defended, but contains more area where the eagles forage.

The primary prey of bald eagles are fish (56%), birds (28%), and mammals (14%) (Stalmaster 1987). Because of this prey preference, bald eagles are closely associated with marine shorelines, embayments and fish bearing waterways. Significant shallow nearshore habitat provides a large productive foraging area throughout Drayton Harbor and Semiahmoo Bay, including seasonal herring and salmon, other forage fish, large waterfowl concentrations, and upland species. The estuary, salt marsh, wetland meadows, fallow fields, and margins throughout the Drayton Harbor watershed provide excellent habitat for bald eagle hunting opportunities. Semiahmoo Bay and Georgia Strait to the west and Birch Bay to the south west also provide excellent shoreline habitat and foraging opportunities for bald eagles. Carrion is available throughout the area as well, including fish, marine mammals, roadkill and domestic animals. Salmon returns to Dakota and California Creeks likely provide food opportunities during migratory runs. Additionally, salmon returns to the Fraser River are large and probably represent a significant food source to wintering bald eagles; thus allowing them to concentrate in the lower Fraser river valley and adjacent areas.

There are five nest sites within two miles of the project area. The closest nest site is north approximately one-half mile from Marine Park. This nest is located on Campbell Creek and has direct line of sight to Marine Park. The pair is often seen on the Semiahmoo Bay tide flats. The second nest site is approximately one mile away at the onramp to I-5 leading from the U.S./Canada truck crossing, with another just southwest of the I nest near the shoreline of Drayton Harbor. A fourth nest is located across Drayton Harbor at the base of Semiahmoo Spit within a condo complex (WDFW 2001). And the fifth is further southwest off Shintaffer Road.

Eagles have been observed perched near or hunting in Drayton Harbor and Semiahmoo Bay. The large cement ruins from old cannery buildings at Marine Park and at the old dock off of Cherry Street in Drayton Harbor are used extensively as perches for bald eagles. Light poles along Peace Portal Way between Cherry and 3rd Streets are also used. Other favorite perches for raptors include the large Douglas fir with a dead top across Drayton Harbor road just upland from the project area, the snag on Semiahmoo Spit, the totem pole in Marine Park and the intertidal flats of both Drayton Harbor and Semiahmoo Bay. The addition of perches would increase the available habitat that could be used by bald eagles and other raptors.

Marbled Murrelet

Marbled murrelets (*Brachyramphus marmoratus*) are a threatened species and an uncommon marine bird which requires old growth forest for nesting. Based on the *Ecology and Conservation of the Marbled Murrelet* (Ralph et al. 1995) murrelets forage in nearshore marine areas for small fish and invertebrates, primarily euphausiids. The primary fish consumed by marbled murrelets are sand lance which make up about 50% of the murrelets diet, Pacific herring (juvenile) and anchovy (*Engraulis* sp.) make up nearly 30%. The other 20% of prey consumed includes surf smelt and seaperch.

Marbled murrelets are known to utilize the nearshore marine areas of Drayton Harbor (Wahl and Paulson 1991) and Semiahmoo Bay. Based on the survey results (Speich and Wahl 1995), marbled murrelet abundance is low in bays with steep and gradual slopes. Of this habitat type, the bays with gradual slopes, sand and eelgrass in Whatcom and Skagit Counties, such as Drayton Harbor and Semiahmoo Bay, have murrelet densities of 0.06 to 0.31 birds/km², however the actual number of birds observed was greater in this specific habitat area than other bay-type habitats. Because murrelets dive for their prey, the use of intertidal areas is restricted to higher tidal inundation. Marbled murrelet occurrence near Marine Park is common but generally in low numbers (Eissinger 1994). However, concentrations increase from March through May during the herring spawning period.

Bull Trout

Bull Trout (*Salvelinus confluentus*), a member of the char family are very similar to dolly varden (*S. Malma*). Bull trout are anadromous and are among the most cold-water adapted fish. They require cold temperatures, which may exclude other fish including salmonids, for incubation, juvenile rearing and to initiate spawning (USFWS 1998). Bull trout have specific habitat requirements for reproduction, but are known to stray widely and travel into potentially marginal stream conditions to feed and utilize saltwater habitats.

Bull trout utilize streams and near-shore marine habitats throughout western Washington. Much of the same type of marine habitat and areas utilized by bull trout is shared with sea run cutthroat trout (*Oncorhynchus clarkii*). In consultation, WDFW Biologist Jim Johnston (pers. comm.) explained that while in Puget Sound and the Strait of Georgia, cutthroat and bull trout feed and migrate along beaches, most frequently in waters less than 3 meters in depth. Feeding areas are typically within the intertidal margin of high gradient fine gravel beaches, particularly in coves and small bays with cool waters and good tidal flow or current. Eelgrass and macro algae meadows are not preferred habitat, however, cutthroat and bull trout may hunt along the edges of these habitats for their preferred prey of smaller fish which concentrate in the cover of these substrates. Certain areas have been identified as prime shoreline habitats for cutthroat in Strait of Georgia, primarily along mainland shorelines. However this type of mapping has not been conducted for bull trout and the marine data for this species is lacking (Williams 1999).

Bull trout may out-migrate from the nearby river systems to local marine waters at any time. Outmigration is likely guided by prey and habitat preferences which possibly includes avoiding shallow and warm embayments. Bull trout, likely utilize portions of the Drayton Harbor nearshore habitat and migrate to Semiahmoo Bay and the Strait of Georgia. Bull trout are opportunistic feeders, feeding on a variety of organisms including both fish and insects. Surf smelt, juvenile salmon, Pacific herring, Pacific sand lance and squid are all prey sources in the marine environment. Marine associated bull trout have been found to feed heavily on surf smelt (WDFW 1997).

Salmon

Chinook (*Oncorhynchus tshawytscha*), coho (*Oncorhynchus kisutch*), pink (*Oncorhynchus gorbuscha*), sockeye (*Oncorhynchus nerka*), steelhead (*Oncorhynchus mykiss*) and chum (*Oncorhynchus keta*) salmon are all known to utilize the Fraser River system and all but pink salmon utilize local creeks. Chinook salmon are listed as a threatened species and coho salmon are a candidate species for listing in Puget Sound and the Strait of Georgia. Four of the five Pacific salmon species likely pass through Drayton Harbor and Semiahmoo Bay in

varying numbers either as juveniles or adults. As smolts, these species utilize the near-shore habitat upon entering saltwater and travel along shorelines and shallows (Hendrick 1999). Returning adults however utilize deeper water and may or may not use shorelines as their travel route depending on the species (PFMC 1999). Salmon utilizing Cain, California and Dakota creeks may return to their natal streams from any time of the year depending on the species and run.

Salmon are carnivorous and feed on a variety of freshwater and marine fish and invertebrates including other salmon, Pacific herring (*Clupea harengus pallasii*), surf smelt (*Hypomesus pretiosus pretiosus*), Pacific sand lance (*Ammodytes hexapterus*) and squid. In synchrony with the peaks of outmigrating salmon, primarily between March and September, is the herring, surf smelt and sandlance spawning along the Drayton Harbor and Semiahmoo Spit shoreline. This concentration of food for emerging salmon is an important aspect perpetuating the local stocks, which have been declining. Juvenile salmon also utilize eelgrass meadows but are more difficult to detect. Given the extensive eelgrass beds in Drayton Harbor and Semiahmoo Bay, it is assumed that juvenile salmon are present. Chinook and coho are known to spawn in Dakota Creek and may also utilize California Creek (Whatcom County 1994). Cain Creek, a two mile long stream located within the Blaine city limits, has a perched culvert and is therefore inaccessible to fish. Chinook (ocean- and stream-type) presence is possible near Marine Park throughout the year in both juvenile and adult stages when the tide is in. There is ESA designated critical habitat for chinook salmon near Marine Park.

Baitfish

Baitfish are a group of common Pacific fish species that have historically provided bait for fisherman's gear and account for the major prey species on endangered salmonids. Of these prey species, Pacific herring, surf smelt and sand lance are associated with the Drayton Harbor, Semiahmoo Bay and Boundary Bay shorelines. Surf smelt spawn at the Drayton Harbor and Semiahmoo Bay beaches year-round (WDFW 2000c). They are beach spawners requiring specific beach conditions and substrate. Spawning occurs during high water slack in the upper intertidal zone on coarse sand and fine gravel. Eggs incubate for two to five weeks before hatching (WDFW 2000c). Sand lance spawn between November and February. Spawning is similar to surf smelt although finer grain substrate is preferred (WDFW 2000b). The Cherry Point Pacific herring stock was the largest in the state and the eelgrass and macro algae in Drayton Harbor are prime spawning habitat for this stock (WDFW 2000a).

Some of the beaches along Marine Park are potential baitfish spawning areas and the eelgrass meadows support herring spawning. These fish and their roe also serve as a vital food source for diving birds, particularly during migration north to breeding grounds in the spring.

Lampreys (River and Pacific)

Lampreys are anadromous fishes that require cool northern marine and fresh water systems in which to reside. Little is known about the Pacific lampreys (*Lampetra tridentata*) and river lampreys (*Lampetra ayresi*) of Puget Sound and the Strait of Georgia and no data was available for the local area. Lampreys likely utilize the Fraser river system and local creeks, returning as 2-3 year-old adults to spawn. Following several months spent in fresh water river bottoms after hatching, the larvae metamorphose into miniature sub-adults and then outmigrate to marine waters.

While in marine waters, lampreys prey on fish by attaching their tooth studded sucking disc mouth and rasping holes through the skin. Pacific herring is the favorite prey of river lamprey, but other potential prey or host species include young salmon, rockfish (*Sebastes* sp.), bottom fish and other species of baitfish. Marine mammals are also targets (Lamb and Edgell 1986).

Pacific and river lamprey use of habitat and occurrence near Marine Park is not known. As a species associated with the Dakota and California Creeks, lampreys likely pass through the nearshore while foraging both as adults en route to spawning grounds and as outmigrating juveniles. The Pacific herring, surf smelt and sandlance are prey species closely associated with the Drayton Harbor and Semiahmoo Spit shoreline. Herring are a more substantial part of river lamprey diets than the other two. The Pacific lamprey prefers salmon and bottomfish (Lamb and Edgell 1986).

Harbor Seal

Although harbor seals (*Phoca vitulina*) are the most numerous marine mammal in Puget Sound and the Strait of Georgia, they are still protected under the Marine Mammal Protection Act of 1972 and must be considered. It is the smallest seal found in local waters and can be distinguished from other local pinnipeds because they are earless. Harbor seals haul out of the waters to rest and give birth and usually spend equal amounts of time hauled out as in the water (Newby 1978) (Osborne et al. 1988). Hauled out harbor seals are especially wary of humans and if approached will return to the water.

Major threats to harbor seals stem from pollution and disturbance. Poly-chlorinated biphenyls (PCBs) and DDT are two of the primary pollutants found in harbor seals. Pollutants are consumed in their diet of fish of any species (Osborne et al. 1988). Favorite prey items are sole, flounder, sculpin, herring, squid and octopus (Newby 1978). Further, approximately 2-5 percent of the harbor seal diet is salmon. Frequent disturbance of seals can result in the colony abandoning haulouts and potentially pups. Human disturbance can include approaching too close on foot or by water. Boats and personal watercraft can cause a stampede of panicked harbor seals into the water. Pups may be squashed or injured by adult seals.

Drayton Harbor has a breeding colony of harbor seals numbering approximately 100 and counts of nearly 300 have been reported (Jim Jorgenson personal communication). The primary haulout for this colony is the Resort Semiahmoo marina breakwater. Other haulouts include the mudflats south of the Blaine marina breakwater and the eastern mudflats of Semiahmoo Bay. Pupping generally starts in May or early June. The most sensitive time for this colony is during the pupping season from about May 1 to August 1. The pups are being nursed at this time and have only six weeks to gain as much fat as possible before being weaned. If a harbor seal breeding colony is disturbed, pup and mother may be separated which can result in the death of the pup (Osborne et al. 1988)(Newby 1978). Seals are first disturbed when they lift their heads and alertly stare at something or dive into the water. People and dogs can disturb the seals by close proximity, chasing or loud noises. Human on foot, in boats or personal watercraft should not approach closer than 100 yards to hauled out seals.

Another important issue with harbor seals, is informing the public regarding abandoned pups. Pups found alone on the tidal flats or beach must be left alone, this includes not handling them. If the pup is emaciated or looks ill, the local marine wildlife officers need to be informed so the pup can be evaluated by a professional wildlife rehabilitator and taken to a rehab center if necessary.

WILDLIFE PROTECTION PLAN

Objectives and Process

The City of Blaine is in the process of developing a Public Access and Habitat Preservation Action Plan for the northern shoreline of the Marine Drive Extension. The primary objective of this process is to develop a long-term management plan for this important wildlife area. As a result, the City is assessing the wildlife and habitat associated with Marine Park and formulating a detailed plan to protect and restore the natural attributes of the area.

A baseline assessment of the known wildlife species and habitat was conducted utilizing a combination of existing reports, listings and information with on-site observations and expert consultations. A variety of sources were utilized including: City of Blaine, Whatcom County, Washington Department of Fish, Wildlife, U.S. Fish and Wildlife Service, the Marine Education Foundation, and independent publications. In addition to the document sources, individuals that frequent Marine Park and Semiahmoo Bay and organizations were consulted. These included local citizens, birders, Friends of Semiahmoo Bay Society, B.C. Bird Survey, Canadian Wildlife Service and the Audubon Society.

The Semiahmoo Bay Wildlife Protection Plan is a guidance tool to define, protect and enhance the wildlife and wildlife habitats of Marine Park and Semiahmoo Bay associated marine shoreline and intertidal area north to the international boundary. The Plan consists of several parts focused on the intertidal, shoreline-upland interface and upland habitats. Recommendations for these habitats are coupled with the designation of protection areas, enhancement, public access, complementary development and education/interpretation. It is also recommended that general guidelines from this plan be adapted to other sensitive shorelines in the area including Semiahmoo Spit and Drayton Harbor.

In the development of the Semiahmoo Bay Wildlife Protection Plan, a citizen subcommittee was formed from members of the Blaine Parks Board to assist in the planning process, provide informational input and citizen perspective. Members of the Wildlife Technical Committee included members of the Blaine Parks Board, the City of Blaine Planning Assistant and the consulting biologist. A list of the committee members is provided in Attachment A.

The vision from the Wildlife Technical Committee for Marine Park, Blaine was to protect wildlife, maximize viewing and educational opportunities and define public access. Five people met to discuss and presented their written ideas and vision for the park, wildlife protection and enhancement. All agreed that some form of increased educational signage was needed. Two felt that the signs should be low impact, with emphasis placed on educational signage and minimize regulatory signage. The other two would prefer more obvious regulation signage.

All four would like increased viewing access to the Cain Creek area including blinds for viewing birds. Some suggested telescopes and educational flyers. There was also interest in increasing marine oriented recreational activities (half suggested tying educational activities to these recreational activities).

A portion of the Committee suggested the addition of playground equipment, a kayak launch area and a boardwalk to the end of the jetty. The other half of the group would like more fencing where the blackberries are (basically from Shelter #2 to current fence line) and replanting with native vegetation those areas cleared of noxious weeds. These two would also like the park to be a passive place with only nature related activities.

Each person suggested original items including the following. The harbor area offer amenities such as a fire ring, snack bar and espresso stand, fishing and crab bait shop (to help financially support the Plover ferry) and a year-round restroom. One wanted a lighthouse and a place for community activities such as dances, picnics, barbecues and craft fairs. One person wanted a place for kite flying and frisbee playing. In the old warehouses should be shops, a museum and restaurants. Another suggested easier beach access. Suggestions also included holding educational events to enhance people's enjoyment of the site and increase their knowledge of safe ecologically sound activities which includes classroom oriented events for local schools.

All of the ideas presented in the Wildlife Committee process were considered. Those pertaining specifically to wildlife, education, enhancement and human impacts to wildlife were given greater consideration. Many of these ideas were incorporated into plan and recommendations. Following the Committee's discussions and the consultant's assessment of the site and review of the existing information, criteria for designating a wildlife protection area were defined and specifics of the plan were developed. Further information and comment was gathered during a public meeting and public review of the draft plan.

Designated Wildlife Areas and Protection Guidelines

The designated wildlife area for Marine Park/Semiahmoo Bay is based on the following five criteria:

- 1) Area is frequented by large numbers of birds and/or wildlife for feeding and/or resting.
- 2) Area has a record of rare, unusual or endangered species occurrence.
- 3) Area is currently accessible by humans and/or domestic dogs.
- 4) Area is of high quality habitat or contains critical habitat.
- 5) Area/habitat is sensitive to human use or disturbance.

The criteria provide the parameters on which to identify and support the protection of area(s) designated. There may also be a seasonality and tidal cycle considerations in the designation and management of the protection area.

Assessing Marine Park/Semiahmoo Bay based on the above criteria has resulted in the following findings.

1) Large numbers of birds occur throughout Semiahmoo Bay at both the high and low tides. The greatest concentrations of birds are observed in the fall, winter and early spring months; primarily September 1 through April 30. This is the period of migration and overwintering for most waterbirds, or the non-breeding period. However, brant and certain diving birds are moving through the area until May 15. Shorebirds are different and represent a significant avian group for Marine Park. Shorebirds require resting and feeding opportunities during migration, utilizing the intertidal area in various waves and concentrations of species over most of the year, specifically July through May, depending on the year (T. Wahl, pers. comm. 2002). Significant concentrations of shorebirds occur during spring and fall migrations April 1 - June 1 and August 1 - November 1 (D. Drummond pers. comm. 2002). The tide flats, Cain Creek outflow, Cain Creek channel and the boat channel edge, are important bird use areas at low tide. As the tide fluctuates, particularly on extreme tides, the tideline is the greatest concentration area for most shorebirds, dabbling ducks and sometimes gulls. The pocket beaches, and Cain Creek outflow in particular provide sheltered areas of concentration at various tidal levels. At high tide large flocks of diving marine birds and dabbling ducks utilize most of Semiahmoo Bay for resting and feeding, while the shorebirds seek saltmarsh areas and upland wetlands or edges or rocky outcrops for continued foraging and/or resting. .

2) The area with frequent rare and unusual sightings ranges along the nearshore of Marine Park, particularly within the inner shoreline from Shelter # 3 east. However, sightings of certain unusual species such as godwits, and other large shorebirds, may occur at any location following the tideline from the inner bay out to the main channel separating the Blaine pier from Semiahmoo spit. Endangered species such as bald eagles utilize the tidelands further

from shore and have potential for disturbance. The active bald eagle nesting territory located at Campbell Creek near the shoreline, just north of the international boundary, includes within its boundaries this southeast corner of Semiahmoo Bay and all of Marine Park, and is frequently used for hunting, foraging, and loafing. Peregrine falcons are known to hunt over this area, however they do not have a primary habitat association.

Other endangered and sensitive species are marine associated. These include: marbled murrelets, a sea bird that forages within the open waters of the bay; large aggregations of diving birds; marine mammals, primarily harbor seals which breed, rear their young feed and loaf in and around Semiahmoo Bay and Drayton Harbor, young are particularly vulnerable while resting on shorelines and mud flats between Late May and August; salmon and bull trout, which forage and migrate around Semiahmoo Bay; herring, surf smelt and sandlance which are important prey of diving birds and salmon, all of which spawn nearshore in marine vegetation or on the fine rocky beaches of Semiahmoo Bay and possibly Marine Park.

Given the sensitivity of the marine and shoreline wildlife habitats, with regard to endangered species occurrence, it is important to recognize the responsibility by the governing jurisdiction to abide by the U.S. Endangered Species Act, Section 7 and the Marine Mammal Protection Act of 1972. This is particularly important for the tidelands just north of Marine Park where bald eagles and harbor seals feed and loaf.

3) Humans and their dogs currently have access to the pocket beaches and western shoreline (west of Shelter# 3) and most of the intertidal area at low tide. Because both humans and dogs may disturb birds and other wildlife where access and conditions allow, areas designated for protection need clear delineation and logical placement. Requiring dogs on leashes throughout the park, shoreline and tidelands provides protection for both wildlife and other visitors, including human. Due to the potential for protected species occurrence along the tidelands, it is important to maintain on-leash only access for dogs within the tidelands as well. These are not off-lease areas, therefore enforcement of current regulations is important.

Due to the seasonal sensitivity of the tidelands, it is recommended that public access to these areas as designated, be limited to summer months (June-August). However an issue during that seasonal period is the potential for disturbance seal pups and shorebirds, which may result in the need for further restricted use. As a result of tideland sensitivity and water quality issues, it is strongly recommended that shellfish gathering be completely prohibited north of Marine Drive.

4) Areas of high quality habitat include all of Drayton Harbor and Semiahmoo Bay. The low gradient intertidal mudflat habitat, freshwater inlet and sheltered beaches of Marine Park are all considered high quality habitat. In addition, the small saltmarsh between shelters #1 and #2 is the only remaining saltmarsh habitat in the near vicinity and is sensitive to human access, development or shading. The shoreline-upland interface is vital habitat for many species, including marine and upland species. As a result the band of habitat extending along the shoreline is considered sensitive and is in need of enhancement with native shrubs and trees. One other sensitive area identified in the Marine Park assessment is the centrally located fallow field, which appears to be of little value, however it is a unique habitat for the park offering significant diversity and sanctuary for upland and wetland species such as: tree frogs, long-toed salamanders, garter snakes, meadowlarks, sparrows, finches, snipes, field voles, deer mice, cotton-tailed rabbits, northern harriers, short-eared owls and herons. The enhancement potential for this area is tremendous and would create a magnet for migrant and well as resident birds.

5) Areas sensitive to human use are those areas where concentrations of wildlife occur and may be disturbed or displaced by human activity. The Cain Creek estuary is unarguably a sensitive area as is the intertidal area and the shoreline-upland interface.

Because Marine Park lies perpendicular to the rising and falling tide, the location lends itself to excellent bird watching, particularly shorebirds which tend to forage by following the rising and falling tideline. This configuration also lends itself to challenging management due to the relatively sensitive habitat moving up and down along the shoreline, a moving target so to speak. Fortunately, the seasonal low tides of summer occur during the diurnal cycle (during the day) and the lowest tides of winter occur at night. This cycle provides migrating and wintering birds foraging opportunities under the cover of darkness and limits intertidal access by humans during the day. Although summer low tides allow greater access to tidelands, the concentration of birds is greatly reduced, thus reducing the potential for disturbance.

As a result of the above findings a year-round wildlife protection area is recommended from Shelter #3 north across the intertidal area and east along the shoreline to the mainland (see Wildlife Protection Area Map). The intertidal area extending west would remain open to the public on a seasonal basis, for passive recreation only. Further recommendations are defined in the following section.



 Multiuse Path
 Foot Path

 Enhancement Area

Semiahmoo Bay Wildlife Protection Plan
Wildlife Protection Area

Nahkeeta Northwest
 Map by K. Wilcox/OES 5/10/02



Semiahmoo Bay Wildlife Protection Plan
Public Access Areas
 Nahkeeta Northwest
 Map by K. Wilcox/OES 5/1/02

SEMAIHMUO BAY & MARINE PARK WILDLIFE PROTECTION PLAN RECOMMENDATIONS

Upland Park and Open Space

Marine Park, located on the north side of Marine Drive, is primarily undeveloped open space, with marine shoreline and upland features. The park contains a parking area, directly associated with Marine Drive, maintained lawn, walkways (gravel and asphalt), picnic shelters, an open bluff-top picnic area, amphitheater, entry sign/salmon wall and large open-air deck. At the western edge of the park is a city sewage pumping facility. Portions of the park are natural open space including an fallow field/seasonal wet-meadow, berm, the shoreline-upland interface and Cain Creek outfall area. A fallow field covers approximately 2.5 acres of upland. The upland area is primarily open with only a few clumps of individual trees and low shrubs, giving the entire park a sense of openness resulting in excellent views of Semiahmoo Bay, the Peace Arch, City of White Rock, Point Roberts and on a clear day, Vancouver Island and the Gulf Islands.

The upland area north and south of Marine Drive is zoned Marine Commercial. Marine Park is designated as Park in both the City of Blaine Park, Recreation and Open Space Plan and Comprehensive Plan. South of Marine Drive is currently designated public and commercial use and includes the Port of Bellingham's Blaine Harbor and associated services (including boat moorage, public restrooms, offices and a visitor information center). There is also private commercial boat moorage, boat launching, dock facilities, shipyard, fish processing plants, a restaurant and buildings that are vacant.

The current division of land use, north and south of Marine Drive, makes for a logical separation for long term management. The current zoning of Marine Commercial for Marine Park is inconsistent with its use and should therefore be changed to "Public Lands" zoning. For consistency and protection of the shoreline and tidelands, these areas should be designated as Critical Areas under the City's Critical Area Ordinance. It is therefore strongly recommended that the park or area north of Marine Drive be rezoned and protected under the Critical Area Ordinance, to be consistent with its Park and Open Space designation. The area should also be specifically managed for only passive (nonmotorized) recreation, with the natural features of the Park maintained, restored and enhanced.

Given the park's open space attributes, it is a significant public use area that provides a special experience and harbors opportunities from viewing rare wildlife to taking a quiet stroll or enjoying a family picnic. The present facilities complement the site without clutter and allows habitat areas to remain natural and support wildlife in close proximity for viewing.

The commercial and port facilities south of Marine Drive are fully developed, however portions of the old fish processing and packing facilities are now vacant and could be redeveloped into a complementary commercial and educational center. The redevelopment could include an indoor interpretive facility, shops, gallery, café and fish market. By utilizing the concept of complementary uses, the general public would find a diverse array of settings and activities suitable for both individuals and families. The added shoreline boardwalk to the outer pier, west of Marine Park would add additional incentive to people to park their cars and walk the full distance to the pier and back, which from the Cain Creek outfall, is a one mile round trip.

The central fallow field, a 2.5 acre area of Marine Park is zoned commercial, however no plans are currently in place for future development. Development of this site would greatly block views, upset the aesthetics and detract from the open space and habitat value of the current park setting. This is the only open field for upland raptor hunting and has the potential to support an estimated 35 species ranging from amphibians to mammals. The wet meadow, albeit small and shallow, offers some fresh water for local wildlife. The site has incredible potential if enhanced for exceptional habitat value and overall function for wildlife. Designated use of this area consistent with the greater Park area would protect the habitat value. Enhancement to create a wetland with fallow grass and shrub edges would increase habitat value. This pocket of habitat is a jewel in the rough and with enhancement could be a secret garden just waiting to be discovered.

The berm separating the western parking lot from the open picnic area and totem pole provides a wind break, a nice privacy screen and noise abatement for the those utilizing the bluff area. The berm separates the picnic area from the parking lot to the south, however, the screen is so effective it isolates the picnic area. By making a break in the berm in line with the totem pole would provide a greater sense of openness and invitation. The berm is dominated by common tansy (*Tanacetum vulgare*) and although this plant is attractive in the summer with bright green foliage and yellow flowering umbels, it turns brown in the fall and remains a brown border until late spring. The monoculture of a single plant also limits habitat value. It is recommended that the berm be planted with a combination of herbaceous plants, shrubs and trees to offer greater structural diversity and habitat value. Shrubs including both evergreen and deciduous would be useful in providing food and cover. Trees of low to medium height also a mix of deciduous and evergreen would enhance perching and nesting opportunities at this end of the park. Native species are advised. A butterfly theme could be applied to the plantings, providing habitat for area butterflies with the placement of flowering food plants and host plants.

Trails in the upland appear to be suitably routed and well used. The unpaved nature of the shoreline trail provides a natural feel and appearance, while the bike trail is paved and suitably functional for cycling and in-line skating. The different surfaces have effectively separated potentially conflicting uses and appear to be greatly enjoyed and appreciated by the different user groups. It is recommended that the trails and paths remain unchanged.

Just outside of Marine Park to the south, a remanent wetland and saltmarsh would also benefit from restoration and enhancement to improve habitat value and create additional habitat for both upland and semiaquatic species.

Shoreline and Upland Interface

The shoreline-upland interface, or shoreline buffer, is a critical habitat area that requires protection and enhancement. The strip of the upper beach where vegetation begins extending over the bank to the upland constitutes the interface habitat. Although there are currently no natural upland habitat links to this interface, the existing habitat is valuable and serves numerous landscape and wildlife functions. Unfortunately, some of this area is fragmented, narrow and/or infested with invasive weeds. With the exception of the western shoreline where the bank gradient and rip-rap or rock armoring precludes the growth of vegetation in the interface, this area of habitat is recommended for both protection and enhancement.

The shoreline-upland interface for the most part is delineated on the ground from the fencing to the shoreline. In some areas where fencing is not present the maintained lawn defines the habitat. It is recommended that from Cain Creek west to Shelter #2 the shoreline vegetation be widened slightly (approximately 4-6 feet) for greater buffering effect given that this is the most sensitive bird resting and bathing area. The outer edge of this buffer could be lined with Nookta rose as a natural barrier and an exquisitely scented native landscape plant. A few patches of blackberry should be replaced with native shrubs however, this should be done only in increments. The addition of a few tree clusters is also recommended to complement the existing trees with wildlife friendly species. The area around the large viewing deck and north to Shelter #2, is infested with weed species and needs to be incrementally cleared and replanted. No herbicides should be used, only manual control and maintenance. At Shelter #2 several trees should be planted to complement the existing poplars and old cottonwood (which is an excellent wildlife tree and should remain). Added trees should include douglas fir, big-leaf maple and madrone, all of which will be relatively slow growing at this site and provide multiple habitat features.

From Shelter #2 to #3, the buffer is fragmented and thin. Enhancement of the vegetation with shrubs particularly rose and flowing current, herbaceous plants and beach grass would greatly add color, texture and habitat value to this strip. Adding a fallow connector from the fallow field north to the shoreline, bisected only by the trail, would add a interesting experience to the walk and link the habitat from upland to shoreline. This would be the only direct shoreline-upland link on the site. The planting of occasional madrone trees within the buffer is also recommended due to their slow growing nature, tolerance of shoreline conditions and wealth of beauty and habitat value. Care in plant placement and maintenance is essential to ensure that view corridors are maintained and the plants survive or are replanted.

At Shelter #3 a small viewing platform or low tower would be suitable if designed as to blend in the surroundings. The structure should be set back from the shoreline and could be placed on the opposite side (southeast) of the existing trail so as to avoid impacts and conflicts with the sensitive shoreline edge.

Beach enhancement for the public use areas west of Shelter #3 is recommended. With the addition of clean sand and applicable plants (beach grass, wormwood, beach pea etc.) these areas could become attractive and comfortable beaches for whole families.

The bluff area is currently lawn with a rough edge. A fence protects the bank and steep slope. As with the other buffer areas, the addition of certain shrubs along the fence line and beyond would enhance habitat value. However, careful placement is important to maximize habitat value and not block views.

Intertidal and Estuarine Areas

The intertidal and estuarine areas of Marine Park-Semiahmoo Bay are the most sensitive areas for wildlife and need protection. Since humans and their dogs currently have access to the pocket beaches and western shoreline (west of Shelter# 3) and most of the intertidal area at low tide, the wildlife using these areas may be disturbed or harmed by direct pursuit and harassment by dogs off leash plus the noise and activity. Leashes must be clearly required for all dogs throughout the park, shoreline and tidelands to provide protection for both wildlife and other visitors, including human. It is recommended that regulatory and educational signs be placed at tideland access points to educate visitors on the access boundaries and sensitivity of the wildlife using the tidelands.

The greatest disturbance potential occurs when habitat is reduced or removed, sensitive wildlife is present and/or habitat needs restricts wildlife movement. Due to proposed habitat protection and enhancement measures, habitat loss is not anticipated. Sensitive wildlife does occur, i.e. large concentrations of migratory or wintering waterfowl, marine mammals and other species, most of which utilize the marine waters or intertidal area. As a result, access to the intertidal area in particular should be limited.

The marine and intertidal habitats require protection from human disturbance, particularly during migration and periods of high concentration August 15 to May 15. Because, the seasonal low tides of summer occur during the day when fewer birds are present and the lowest tides of winter occur at night, many migrating and wintering birds can forage under the cover of darkness. There are areas however that require year-round protection including the inner bay at the Cain Creek estuary and certain shoreline foraging areas. During the low tides of summer (June, July, August) the concentration of birds is greatly reduced, thus reducing the

potential for disturbance, with the exception of some shorebirds in migration during August. It is therefore recommended that public access to the intertidal area be limited to summer months (June-August), and that no personal watercraft be allowed east of the main channel to and from Blaine Harbor. The area for year-round protection extends from Shelter #3 east along the shoreline and north across the tidelands (see Wildlife Protection Area Map). Signs should be placed in the upland and spaced out on the tide flats to inform visitors of timing restrictions and the boundary of the wildlife protection area.

The most important summer tideland issue is, the potential for seal pup disturbance while they are hauled out on the mudflats. Frequent disturbance of seals can result in the haulout abandonment and potentially increasing the number of abandoned pups. Human access to the tidelands when seals are present should be limited. By law (The Marine Mammal Protection Act of 1972), humans and their animals are not allowed to approach closer than 200 yards to seal haulouts. Boats and personal watercraft can cause a stampede of panicked harbor seals into the water, which can cause pups to be injured; therefore, non-human powered boats should be banned near the park and intertidal areas. Kayaking also needs to be done responsibly to reduce disturbance to birds and mammals.

It is recommended that visitors be educated regarding proper procedure when dealing with abandoned pups. Pups found alone on the tidal flats or beach must be left alone, this includes not handling them. If the pup is emaciated or looks ill, the local marine wildlife officers need to be informed so the pup can be evaluated by a professional wildlife rehabilitator and taken to a rehab center if necessary.

As a result of tideland wildlife sensitivity and water quality issues, it is strongly recommended that shellfish gathering be permanently prohibited north of Marine Drive.

The salt marsh between Shelters #1 and #2 needs protection from development and shading as well as restoration with native salt marsh associated plants.

Wildlife and Habitat Enhancement

Marine Park vegetation restoration should include removal of invasive non-native species, the addition shrubs for barriers, planting of certain trees, placement of perch poles, enhancement of shoreline and saltmarsh and restoration of fallow field/wet meadow.

Removal of non-native invasive plants is an on-going effort. Areas of non-natives need to be identified and delineated by an knowledgeable professional and a schedule of removal devised. Only manual removal is recommended. Plants such as blackberries (*Rubus* spp.), Japanese knot weed, purple loosestrife and reed canary grass should be removed systematically by physical means rather than with harmful chemicals. Second, to create a barrier around those sensitive shorelines, Nootka rose (*Rosa nutkana*), willow (*Salix* spp.), black hawthorn (*Crataegus douglasii*), native crab apple or other thick, low-growing shrubs should be planted.

Native coniferous and horizontally branching deciduous trees should be planted in the six locations as indicated on the map to increase perching habitat for raptors. Vertically branching trees such as the poplars currently on-site are useless for large birds. Until planted trees reach usable height, perch poles should be placed near the plantings. The addition of perch poles to the park until the planted trees grow to a usable height for birds of prey would attract more birds of prey. Bald eagles have been seen using the totem pole for perching due to the current lack of suitable perches.

Along certain beach areas, asphalt has been dumped, in addition to broken glass and garbage. These items should be removed on an on-going basis. Debris should be removed by hand picking in order to reduce disturbance of shoreline habitat.

The fallow field/seasonal wetland in the park should be enhanced to provide a greater diversity of habitat for more diverse species. If a small portion of the site was excavated and lined with clay so that it held water, then planted with a variety of sedges (*Carex* spp.) and other wetland associated plants including tules (*Scirpus lacustris*) or cattails (*Typha latifolia*), waterfowl such as, common snipe, dabbling ducks and herons would use the site. This would also be a potential roost for shorebirds at high tide. Swallows, red-wing blackbirds and marsh wrens would also be common inhabitants. Small shrubs such as red-osier dogwood (*Cornus stolonifera*), rose, spirea, crabapple and willow along the margins of the wetland also add to this habitat.

It is recommended that the beach, shoreline and saltmarsh habitat be restored with plantings from the following list of native vegetation.

Saltmarsh

American glasswort (*Salicornia virginica*)
beach sand spurry (*Spergularia macrotheca*)
fleshy jaumea (*Jaumea carnosa*)
scurvy grass (*Cochlearia officianalis*)
sea milk-wort (*Glaux maritima*)
sea plantain (*Plantago maritima* spp. *juncoides*)
seashore saltgrass (*Distichlis spicata* var. *spicata*)

Upland of Saltmarsh

dunegrass (*Elymus mollis*)
Lyngby's sedge (*Carex lyngbyei*)
Nootka lupine (*Lupinus nootkatensis*)
pacific silverweed (*Potentilla anserina*)
sea arrowgrass (*Triglochin maritimum*)
springbank clover (*Trifolium wormskjoldii*)
tufted hairgrass (*Deschampsia cespitosa*)

Sandy Beaches

beach morning glory (*Convolvulus soldanella*)
beach pea (*Lathyrus japonicus*)
beach-carrot (*Glehnia littoralis* ssp. *leiocarpa*)
native dunegrass (*Elymus molis*)
large headed sedge (*Carex macrocephala*)
Nootka lupine (*Lupinus nootkatensis*)
paintbrushes (*Castilleja* spp.)
searocket (*Cakile edentula*)
seashore bluegrass (*Poa macrantha*)
seashore lupine (*Lupinus littoralis*)
silver burweed (*Ambrosia chamissonis*)
yellow sand verbena (*Abronia latifolia*)

Cobble or Rocky Beaches

beach pea (*Lathyrus nevadensis*)
cleavers (*Galium aparine*)
coastal strawberry (*Fragaria chiloensis*)
native dunegrass (*Elymus molis*)
giant vetch (*Vicia gigantea*)
searocket

A list of plant species suitable for shoreline gravel habitat, provided by Binda Colebrook, 2002. The following list is based on over a decade of restoration experience and growing trials. Vegetation enhancement will require a specific planting and maintenance plan to ensure the growth and success of the plantings. This could be part of a citizen volunteer project.

baldhip rose (*Rosa gymnocarpa*)
bitter cherry (*Prunus emarginata*)
black hawthorn (*Crataegus douglasii*)
buckbrush (*Ceanothus sanguineus*)
coast gooseberry (*Ribes divaricatum*)
Garry white oak (*Quercus garryana*)
hairy manzanita (*Arctostaphylos columbiana*)
holly-leaved Oregon grape (tall/dwarf) (*Mahonia aquifolium*)
kinnikinnik (*Arctostaphylos uva-ursi*)
madrone (*Arbutus menziesii*)
Nootka rose (*Rosa nutkana*)
oceanspray (*Holodiscus discolor*)
orange honeysuckle (*Lonicera ciliosa*)
pacific mock orange (*Philadelphus lewisii*)
red flowering currant (*Ribes sanguineum*)
San Juan juniper (*Juniperus scopularum*)
Scouler's willow (*Salix scouleriana* var. *coetana*)
shore pine (*Pinus contorta* var. *contorta*)
Snowberry (*Symphoricarpos albus*)
soopolallie (*Shepherdia canadensis*)
sticky laurel (*Ceanothus velutinus* var. *laevigatus*)
western serviceberry (*Amelanchier alnifolia*)
western paper birch (*Betula papyrifera*)
western crabapple (*Malus fusca*)

Shade

Cascade Oregon grape (*Mahonia nervosa*)
Douglas maple (*Acer glabrum* var. *douglasii*)
evergreen (*Vaccinium ovatum*)
Oregon box (*Pachistima myrsinites*)
salal (*Gaultheria shallon*)

Wildlife Viewing Areas

Wildlife viewing is the fastest growing outdoor recreation in the United States (Knight and Gutzwiller 1995). The majority of this industry is built around bird watching specifically. Because Marine Park has gained a reputation as a good location for spotting rare birds, it is frequented by both professional and amateur birders, and birding tour groups.

Birders are a hardy bunch. They know how to dress for any weather conditions, carry their own optics and will spend hours at observation. Currently the Marine Park shoreline trail and associated picnic shelters provide excellent access for birders and viewing opportunities. Due to the open, unobstructed shoreline views, birders have full visual access to the shoreline and intertidal areas. There may actually be too much openness from the bird's perspective. Birders do not need to be close, but instead prefer to be non-disruptive to their subjects and viewing should be at a safe and non-disturbing distance. Most birders also do not need to access the beach, but prefer to view from above, a perched perspective as it were.

Due to the locations of the picnic shelters and their proximity to the tideflats, where most of the interesting birds are located, these structures substitute for viewing platforms or blinds. All of the shelters are situated directly above the shoreline edge and are significantly higher than the intertidal area. The fact that the best birding is done in the cooler fall, winter and early spring, there is little conflict with summer picnic use. Each shelter could be made more birder friendly with simply removing one of the picnic tables and adding a wind block or vegetation on the west side to break the wind. The shelters would then become multiuse. Interpretive information may also be placed at these locations.

Some discussion of a viewing tower or platform has occurred. This idea warrants further discussion for future consideration. The addition of the boardwalk west to the pier would serve a greater public function and provide significantly more viewing area than a platform and should be a higher priority. If a viewing platform was proposed, the two most suitable locations would be at the site of the existing deck (within the existing footprint) for primarily birding or near Shelter #3 for a sweeping view. A lower platform would be preferred over a tower due to the potential for view obstruction created by such a dominate structure on the shoreline and liability issues. Another idea would be to incorporate a platform behind the salmon wall which is already built up and could provide a central view point for the whole park.

Other bird/wildlife amenities for the site could be enhancement of the fallow field/wetland to attract/support greater species diversity and a different habitat experience. By building up the berm to the west, it could serve as a wind break and a well sheltered view point could be established with an interpretive sign. A wildlife check list and brochure for Marine Park and Semiahmoo Bay should be made available at the information center. A recent bird sighting board could also be maintained.

Designated Public Access Areas

Currently the general public has access to all of Marine Park and Semiahmoo Bay with the exception of an area of shoreline from Shelter #3 east to the Cain Creek estuary. Following a review of habitat, bird concentrations and rare bird occurrences, the area of current restriction is supported by the available data and protection of the entire bay could be justified. Further protection of the intertidal area is recommended and should be expanded if disturbance of wildlife continues or the area designated as protected proves to be inadequate.

It is recommended that the shoreline and associated intertidal area from Shelter #3 north to the international boundary and east to the opposite shoreline be designated a wildlife protection area. This includes all of the associated shoreline beaches, the small saltmarsh between Shelters #1 & #2, Cain Creek estuary and the shoreline-upland interface. Further development of any kind in this area is discouraged. The area designation is essentially what is already in effect, however the tideland restriction is perhaps more extensive. This area should be monitored by a qualified biologist for at least one year to determine the adequacy and effectiveness of the protection zone and to make recommendations for final protection and management.

To protect habitat and reduce disturbance to the intertidal area, it is recommended that public shellfish harvesting be prohibited in Semiahmoo Bay north of Marine Park. This is consistent with the current prohibition on shellfish harvest in the area due to degraded water quality.

Dogs in the tidelands are a serious issue. Due to the potential for disturbance to wildlife, dogs should be required to be on leash at all times, both in the park and designated beach areas. Signs and enforcement will be necessary to enact this restriction. Also, off lease areas in the City need to be identified and made available where wildlife will not be threatened.

The shoreline beach west of Shelter #3 has less habitat value and provides two excellent pocket beaches for public access. The deep pocket beach immediately south of Shelter #3, contains a shell berm, behind which is a low spot with drift wood deposits. This beach could be enhanced with clean sand, and sandy beach plants to create a unique beach habitat and excellent basking beach for families.

Given the sensitivity of all the tidelands for wildlife, it is necessary to recommend the consideration of closing the intertidal area to public access. This could be done on a seasonal basis, as a compromise or made year round if warranted. Monitoring of the site would assist in collecting the information necessary to clarify the need for such a restriction and to support this decision.

Without a doubt the proposed public boardwalk extending west to the public pier would be an outstanding addition to the park. The boardwalk would direct foot traffic away from the shoreline and its potential impacts, to an area specifically for public use. Such a walkway would provide superb views for birding at safe distances and just plain enjoyment. Extended decks with benches along the boardwalk would provide areas for relaxing and enjoying the scenery.

The public pier area, at the west end of Marine Drive, would be a logical location for the Plover Ferry docking and expanded picnic use. Areas for crabbing and fishing from the pier should be designated and not include the entire deck. Interpretive signage would be recommended for this area. As use of the pier increases, it may become necessary to restrict vehicle use and parking, by directing the parking of vehicles to the large lot at the berm and encouraging foot traffic only to the pier.

Kayak and small boat launching should all be directed to the launching facility at the Port. Use of the park for launching is a conflict of uses and is unnecessary given the excellent facilities available directly across Marine Drive.

The upland the fallow field/wet-meadow is generally avoided by people. With habitat enhancement of this area, public access could be directed with a low boardwalk along the south side to a partially screened small viewing deck and interpretive display. This should be carefully planned with the guidance of a biologist. Foot access directly into the habitat area would be discouraged or restricted by vegetation.

In conclusion, passive recreation is encouraged for Marine Park. Public access areas need to be clearly marked and enforced. Directing public use throughout the park by trails, boardwalks, view points, fencing and well placed signage will provide passive enforcement of access policies, protection for wildlife and enjoyment for the people using the park. However, some active enforcement will be necessary to ensure the protection of wildlife and their associated habitat, particularly during high use months. Consideration of further public access restriction in the intertidal areas is encouraged.

Complementary Development

One of the greatest attributes of the Marine Park - Blaine Harbor marina complex is the potential for complementary redevelopment of existing structures and new development for public access and commerce. By redirecting development to existing structures, the open space and habitat at the park can be preserved. With the decline of the fishing industry in Blaine, many commercial fish processing facilities and warehouses are becoming vacant. A high quality education and interpretive center would be a perfect redevelopment project and could include a "working" museum feature. In addition, shops and fish market, cafe and other commercial operations would be a great attraction to tourists. As Port property, coordination with the Port would be essential. While redirecting development to this area of declining use, it would revitalize the wharf area and maintain the integrity and protection of the wildlife viewing area along Marine Park. By redeveloping the vacant buildings and warehouses, some of the historical value would also be preserved, the development footprint would greatly reduce impacts and the added quaintness of the old buildings would potentially attract interesting businesses and more people. Overall, a cluster of shops, educational facilities, cafes and offices could become a year-round tourist center.

Public Education and Interpretation

The following are recommendations for public education and natural history interpretation at Marine Park and associated area.

1. The bulk of the public education and interpretive materials/displays should be located in the abandoned buildings south of Marine Drive. A few interpretive and educational signs along the shoreline path is sufficient.
2. Create the formerly proposed indoor education and museum facilities in the unused buildings south of Marine Drive. Re-direct all future development to this area and leave the park as open space.
3. Secure funding from area businesses and granting organizations for hold nature and history programs at the amphitheater. It is currently a beautiful facility that is under-utilized. If more education is provided, less enforcement will be needed.
4. Provide wildlife brochures and a bird checklist at the visitor information center. Have a recent rare bird sighting board so birders are alerted to special species using the tidelands.
5. Provide a whale watching/wildlife tour boat to Pt. Roberts. Whale watching in a multi-million dollar industry and Pt. Roberts is a common place for the orcas to be during certain times of the year. Other exciting wildlife can also be seen from boats. People will use this vector to get closer to the wildlife.
6. Train some volunteer stewards to monitor activities in the park and help inform the visitors of events and recent sightings. They can also help alert authorities to enforcement issues.
7. Utilize ideas from the previous development plans and incorporate them in an updated fashion in accordance with the new wildlife management plan.
8. Coordinate with transboundary organizations and programs for education and building uniform protection guidelines and public access.
9. Education the public regarding wildlife sensitivity and regulations restricting harassment and disturbance of wildlife.

Summary of Recommendations

The following is a list of general recommendations for the Marine Park area, and for the protection of wildlife and enhancement of habitat at Marine Park and Semiahmoo Bay.

- Maintain the current separation of landuse with park/recreation/habitat to the north of Marine Drive and Port/marine development to the south.
- Establish consistent zoning and landuse designation for marine park to make it consistent with City Comprehensive Plan and Parks Park.
- Designate Marine Park and associated tidelands a GMA Critical Area.
- Maintain passive recreation only at Marine Park.
- Maintain the current trail network.
- Designate the shoreline, saltmarsh and intertidal area north and east of Shelter #3 as a year-round wildlife protection zone.
- Consider restricting public access to whole intertidal area, or imposing season restrictions.
- Monitor wildlife patterns and public use of intertidal area for one year to determine need to impose greater public access restrictions. Assess and record disturbance of current public use activities.
- Assess the wildlife and habitat of Cain Creek, with the potential for day-lighting portions of the creek that are currently underground.
- Require that all dogs be on lease in all areas.
- Discourage dogs from entering intertidal area or require leash only access.
- Stress that public maintain a distance of 100 meter minimum from marine mammals in the water and 200 meter minimum for seals on beaches or floats, including seal pups.
- Prohibit shellfish gathering in intertidal area north of Marine Drive, except from pier.

- Require all small boat launching take place at the harbor boat launch facility south of Marine Park.
- Enhance designated pocket beaches for public use.
- Remove toxic debris and garbage from beaches.
- Enhance picnic shelters to serve as birding blinds, multi use structures.
- Add interpretive signage and birders information to existing large platform area.
- Consider a low viewing tower east of Shelter # 3.
- Maintain birding information and checklists at the information center south of Marine Park.
- Enhance habitat of fallow field/wet meadow.
- Discourage or limit use of personal watercraft east of main boat channel.
- Encourage redevelopment in specified area for educational and commercial facilities.
- Coordinate with Port of Bellingham, Blaine Harbor, Marine Education and Resource Center individuals and others to plan redevelopment options.
- Add shoreline pedestrian boardwalk to north side of Marine Drive along jetty.
- Enhance, revegetate and slightly reform berm near totem.
- Enhance shoreline-upland interface with shrubs and listed vegetation and add vegetative barriers where necessary.
- Maintain current fencing in park area.
- Add trees and perches to the upland for perching birds including raptors.
- Utilize only native plant species.
- Eliminate or control invasive non-native plants.
- Promote public education of natural history and assist in building the publics appreciation of wildlife and habitat.

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ATTACHMENTS

A - Blaine Wildlife Technical Commitee

B - Project Area Photographs

C - Wildlife Species List

D - Plant Species List

**Attachment A: The Blaine Wildlife Technical
Committee**

The Blaine Wildlife Technical Committee

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Attachment B: Project Area Photographs



1.

1. Park entrance gate looking northeast with pooper scooper bag dispenser and regulatory signs.
2. Boy with one of the many dogs using the park.

2.



3.

3. One of the four picnic shelters. These could be easily used by birders in inclement weather.
4. Person reading one of the interpretive signs near shelter 3.

4.



5.



5. The totem pole at the bluff picnic area.



6.

6. Dabbling ducks resting, gulls bathing and shorebirds feeding at the mouth of Cain Creek during high tide.

7. The paved path and one of the wildlife protection signs near shelter #1. Please note the combination of fence and thicket to keep people off the tidelands in this area.



7.

8. The paved path looking west near the large berm and the totem pole.

9. The paved path looking east near the large berm. The amphitheater is the wooden structure in the center.



8.



9.

10.

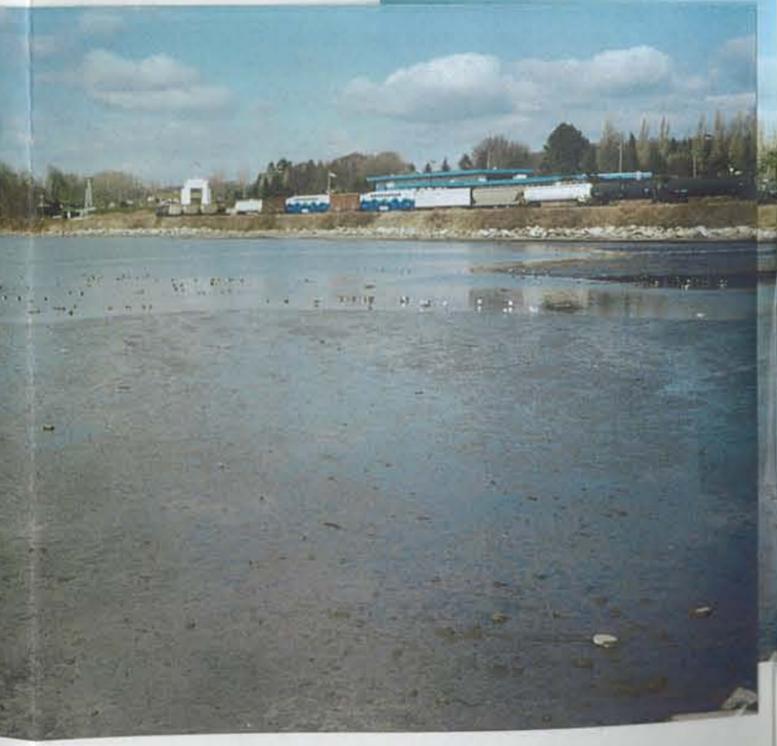
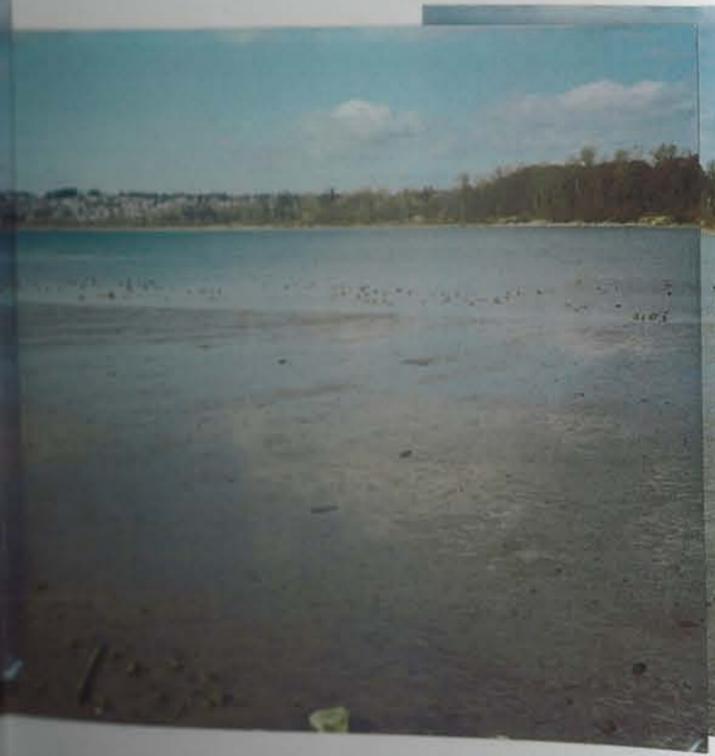
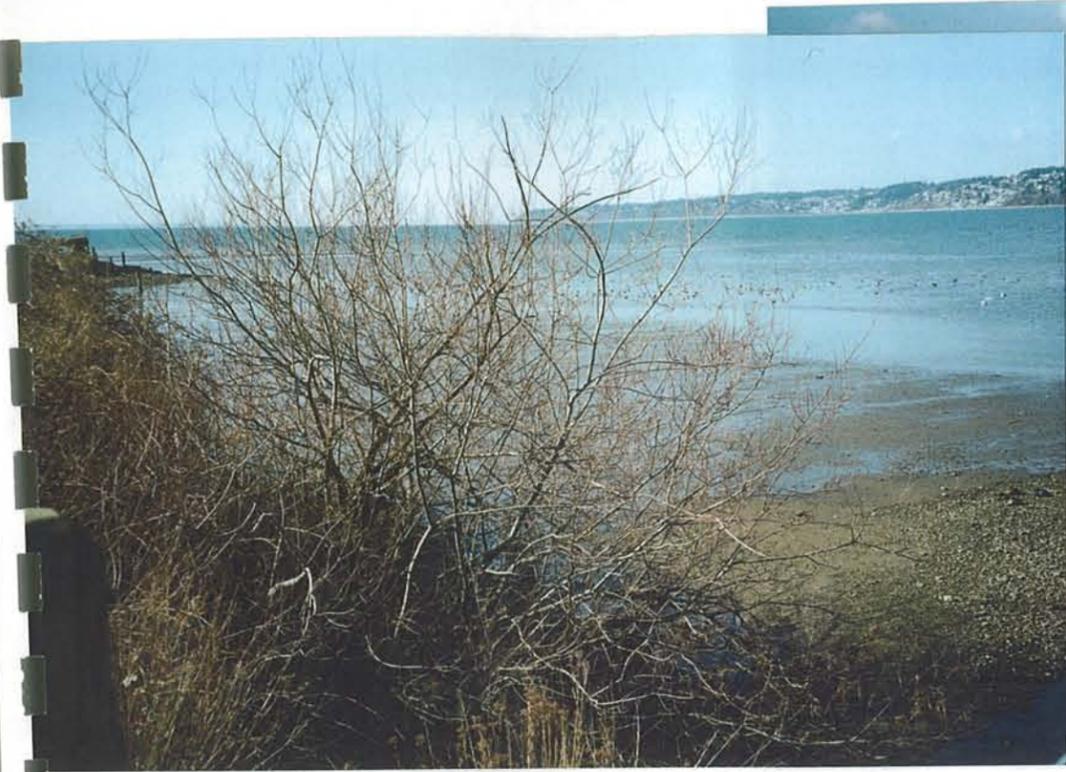


10. The former Cain Creek riparian marsh east of the Blaine Harbor marina looking south. The Burlington Northern railroad and right of way are on the left as is the old train depot. The central business district of Blaine is further to the left up on the hill.

11. The current mouth of Cain Creek looking northwest toward White Rock, British Columbia and the international border. The Burlington Northern Railroad and right-of-way are to the right of the picture. The blackberries on the left and willow shrubs on the right provide habitat and a natural barrier to public access.

11.





12.

12. The mouth of Cain Creek looking northeast toward the Peach Arch border crossing. Ducks are sleeping on the beach while gulls wash in the fresh water from the creek.

13. The proposed wildlife protection area looking north. The protection area would extend from shelter #3 to the eastern edge of the bay. The shelter in view is shelter #2. Part of the old lumber mill ruins are on the left. Dabbling ducks, gulls and other waterfowl are loafing and foraging near the tide line and creek mouth.

13.



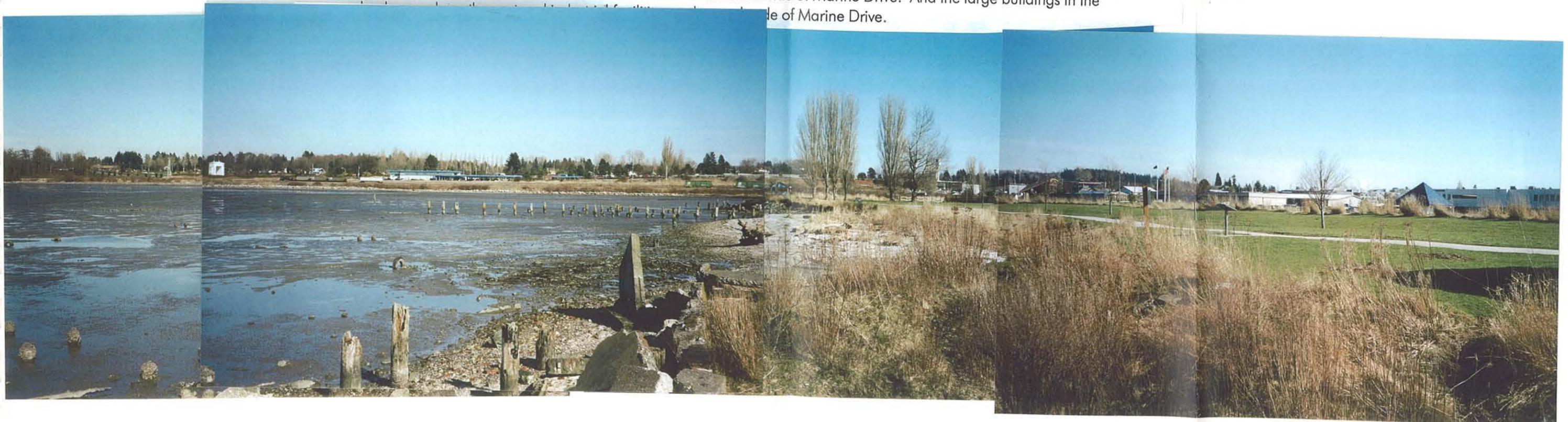
14.



14. Looking west from shelter #2 to shelter #3 at the pocket beach to be included in the protection area. Note the gravel, shell and sand mixture which is the type of substrate preferred by surf smelt and sandlance for spawning.

15. The wildlife protection area from shelter #3 looking east toward the eastern edge of Semiahmoo Bay. In the park on the right is the little used amphitheater and flag/salmon wall entrance. In the foreground are the gravel path and one of the wildlife protection signs. Also note the poplar trees by shelter #2. The vertical branching is not usable by large raptors. The blue pyramid roof is the public information center on the south side of Marine Drive. And the large buildings in the background are the high school and the middle school on the north side of Marine Drive.

15.



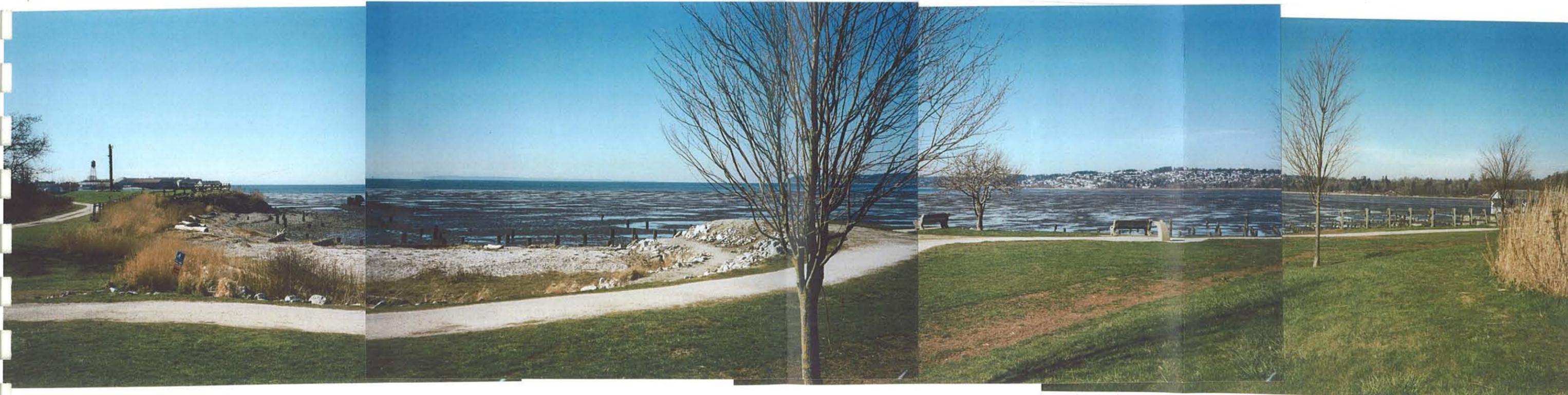
16.



16. Looking northeast at shelter #3 near one of the small pocket beaches with public access. Please note the amount of available mudflat for foraging as you look north toward White Rock. The blue roofed building on the right is the U.S. border station.

17.

17. Looking northwest at a second small pocket beach. The shoreline gravel path is lined with benches and a drinking fountain. The clump of dried grass to the right is part of the fallow field/meadow. On the far left is the totem pole with Semiahmoo Resort in the background. Shelter #3 is on the far right and shelter #4 is on the far left.



18.

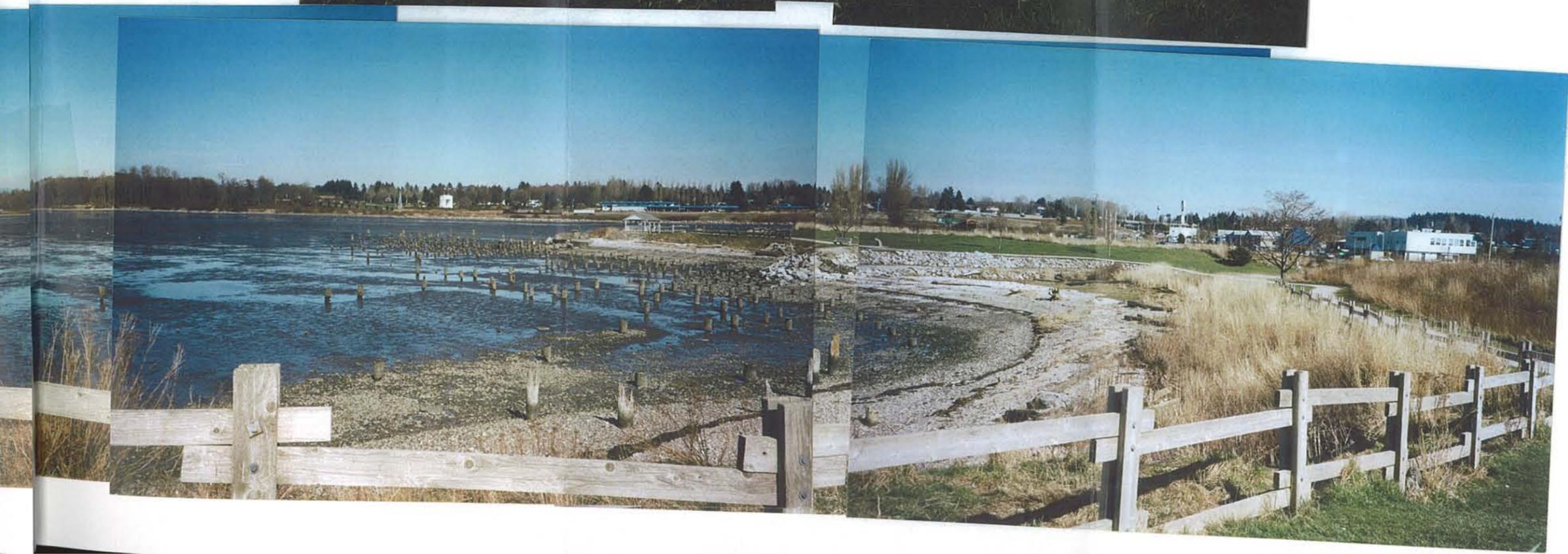
18. A panorama looking northwest of the grassy area and picnic tables near the totem pole. The Peach Arch is on the far right and the tower at Semiahmoo Resort is on the far left. The picnic shelter is shelter 4 and is next to the old sewer treatment facility site.



19. A panorama looking north to White Rock, British Columbia and the international border. The white dots on the mud flats are gulls and the darker ones are dabbling ducks. This area is the foraging habitat for migratory and resident shorebirds. Currently the tide is out and foraging shorebirds would be down by the tide line. Please note that the span of water between the tidal flat and Semiahmoo Resort on the far left is the navigation channel for Blaine Harbor marina and the Semiahmoo Resort marina. The concrete navigational piling and the steel navigational tower to the left out in the blue water are the sites for the two cormorant nesting colonies. On the far right is the large berm covered in common tansy.

19.







20.

20. Looking west, the fallow field/wet meadow area that could be restored to attract marsh associated birds and animals. Shelter #3 is on the left, the amphitheater is on the right with the orca sculptures and salmon wall between it and the flagged park entrance sign. Marine Drive and harbor buildings are on the far right.

21. Shelter #4 looking west to the right of the old sewage treatment facility. Another of the pocket beaches is on the left and the totem is on the right.



21.

22.



22. The view looking west from the end of Marine Drive on the pier. Marine Park is right center, the fish processing and other industrial buildings on the south side of Marine Drive are on the far right. On the left are some recreational shellfish gathers.

Attachment C: Wildlife Species List

Vertebrate Species of Semiahmoo Bay and Marine Park Blaine, Washington

The following species list is a combination of species known to occur within the area of Semiahmoo Bay and Marine Park and those species that potentially could occur, but have not been confirmed. The latter are listed in the following list as not verified. This list does not include fish.

This list is structured in taxonomic order by class, family and species. Species are listed by species code which represents the first two letters of the genus/species or scientific names. Under each family, species are then listed in alphabetical order of the species code. The species code is followed by common name, status (see key), scientific name and codes depicting occurrence/abundance and seasonality.

Due to the lack of field verification for amphibians, reptiles and most mammals, many of these species are inferred from habitat relationships and from those species known to occur in the lowlands of Whatcom County. The bird list is the result of accumulated field data and includes common, breeding, migratory and rare species. In addition to terrestrial species, the scope of the bird list includes shore, nearshore and marine species due to their importance as part of the habitat area. Sources and contributors to the species list are:

Brown, Herbert. 1992. *Amphibians and Reptiles of Whatcom County and Bellingham*.
Drummond, David P. 2002. Contributor (unpublished data).
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Codes used to indicate status, abundance and seasonality are as follows:

- * species that are expected, but not verified by those cited or by the authors
- * * introduced species
- X extirpated native species
- SS sensitive species, Endangered, Threatened, Sensitive, Candidate, PHS, species of local significance

Occurrence = C (common), U (uncommon), R (rare), - (undetermined)

Seasonality = P (permanent residence, breeder),
S (summer, breeder),
W (winter resident),
SF (spring/fall, migrant)
- (undetermined)

AMPHIBIANS

<u>species code</u>	<u>common name/status</u>	<u>genus species</u>	<u>abundance/seasonality</u>	
AMBYSTOMATIDAE				
AMMA	long-toed salamander*	<i>Ambystoma macrodactylum</i>	-	-
PLETHODONTIDAE				
PLVE	western redback salamander*	<i>Plethodon vehiculum</i>	-	-
HYLIDAE				
HYRE	pacific tree frog*	<i>Hyla regilla</i>	-	-

REPTILES

ANGUIDAE				
ELCO	northern alligator lizard*	<i>Elgaria coerulea</i>	-	-
NATRICINAE (subfamily)				
THOR	northwestern garter snake*	<i>Thamnophis ordinoides</i>	-	-
THSI	common garter snake*	<i>Thamnophis sirtalis</i>	-	-
THEL	terrestrial garter snake	<i>Thamnophis elegans</i>	-	-

BIRDS based on the *Check list of North American Birds* from the American Ornithologists' Union, 1985.

<u>species code</u>	<u>common name/status</u>	<u>genus/species</u>	<u>abundance/seasonality</u>	
GAVIIDAE				
GAAD	yellow-billed loon SS	<i>Gavia adamsii</i>	R	W
GAIM	common loon SS	<i>Gavia immer</i>	C	W
GAPA	pacific loon SS	<i>Gavia pacifica</i>	C	W
GAST	red-throated loon SS	<i>Gavia stellata</i>	C	W
PODICIPEDIDAE				
AEOC	western grebe SS	<i>Aechmophorous occidentalis</i>	C	W
POAU	horned grebe SS	<i>Podiceps auritus</i>	C	W
PODNI	eared grebe* SS	<i>Podiceps nigricollis</i>	U	W
POGR	red-necked grebe SS	<i>Podiceps grisegena</i>	C	W
POPO	ped-billed grebe SS	<i>Podilymbus podiceps</i>	U	W
PHALACROCORACIDAE				
PHAU	double-crested cormorant SS	<i>Phalacrocorax auritus</i>	C	P
PHPE	pelagic cormorant SS	<i>Phalacrocorax pelagicus</i>	U	P

<u>species code</u>	<u>common name/status</u>	<u>genus/species</u>	<u>abundance/seasonality</u>	
ARDEIDAE				
BOLE	American bittern*	<i>Botaurus lentiginosus</i>	R	S
ARHE	great blue heron SS	<i>Ardea herodias</i>	C	P
BUIB	cattle egret	<i>Bubulcus ibis</i>	R	F
BUST	green-backed heron	<i>Butorides striatus</i>	U	S
CASAL	great egret	<i>Casmerodius albus</i>	R	F
NYNY	black-crowned night-heron	<i>Nycticorax nycticorax</i>	R	F
ANATIDAE				
CYBU	trumpeter swan SS	<i>Cygnus buccinator</i>	U	W
CYCO	tundra swan SS	<i>Cygnus columbianus</i>	U	W
ANAL	greater white-fronted goose	<i>Anser albifrons</i>	U	SF
CHCA	lesser snow goose SS	<i>Chen caetulescens</i>	U	W
BRBE	brandt SS	<i>Branta bernicla</i>	C	SF
BRCA	Canada goose	<i>Branta canadensis</i>	C	P
AISP	wood duck SS	<i>Aix sponsa</i>	U	P
ANAAM	American wigeon	<i>Anas americana</i>	C	W - SF
ANAC	northern pintail	<i>Anas acuta</i>	C	W
ANCL	northern shoveler	<i>Anas clypeata</i>	C	SF
ANCR	green-winged teal	<i>Anas crecca</i>	C	W
ANCY	cinnamon teal	<i>Anas cyanoptera</i>	U	SF
ANDI	blue-winged teal	<i>Anas discors</i>	U	SF
ANPE	eurasian wigeon	<i>Anas penelope</i>	R	W
ANPL	mallard	<i>Anas platyrhynchos</i>	C	P
ANRU	American black duck	<i>Anas rubripes</i>	R	W
ANST	gadwall	<i>Anas strepera</i>	U	W
AYAF	lesser scaup	<i>Aythya affinis</i>	U	W
AYMA	greater scaup	<i>Aythya marila</i>	C	W
AYVA	canvasback	<i>Aythya valisineria</i>	U	W
BUAL	bufflehead	<i>Bucephala albeola</i>	C	W
BUCL	common goldeneye	<i>Bucephala clangula</i>	C	W
BUIS	Barrow's goldeneye	<i>Bucephala islandica</i>	C	W
CLHY	oldsquaw	<i>Clangula hyemalis</i>	C	W
HIHI	harlequin duck SS	<i>Histrionicus histrionicus</i>	C	P
LOCUC	hooded merganser SS	<i>Lophodytes cucullatus</i>	U	P
MENI	black scoter	<i>Melanitta nigra</i>	U	W - SF
MEPE	surf scoter	<i>Melanitta perspicillata</i>	C	W - SF
MEFU	white-winged scoter	<i>Melanitta fusca</i>	C	W - SF
MERME	common merganser	<i>Mergus merganser</i>	C	W
MESE	red-breasted merganser	<i>Mergus serrator</i>	C	W
OXJA	ruddy duck	<i>Oxyura jamaicensis</i>	U	W
RALLIDAE				
RALI	Virginia rail	<i>Rallus limicola</i>	U	-
PORCA	sora	<i>Porzana carolina</i>	U	-
FUAM	American coot	<i>Fulica americana</i>	C	P

<u>species code</u>	<u>common name/status</u>	<u>genus/species</u>	<u>abundance/seasonality</u>	
GRUIDAE				
GRCA	sandhill crane SS	<i>Grus canadensis</i>	R	SF
CHARADRIIDAE				
CHSE	semipalmated plover	<i>Charadrius semipalmatus</i>	U	SF
PLDO	lesser golden-plover	<i>Pluvialis dominica</i>	U	SF
PLSQ	black-bellied plover	<i>Pluvialis squatarola</i>	C	W
CHVO	killdeer	<i>Charadrius vociferus</i>	C	P
SCOLOPACIDAE				
ACMA	spotted sandpiper	<i>Actitis macularia</i>	U	S
APVI	surfbird	<i>Aphriza virgata</i>	U	-
AREIN	ruddy turnstone	<i>Arenaria interpres</i>	R	SF
ARME	black turnstone	<i>Arenaria melanocephala</i>	C	W
CAAL	dunlin	<i>Calidris alpina</i>	C	W - SF
CABA	Baird's sandpiper	<i>Calidris bairdii</i>	U	F
CAHI	stilt sandpiper	<i>Calidris himantopus</i>	R	F
CALAL	sanderling	<i>Calidris alba</i>	C	W - SF
CAMAU	western sandpiper	<i>Calidris mauri</i>	C	W - SF
CAMEL	pectoral sandpiper	<i>Calidris melanotos</i>	C	SF
CAMI	least sandpiper	<i>Calidris minutilla</i>	C	SF
CAPT	rock sandpiper	<i>Calidris ptilocnemis</i>	R	-
CAPU	semipalmated sandpiper	<i>Calidris pusilla</i>	R	SF
CASE	willet	<i>Catoptrophorus semipalmatus</i>	R	SF
GAGA	common snipe	<i>Gallinago gallinago</i>	U	P
LIFE	marbled godwit	<i>Limosa fedoa</i>	U	SF
LIGR	short-billed dowitcher	<i>Limnodromus griseus</i>	C	SF
LILA	bar-tailed godwit	<i>Limosa lapponica</i>	R	-
LISC	long-billed dowitcher	<i>Limnodromus scolopaceus</i>	C	SF
NUPH	whimbrel	<i>Numenius phaeopus</i>	U	SF
NUAM	long-billed curlew	<i>Numenius americanas</i>	R	-
PHLO	red-necked phalarope	<i>Phalaropus lobatus</i>	U	SF
PHTR	Wilson's phalarope	<i>Phalaropus tricolor</i>	U	SF
TRFL	lesser yellowlegs	<i>Tringa flavipes</i>	C	SF
TRME	greater yellowlegs	<i>Tringa melanoleuca</i>	C	SF
LARIDAE				
STPA	parasitic jaeger	<i>Stercorarius parasiticus</i>	C	SF
LAAR	herring gull	<i>Larus argentatus</i>	C	W
LACAL	California gull	<i>Larus californicus</i>	C	SF
LADE	ring-billed gull	<i>Larus delawarensis</i>	C	P
LAGL	glaucous-winged gull	<i>Larus glaucescens</i>	C	P
LAHE	Heermann's gull	<i>Larus heermanni</i>	C	SF
LAHY	glaucous gull	<i>Larus hyperboreus</i>	R	W
LAOC	western gull	<i>Larus occidentalis</i>	U	W
LAPH	Bonaparte's gull	<i>Larus philadelphia</i>	C	SF

<u>species code</u>	<u>common name/status</u>	<u>genus/species</u>	<u>abundance/seasonality</u>	
LARCAN	mew gull	<i>Larus canus</i>	C	W
LATH	Thayer's gull	<i>Larus thayeri</i>	U	W
STCA	caspian tern	<i>Sterna caspia</i>	C	SF
STHI	common tern	<i>Sterna hirundo</i>	C	SF
STPAR	arctic tern	<i>Sterna paradisaea</i>	R	SF
ALCIDAE				
BRMA	marbled murrelet SS	<i>Brachyramphus marmoratus</i>	U	P
CECO	pigeon gillmot SS	<i>Cephus columba</i>	U	S
URIA	common murre SS	<i>Uria aalge</i>	R	W
CATHARTIDAE				
CAAU	turkey vulture	<i>Cathartes aura</i>	C	S - SF
ACCIPITRIDAE				
HALE	bald eagle SS	<i>Haliaeetus leucocephalus</i>	C	P
CICY	northern harrier	<i>Circus cyaneus</i>	C	P
ACCO	Cooper's hawk	<i>Accipiter cooperii</i>	U	P
ACST	sharp-shinned hawk	<i>Accipter striatus</i>	U	P
BUJA	red-tailed hawk	<i>Buteo jamaicensis</i>	C	P
BULA	rough-legged hawk	<i>Buteo lagopus</i>	C	SF, W
PAHA	osprey	<i>Pandion haliaetus</i>	C	P
FALCONIDAE				
FACO	merlin SS	<i>Falco columbarius</i>		C SF, W
FAME	prairie falcon	<i>Falco mexicanus</i>	R	-
FAPE	peregrine falcon SS	<i>Falco peregrinus</i>	C	P
FARU	gyrfalcon	<i>Falco rusticolus</i>	R	W
FASP	American kestrel	<i>Falco sparverius</i>	U	SF, W
PHASIANIDAE				
PHCO	ringed-necked pheasant**	<i>Phasianus colchicus</i>	U	P
COLUMBIDAE				
COFA	band-tailed pigeon SS *	<i>Columba fasciata</i>	-	S
COLI	rock dove	<i>Columba livia</i>	C	P
ZEMA	mourning dove	<i>Zenaida macroura</i>	U	S - SF
TYTONIDAE				
TYAL	barn owl*	<i>Tyto alba</i>	C	P
STRIGIDAE				
AEAC	northern saw-whet owl*	<i>Aegolius acadicus</i>	U	-
ASFL	short-eared owl*	<i>Asio flammeus</i>	U	W
BUVI	great horned owl*	<i>Bubo virginianus</i>	U	P
NYSC	snowy owl	<i>Nyctea scandiaca</i>	R	W
STVA	barred owl*	<i>Strix varia</i>	U	P

<u>species code</u>	<u>common name/status</u>	<u>genus/species</u>	<u>abundance/seasonality</u>	
CAPRIMULGIDAE				
CHMI	common nighthawk	<i>Chordeiles minor</i>	U	S
APODIDAE				
CHVA	Vaux's swift SS	<i>Chaetura vauxi</i>	U	S
CYNI	black swift	<i>Cypseloides niger</i>	U	S
TROCHILIDAE				
SERUF	rufous hummingbird	<i>Selasphorus rufus</i>	C	S
ALCEDINIDAE				
CEAL	belted kingfisher	<i>Ceryle alcyon</i>	C	P
PICIDAE				
COAU	northern flicker	<i>Colaptes auratus</i>	C	P
DRPI	pileated woodpecker SS	<i>Dryocopus pileatus</i>	-	-
PIPU	downy woodpecker	<i>Picoides pubescens</i>	C	P
PIVI	hairy woodpecker	<i>Picoides villosus</i>	-	-
TYRANNIDAE				
EMTR	willow flycatcher SS	<i>Empidonax trallii</i>	C	S
COBO	olive-sided flycatcher SS	<i>Contopus borealis</i>	U	S
EMDI	pacific slope flycatcher	<i>Empidonax difficilis</i>	U	S
EMHA	Hammond's flycatcher	<i>Empidonax hammondii</i>	U	S
EMMI	least flycatcher	<i>Empidonax minimus</i>	R	S
ALAUDIDAE				
ERAL	horned lark	<i>Eremophila alpestris</i>	U	SF
HIRUNDINIDAE				
PRSU	purple martin X	<i>Progne subis</i>	-	-
HIPY	cliff swallow	<i>Hirundo pyrrhonota</i>	C	S, SF
HIRU	barn swallow	<i>Hirundo rustica</i>	R	S
RIRI	bank swallow	<i>Riparia riparia</i>	U	SF
STSE	northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	U	S, SF
TABI	tree swallow	<i>Tachycineta bicolor</i>	U	S
TATH	violet-green swallow	<i>Tachycineta thalassina</i>	C	S
CORVIDAE				
COCA	Northwestern crow	<i>Corvus caurinus</i>	C	P
COCO	common raven	<i>Corvus corax</i>	C	P
CYST	Steller's jay	<i>Cyanocitta stelleri</i>	U	P
PARIDAE				
PAAT	black-capped chickadee	<i>Parus atricapillus</i>	C	P
PARU	chestnut-backed chickadee	<i>Parus rufescens</i>	C	P

<u>species code</u>	<u>common name/status</u>	<u>genus/species</u>	<u>abundance/seasonality</u>	
AEGITHALIDAE				
PAMI	bushtit	<i>Psaltriparus minimus</i>	C	P
CERTHIIDAE				
CEAM	brown creeper	<i>Certhia americana</i>	U	P
SITTIDEA				
SICA	red-breasted nuthatch	<i>Sitta canadensis</i>	U	P
TROGLODYTIDAE				
THBE	Bewick's wren	<i>Thryomanes bewickii</i>	C	P
TRTR	winter wren	<i>Troglodytes troglodytes</i>	U	P
CIPA	marsh wren	<i>Cistothorus palustris</i>	U	P
MUSCICAPIDAE				
CAUS	Swainson's thrush	<i>Catharus ustulatus</i>	C	S
IXNA	varied thrush	<i>Ixoreus naevius</i>	C	W, SF
RECA	ruby-crowned kinglet	<i>Regulus calendula</i>	C	W
RESA	golden-crowned kinglet	<i>Regulus satrapa</i>	C	P
SIME	western bluebird X	<i>Sialia mexicana</i>	-	-
TUMI	American robin	<i>Turdus migratorius</i>	C	P
LANIIDAE				
LAEX	northern shrike	<i>Lanius excubitor</i>	U	W
MOTACILLIDAE				
ANRUB	American pipit	<i>Anthus rubescens</i>	U	W, SF
BOMBYCILLIDAE				
BOCE	cedar waxwing	<i>Bombycilla cedrorum</i>	C	P
STURNIDAE				
STVU	european starling	<i>sturnus vulgarus</i>	C	P
VIREONIDAE				
VIGI	warbling vireo	<i>Vireo gilvus</i>	U	S
VIHU	Hutton's vireo	<i>Vireo huttoni</i>	U	P
VIOL	red-eyed vireo	<i>Vireo olivaceus</i>	U	S
VISO	solitary vireo	<i>Vireo solitarius</i>	U	S

<u>species code</u>	<u>common name/status</u>	<u>genus/species</u>	<u>abundance/seasonality</u>	
EMBERIZIDAE				
DECOR	yellow-rumped warbler	<i>Dendroica coronata</i>	C	S
DENI	black-throated gray warbler	<i>Dendroica nigrescens</i>	C	S
DEPE	yellow warbler	<i>Dendroica petechia</i>	C	S
DETO	Townsend's warbler	<i>Dendroica townsendii</i>	U	S
GETR	common yellowthroat	<i>Geothlypis trichas</i>	C	S
OPTO	Macgillivray's warbler	<i>Oporonhis tolmiei</i>	U	S
VECE	orange-crowed warbler	<i>Vermivora celata</i>	C	S
WIPU	wilson's warbler	<i>Wilsonia pusilla</i>	C	S
PHME	black-headed grosbeak	<i>Pheucticus melanocephalus</i>	C	S
PIER	rufous-sided towhee	<i>Pipilo erythrophthalmus</i>	C	P
MELME	song sparrow	<i>Melospiza melodia</i>	C	P
PAIL	fox sparrow	<i>Passerella iliaca</i>	U	W
PASA	savannah sparrow	<i>Passerculus sandwichensis</i>	C	S
SPAR	American tree sparrow	<i>Spizella arborea</i>	R	W
ZOAL	white-throated sparrow	<i>Zonotrichia albicollis</i>	R	W
ZOAT	golden-crowned sparrow	<i>Zonotrichia atricapilla</i>	U	W
ZOLE	white-crowned sparrow	<i>Zonotrichia leucophrys</i>	C	P
ZOQU	Harris' sparrow	<i>Zonotrichia querula</i>	R	W
JUHY	dark-eyed junco	<i>Junco hyemalis</i>	C	P
CALA	lapland longspur	<i>Calcarius lapponicus</i>	R	W, SF
PLNI	snow bunting	<i>Plectrophenax nivalis</i>	R	W
STUNE	western meadowlark	<i>Sturnella neglecta</i>	U	W
AGPH	red-winged blackbird	<i>Agelaius phoeniceus</i>	C	P
XAXA	yellow-headed blackbird	<i>Xanthocephalus</i>	R	SF
EUCA	rusty blackbird	<i>Euphagus carolinus</i>	R	W
EUCY	Brewer's blackbird	<i>Euphagus cyanocephalus</i>	C	P
MOAT	brown-headed cowbird	<i>Molothrus ater</i>	C	S
ICGA	northern oriole	<i>Icterus galbula</i>	C	S
PILU	western tanager	<i>Piranga ludoviciana</i>	U	S

<u>species code</u>	<u>common name/status</u>	<u>genus/species</u>	<u>abundance/seasonality</u>	
ESTRILDIDAE				
PADO	house sparrow	<i>Passer domesticus</i>	C	P
FRINGILLIDAE				
CAPI	pine siskin	<i>Carduelis pinus</i>	C	P
CATR	American goldfinch	<i>Carduelis tristis</i>	C	P
LOXCU	red crossbill	<i>Loxia curvirostra</i>	U	P
CAFL	common redpoll	<i>Carduelis flammea</i>	R	W
CARPU	purple finch	<i>Carpodacus purpureus</i>	U	P
CARME	house finch	<i>Carpodacus mexicanus</i>	C	P
COVE	evening grosbeak	<i>Coccothraustes vespertinus</i>	C	W
FRMO	brambling	<i>Fringilla montifringilla</i>	R	W

MAMMALS

<u>species code</u>	<u>common name/status</u>	<u>genus/species</u>	<u>abundance/seasonality</u>	
Order MARSUPIALIA				
DIDELPHIDAE				
DIVI	Virginia opossum	<i>Didelphis virginiana</i>	C	P
Order INSECTIVORA				
SORICIDAE				
SOBE	marsh shrew*	<i>Sorex benderii</i>	-	-
SOCI	masked shrew*	<i>Sorex cinereus</i>	-	-
SOMO	dusky shrew*	<i>Sorex obscurus</i>	-	-
SOTRO	Trowbridge's shrew*	<i>Sorex trowbridgii</i>	-	-
SOVA	vagrant shrew*	<i>Sorex vagrans</i>	-	-
TALPIDAE				
SCTO	Townsend's mole*	<i>Scapanus townsendii</i>	-	-
SCOR	coast mole*	<i>Scapanus orarius</i>	-	-
Order CHIROPTERA				
VESPERTILIONIDAE				
EPFU	big brown bat*	<i>Eptesicus fuscus</i>	-	-
MYLU	little brown myotis*	<i>Myotis lucifugus</i>	-	-
MYOCA	California myotis*	<i>Myotis californicus</i>	-	-
MYVO	long-legged myotis*	<i>Myotis volans</i>	-	-
Order LAGOMORPHA				
LEPORIDAE				
SYFL	eastern cottontail*	<i>Sylvilagus floridanus</i>	-	-

<u>species code</u>	<u>common name/status</u>	<u>genus/species</u>	<u>abundance/seasonality</u>	
Order RODENTIA				
CASTORIDAE				
CASCAN	beaver*	<i>Castor canadensis</i>	-	-
CRICETINAE				
PEMA	deer mouse*	<i>Peromyscus maniculatus</i>	C	P
MICROTINAE				
MITO	Townsend's vole	<i>Microtus townsendii</i>	C	P
MURIDAE				
RANO	Norway rat*	<i>Rattus norvegicus</i>	-	-
MUMU	house mouse*	<i>Mus musculus</i>	-	-
Order CARNIVORA				
CANIDAE				
CALAT	coyote*	<i>Canis latrans</i>	U	P
PROCYONIDAE				
PRLO	raccoon*	<i>Procyon lotor</i>	C	P
MUSTELIDAE				
MUVI	mink	<i>Mustela vison</i>	R	P
MUFR	long-tailed weasel	<i>Mustela frenata</i>	R	P
MEMEP	striped skunk	<i>Mephitis mephitis</i>	U	P
LUCA	river otter	<i>Lutra canadensis</i>	C	P
PHOCIDAE				
PHVI	harbor seal SS	<i>Phoca vitulina</i>	C	P
OTARIIDAE				
ZACA	California sea lion SS	<i>Zalopus californianus</i>	U	S
EULU	Stellar sea lion SS	<i>Eunhydra lutris</i>	R	S

Attachment D: Plant Species List

List of possible Plants found at Marine Park

Latin Name

Achillea millefolium

Agropyron repens

Agrostis sp.

Aira cayophyllea

Alnus rubra

Anaphalis margaritacea

Arctium minus

Berberis aquifolium

Betula papyrifera

Bromus sp.

Chenopodium album

Cichorium intybus

Cirsium arvense

Cornus stolonifera

Cytisus scoparius

Dactylis glomerata

Daucus carota

Dipsacus sylvestris

Distichlis sp.

Elymus mollis

Epilobium angustifolium

Equisetum arvense

Festuca myuros

Geranium sp.

Grindelia integrifolia macrophylla

Juncus sp.

Lathyrus japonicus

Lonicera involucrata

Matthiolum graveolens

Matricaria matricarioides

Melilotus alba

Oemleria cerassiformis

Pastinaca sativa

Phalaris arundinacea

Plantago lanceolata

Plantago major

Plantago maritima

Common Name

common yarrow

quack grass

bent grass

silver hairgrass

red alder

pearly everlasting

common burdock

shining Oregon grape

paper birch

brome

lambquarter

chicory

Canada thistle

red-osier dogwood

scot's broom

orchard grass

Queen Anne's lace

teasel

saltgrass

dunegrass

fireweed

common horsetail

rat-tail fescue

geranium

gumweed

rush

maritime peavine

black twin-berry

stock

pineapple weed

white sweet-clover

Indian plum

wild parsnip

reed canary grass

English plantain

common plantain

seaside plantain

Latin Name

Poa sp.
Polygonum cuspidatum
Populus trichocarpa
Prunus serrulata
Pteridium aquilinum
Pyrus fusca
Ranunculus repens repens
Rosa nutkana
Rubus discolor
Rubus laciniatus
Rubus parviflorus
Rubus ursinus
Rumex sp.
Salix nigra italica
Salix sitchensis
Sambucus racemosa
Scirpus maritimus
Solanum dulcamara
Solidago canadensis
Spirea douglasii douglasii
Stellaria media
Symphoricarpos albus
Tanacetum vulgare
Taraxacum officinale
Trifolium pratense
Trifolium repens
Zostera marina
Zostera japonica

Common Name

blue grass
Japanese knotweed
black cottonwood
flowering cherry
bracken fern
western crabapple
creeping buttercup
Nootka rose
Himalayan blackberry
evergreen blackberry
thimbleberry
pacific blackberry
dock
Lombardy poplar
Sitka willow
red elderberry
seacoast bullrush
climbing nightshade
Canada goldenrod
hard hack
common chickweed
common snowberry
common tansy
common dandelion
red clover
white clover
eelgrass
Japanese eelgrass

SEMIAHMOO BAY WILDLIFE PROTECTION PLAN

