Draft Environmental Assessment

Clark and Sucia Islands Campsite and Trail Relocation

Washington State Parks
FEMA-1641-DR-WA

March 2007

FEMA

U.S. Department of Homeland Security
130 228th Street SW
Bothell, WA 98021-9796

TABLE OF CONTENTS

1.0 INTRODUCTION.....1

2.0 PURPOSE AND NEED FOR ACTION.....2

3.0 ALTERNATIVE ANALYSIS.....3

3.1 ALTERNATIVE 1...RELOCATE CAMPSITES & CONNECTING TRAILS (PREFERRED ALTERNATIVE).....3
3.2 ALTERNATIVE 2 - REPAIR AT EXISTING LOCATION.....6
3.3 ALTERNATIVE 3 - NO ACTION ALTERNATIVE.....7

4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES.....7

4.1 CLIMATE, GEOLOGY, AND SOILS.....8
4.2 WATER RESOURCES.....11
4.3 VEGETATION.....14
4.4 THREATENED AND ENDANGED SPECIES 15
***Bald Eagle*.....15**
***Marbled Murrelet*.....16**
***Salmonids, forage fish, critical habitat, and essential fish habitiat*.....16**
4.5 HISTORIC, ARCHAEOLOGICAL, AND CULTURAL RESOURCES.....18
4.6 SOCIOECONOMIC AND ENVIRONMENTAL JUSTICE (E.O. 12898).....20

5.0 CUMULATIVE IMPACTS.....21

6.0 PUBLIC INVOLVEMENT.....22

7.0 CONSERVATION MEASURES 23

8.0 CONCLUSION.....24

9.0 REFERENCES.....24

LIST OF FIGURES

Figure 1: Clark Island.

Figure 2: Sucia Island.

Figure 3: Clark Island damaged beach campsites.

Figure 4: Location of the proposed campsites and trail on Clark Island.

Figure 5: Typical undeveloped proposed campsite for Clark and Sucia Island.

Figure 6: Typical completed primitive campsite.

Figure 7: Layout of proposed campsites above Echo Bay on Sucia Island.

Figure 8: Location of damaged campsites at Ewing Cove on Sucia Island.

1.0 INTRODUCTION

The Washington State Parks and Recreation Commission (WA Parks) has applied through the Washington State Emergency Management Division (WA EMD) to the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) for funding assistance to reconstruct eight primitive campsites and connecting foot trails at Clark and Sucia Island State Parks. The State owns both Islands (the entire Island). The Islands are located in the Strait of Georgia in San Juan County, Washington (See "Regional Overview). These campsites were either destroyed or damaged during the January 27 to February 4, 2006 severe storms and tidal surge disaster. The event was declared a Presidential disaster on May 17, 2006 (FEMA-1641-DR-WA). FEMA is proposing to fund 75 percent of the cost for this project through its Public Assistance (PA) program.

The National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFRs] Parts 1500 through 1508), and FEMA regulations for NEPA compliance (44 CFR Part 10) direct FEMA and other federal agencies to fully understand and take into consideration environmental consequences of proposed federally funded projects. In compliance with NEPA and its implementing regulations, FEMA has prepared this draft environmental assessment (EA) to analyze potential environmental impacts of alternatives.

At each State Park, eight "primitive" campsites with picnic tables and fire rings were damaged or destroyed. Each campsite was approximately 600 square feet (ft^2). Trails were approximately 3 feet (ft) wide.

Clark Island State Park is located 1.75 miles northeast of Orcas Island (Latitude: 48.7012 N Longitude: 122.7646 W (NAD83/WGS84)). The park is approximately 55.15 acres with 11,292 ft of saltwater shoreline in the Strait of Georgia. It is accessible only by boat (WSP 2000). Prior to the event the park had eight campsites, two picnic sites with fire rings, nine moorage buoys, two vault toilets, one storage building, and one bulletin board. The island has no drinking water, and park visitors remove their own garbage. Activities on the island include primitive camping, picnicking, saltwater fishing, hiking, scuba diving and clam digging.

Figure 1 Clark Island

Sucia Island State Park is located 2.5 miles north of Orcas Island (Fig. 2, at right). The park is approximately 564.1 acres with 77,700 ft of saltwater shoreline in the Strait of Georgia. The island has two docks with 12 ft x160 ft mooring floats, 48 mooring buoys, five pit toilets, nine composting toilets, and two water systems with four reservoirs totaling 22,700 gallons of potable water.

Figure 2 Sucia Island

Drinking water is available April through September. On the island, there is also a shop building, 55 campsites, 16 picnic sites, seven bulletin boards, two trail system information map boards, 6.2 miles of trails, 3.5 miles of service roads, three picnic shelters, two reservation group camps, and one underwater scuba park with locator buoy. There is no garbage pick-up. Activities on and around the island include primitive camping, picnicking, hiking trails, salt water related activities, such as, clamming and crabbing (WSP 2000).

2.0 PURPOSE AND NEED FOR ACTION

The purpose of FEMA's Public Assistance Program is to assist communities in recovering from damages caused by natural disasters. Through this program, FEMA provides financial assistance to state and local governments, tribal governments, and U.S. territories after the declaration of a major disaster.

The Washington State Parks and Recreation Commission has determined there is a need for simple recreational facilities in the Strait of Georgia for recreational boaters and to control and manage identified uses on their Parks. These facilities need to provide: Sheltered Boat Parking/Beaching/Mooring; Beaches; Picnicking & Camping Areas; Access/Hiking/Walking Trails; Fresh Water Supply; and Sanitary/Restroom Features while protecting the fragile island environment. The facilities must be safe, cost effective, and continuously accessable.

3.0 ALTERNATIVE ANALYSIS

The following sections discuss the three Alternatives considered: a) The Preferred Alternative 1 relocates the campsites and trails to new locations; b) Alternative 2 reconstructs the campsites and trails at their existing locations; and c) the No Action Alternative leaves the damaged campsites in their existing condition.

3.1 Alternative 1 – Relocate Clark and Sucia Island Campsites

The Preferred Alternative for Clark Island involves abandoning the eight damaged campsites on the beach (Fig. 3) and relocating them above the beach on a forested bluff at the southwest end of the island (Fig. 4). Each new relocated campsite will occupy approximately 600 square feet and contain one picnic table, a level sleeping area, and one iron fire ring. The campsites and trail will be situated on an upland bluff at least 20 feet higher than the Mean Higher High Water (MHHW) of the beach and 20-50 feet landward from the edge of the bluff. Each campsite will have a water view, looking southeasterly toward Three Sisters and Lone Tree Islands.

Figure 3. Clark Island damaged beach campsites.

A 3-foot wide, 400-foot long trail will lead from the beach (location of the old campsites) to the new campsites (Fig. 5). Brush and small trees (less than 6 inches in diameter) will be removed from the trail/campsites by hand and cut off level with the ground and chipped. The wood chips will be spread over geosynthetic material used to surface the trails and campsites. Geogrid with Geotextile will be installed to 1) reinforce the substrate from rutting and wear; 2) minimize erosion; 3) separate the new trail/campsite activity from historic soil; 4) reduce the need for additional fill; and 5) support drainage across and along the trail and campsites (WSP 2000; Monolux and Vachowski 2000). Also, establishing a constructed, maintained trail should encourage campers to use the

established trail and minimize the tendency of campers to pioneer their own paths. Campsites will be seeded with native grasses to control erosion (Fig. 6).

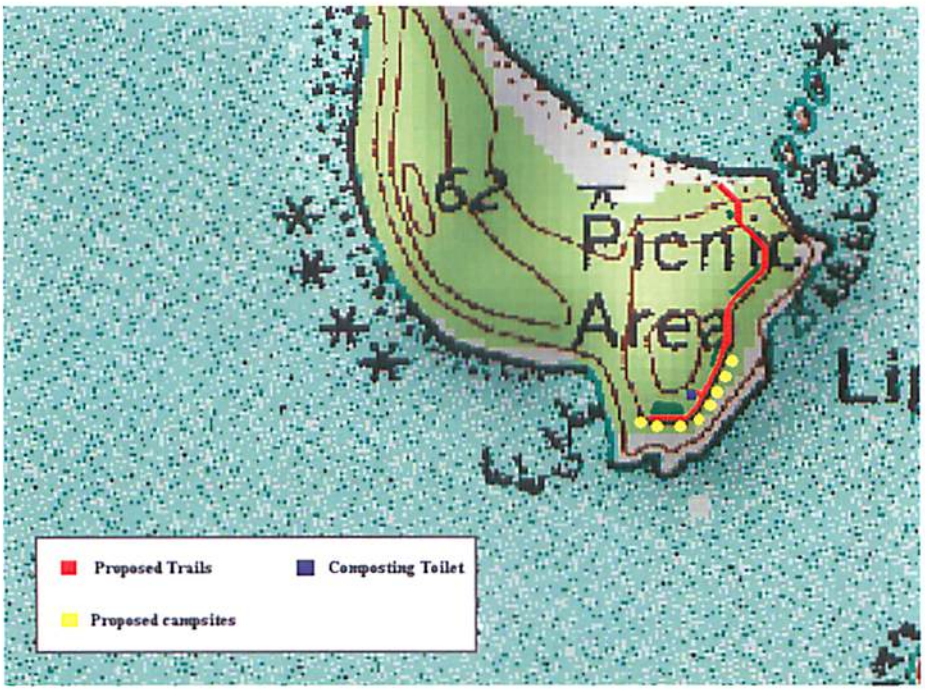

Figure 4. Location of the proposed campsites and trail on Clark Island.

The Preferred Alternative for Sucia Island will abandon the eight primitive campsites that were off the gravel beach at the mouth of Ewing Cove and relocate them on the bluff at the head of Echo Bay. Three of the campsites will be relocated 20-25 feet above the Bay, and a five-site 'group' campsite will be located 60-70 feet from the edge of the bluff to the northwest of the proposed single campsites in the woods (Fig. 7). The Group Camping area will have a picnic shelter with concrete footings, three fire rings and three picnic tables. Substrate under the Group Camping area will be fitted with 2-inch geocell with geotextile and permeable tread material. The geocell will reinforce the substrate from rutting and erosion and wear and will separate the Group Campsite activity from historic soil. The geocell will be covered with gravel and mulched wood chips. The substrate of the proposed trail and five bluff campsites will be treated the same as the proposed relocated Clark Island trail and eight campsites.

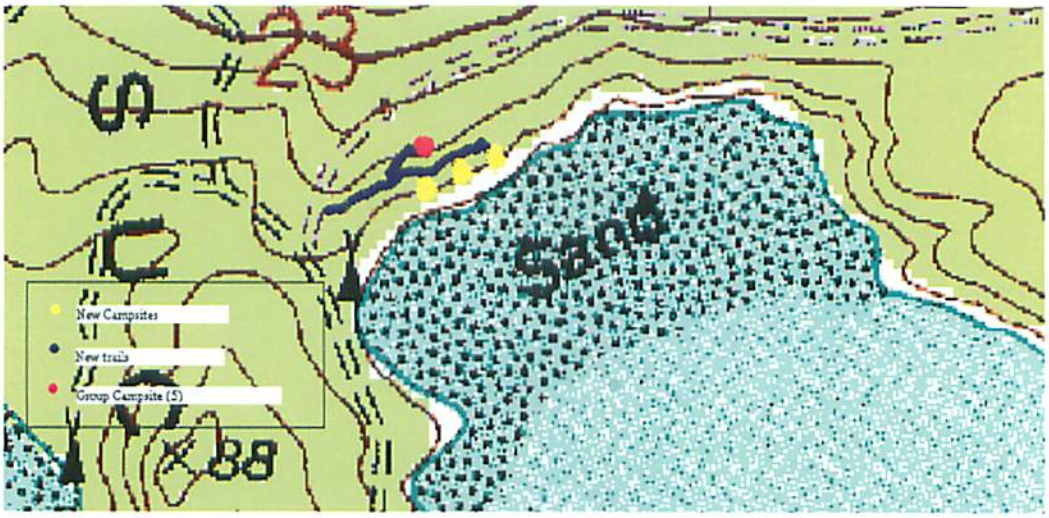

Figure 7. Layout of proposed campsites above Echo Bay on Sucia Island.

A 3-foot wide, 350-foot long trail will be cleared of vegetation and connect the new campsites to existing trail system on Sucia Island. The stairway on the beach at Echo Bay will be repaired.

The existing pit, vault, and compost toilets are adequate to service the campground use. One pit facility will be inactivated and replaced with a composting toilet.

Some repairs have been completed, repairs to the embankment of the road required 53 cubic yards of roadway rock and 15 cubic yards of pit-run gravel to backfill the eroded road shoulder.

Figure 5. Typical undeveloped proposed campsite for Clark and Sucia Islands.

Construction for both campsite/trail areas on Clark and Sucia Islands will be performed in the same manner. Both campsite/trail areas are designated as Resource Recreation Areas in the San Juan Marine State Park Management Plan (WSP 2000). All work would be done in accordance with permit requirements, which includes work windows, conservation measures, and Best Management Practices (BMPs).

Figure 6. Typical completed primitive campsite.

Existing toilet facilities will be maintained at the predisaster sites. New composting toilets will be installed near the new campsites. Toilet installation will depend on user accessibility, maintenance effort, and system capacity. Geosynthetic foundation materials designed to support heavier facilities will be used to support the composting toilet.

Supplies and equipment will be transport to and from the islands by a "landing-craft" type of boat. The bow of the boat lowers onto the beach enabling people and hand tools to be brought ashore. Materials will be hand carried to the site. With the exception of a chipper, work will be completed by hand or with the use of hand-operated equipment. The boat ramp near the Lummi Island Ferry will serve as the mainland access point for both islands.

3.2 Alternative 2 – Repair Camp Sites at the Existing Locations

For Alternative 2, the existing damaged camp sites would be repaired at or near their current locations on both Clark and Sucia Islands. Currently on Clark Island, the campsites are located on a gravel beach at south end of the island as shown in Figure 3.

On Sucia Island, the campsite/trail area is located on the beach of Ewing Cove on the east side of the island (Fig. 8). On both beaches, there are known archaeological and cultural resources (FEMA's Environmental Assessment (ENVAS, 20061030) Geographic Information System (GIS) map). Campsites would be repaired on the footprint of the existing campsites. Existing trails will provide access to the campsites proposed for repair. Current sanitary facilities will be maintained. Construction would be completed by hand and with the use of hand equipment. Geosynthetic materials would be used to separate native soil from trail materials and to reinforce trail/campsite substrate. Reconstruction of the campsites in their present footprints will subject these sites to repetitive damage from winter storm surge and future flood hazard events.

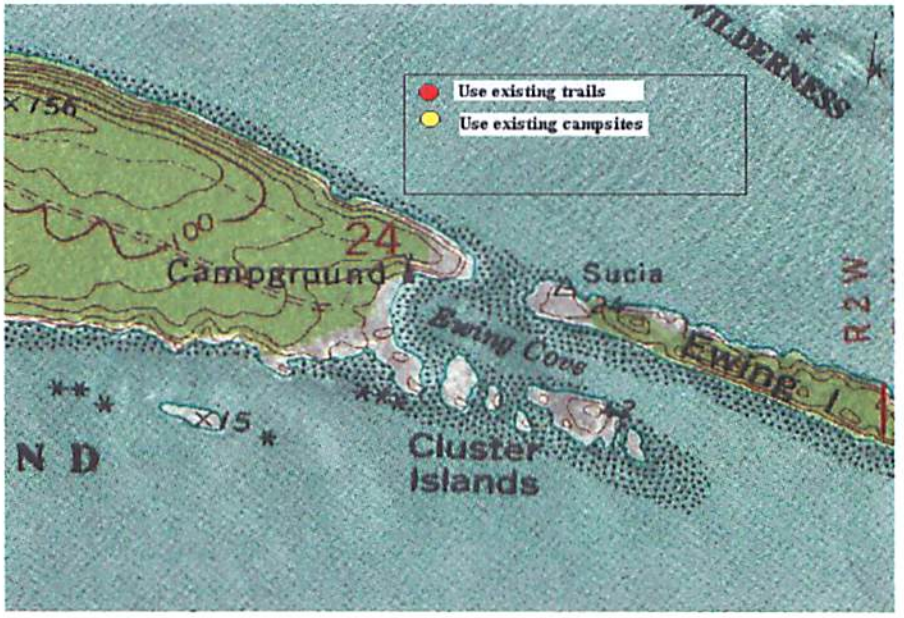

Figure 8. Location of damaged campsites at Ewing Cove on Sucia Island.

3.3 Alternative 3 – No Action Alternative

Under the No Action Alternative, FEMA would not provide funding to replace the damaged campsites on both Islands. Existing conditions at the sites would continue, no measures would be taken to repair the damaged or destroyed campsites or connecting trails. Campers, hikers, and boaters would establish and define the own campsites and paths. This alternative would not meet the WA Parks management goals, which are to establish safe and useable parks and to control and manage identified uses on Clark and Sucia Island Parks.

4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The following sections discuss the existing conditions by resource and the potential effects of the three alternatives considered.

4.1 Climate, Geology and Soils

Climate

The Clark and Sucia Islands are part of the San Juan Islands archipelago located in the Strait of Juan de Fuca. The islands are located within the "Olympic Rain Shadow", which moderates the climate. The Olympic Mountains act as a wall that protects these islands from the moist air coming from the Pacific Ocean. Clark and Sucia Islands receive 23-30 inches of precipitation annually. Rainfall is largely confined to the winter months. During the winter, Clark and Sucia Islands are swept by strong wind-storms and tidal surges, which usually come from the south and cause considerable shoreline and beach erosion. At other times of year, winds often have a drying effect, pulling moisture from vegetation and surface water, and heightening the impact of low rainfall periods.

Geology

Clark and Sucia Islands owe their origin to the partial submergence of a mountain range of unmetamorphosed, stratified, sedimentary rock, which have been covered with glacial drift and folded into the form of a trough or syncline that is inclined toward the east, resembling a horseshoe. These islands represent the highest points of a submerged mountain range that connects Vancouver Island with the mainland, and forms the southern boundary of the Gulf of Georgia. The higher points of the range constitute the islands and reefs of relatively resistant sandstone and conglomerate layers, while the valleys and ravines are more erodible shale and form the channels and harbors.

On Sucia Island, there is an alternating layering of shale and sandstone. By differential chemical action of the salt water on the sandstones of the Nanaimo series, unique land formations have resulted. Hollow caverns have been produced, and the surface resembles a honeycomb. There are also fossiliferous formations on Sucia Island that are 700 feet thick and contain a variety of fossilized species.

Soils

Soil types react differently to various land-use management schemes and have been evaluated by the Natural Resources Conservation Service (NRCS) with reference to development as campsites and trails. The campsites for Clark and Sucia Islands will require site preparation, road/trail stabilization, and sanitary facility installation. The NRCS ratings (for these Islands: Cb, Egb, and RxD) are based on soil properties that reflect the ease of developing camp areas and the performance of the areas after development.

Cb: The damaged campsites on both islands were located on soil classified as Coastal beach (Cb). Coastal beaches support no vegetation and are subject to continual wave action and erosion during high tides and storms. The Cb soil type is not rated by NRCS (2006) soil surveys for 1) camping, 2) paths and trails, 3) heavy foot traffic, 4) picnic areas, 5) shallow excavations, and 6) erosion hazard, due to flooding frequency and soil slippage hazard. Soil surveys rate the beach "poorly suited" for natural-surfaced trails, due to sand content of the soil, plasticity, groundwater depth, flooding frequency, and soil

slippage. Ruts form easily based on high groundwater depth, soil displacement, high runoff potential, and low soil strength (NRCS 2006). On both islands, the campsites and trails will be located off of the beach.

EgB: Clark Island campsites will be relocated on a bluff, at least 20-25 feet above the MHHW of the beach and 30-35 feet landward. The dominant soil is classified as Everett gravelly sandy loam, 3-8 percent slope (EgB), and the major considerations of this soil are slope, erodibility, and soil strength. This soil classification has a high rate of water infiltration and low runoff potential when thoroughly wet. The soil is well-drained gravelly sand, and depth to groundwater is not an issue. For these type soils the erosion hazard is slight to moderate. The soil is "well suited" for deep and surface mechanical site preparation, which will be necessary for root removal for the construction of the new campsites and trails. Gravel content "somewhat limits" camping/picnic areas and heavy foot traffic. This limitation can be overcome or minimized by special planning, geosynthetic fabrics, and design. In off-trail areas where 50-75 percent of the surface has been disturbed, erosion hazard is moderate for unsurfaced trails; however, rutting hazard is severe, indicating some erosion control measures may be needed.

RxD: On Sucia Island, soil classifications for the campsite relocations are Roche-Rock outcrop complex, 8-30 percent slope (RxD) and Roche-Rock outcrop complex, 30-70 percent slope (RxE). The project involves only the Roche-Rock outcrop complex, 8-30 percent slope. The taxonomic classification of Roche soil is a rock outcrop, unweathered bedrock covered by a coarse gravelly loam that is 60 inches deep. Limitations to this soil classification are depth to groundwater, slow water movement, slope, soil strength, gravel content, and depth to hard rock. Campsites, picnic areas, trails, and areas of heavy foot traffic established on this soil type have some limitations (erosion, water issues), but they can be overcome by special planning, design, or installation. Soil rutting and compaction do readily occur and can be controlled with construction fabrics. Shallow excavations of 5-6 feet are very limited in this soil. The limiting features are elevation of groundwater, caving of cutbanks, slope, and the possibility of encountering a dense layer. These limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected in areas of shallow excavations.

Environmental Consequences

Alternative 1 – Relocate Clark and Sucia Islands campsites and trails

The eight damaged campsites and trails on each of the coastal beaches (Cb) of Clark and Sucia Islands will be abandoned and relocated on more upland sites in the forested floodplain. During the winter months, erosive storm waves cut benches on bluffs on all exposed shores near high tide-level at approximately 15-20 feet. The campsites and trails will be situated on the bluffs at least 20-25 feet higher and 30-35 feet landward of the beaches. The sites will be less vulnerable to erosive forces and flooding and would have more protection and stability from destruction by the surf.

Severe rutting hazard is typical of the soils classified on the islands. This soil limitation can be controlled with construction fabrics. On both Islands, the use of geosynthetic materials under the campsites and on the trail substrates will significantly reduce soil erosion, reduce surface runoff, moderate loss of humidity from the macro-climate, maximize soil water retention, decrease substrate disturbance, and eliminate the severe rutting hazard. Soil revegetation and wood chip mulching of the new campsites and trails will significantly minimize short- and long-term soil runoff and erosion.

The new campsite locations will require the construction of composted toilets and drainfields. Limitations to shallow excavations are caving of cutbanks and slope issues. Soil excavations from 0-6 feet (for the new composted toilets and their drainfields) may require shoring or sloping of sidewalls to prevent the cutbanks from caving.

The erosion potential is significantly less than with Alternatives 2 and 3. The setback of the campsites and trails on the upland bluff will eliminate the future loss of the facilities due to storm surge. Geotextile materials would support the substrate base and reduce trail maintenance and need for non-native fill. The adverse anthropogenic effects to the unique rock formations at Ewing Cove on Sucia Island will no longer be an issue.

Alternative 2 – Repair campsites and trails at existing locations

The damaged and destroyed campsites and trails on Clark and Sucia Islands would be repaired to pre-disaster condition on the footprint of the previous facilities. Reconstruction would continue to subject the campsites and trails to future damage on the flood-proned, continuously shifting coastal beach. As a result of the sand/gravel content of the substrate and its soil-slippage tendencies, the soil is poorly suited for camping and heavy foot traffic, and there is a high propensity toward rutting hazard, soil displacement, and erosion. The depth to the water table and soil plasticity makes this soil unsuitable for campsite preparation, unless reconstructive measures are taken, such as the implementation of geosynthetic materials to reinforce the substrate and overcome limitations of the soil properties. Even if geosynthetics materials were used, the probability of the future loss or destruction of the repaired campsites and trails, and loss of the newly installed Geotextile materials are high with Alternatives 2 and 3. The erosion of the unique honeycomb land and fossiliferous formations at Ewing Cove on Sucia Island would continue due to human activity significantly degrading the shoreline (Castor pers. comm. 2006).

Alternative 3 – No Action Alternative

The location of the campsites and trail would remain on the beach, and facilities would continue in their damaged condition, subject to continual wave action, erosion hazard, and flood frequency during high tides and winter storms. Surface soil conditions would remain unstable, proned to rutting and erosion, and poorly drained with high groundwater. The campsites, trails, picnic tables, and fire pits would not be repaired or replaced. Campers and boaters would define and establish their own trails and campsites. Therefore, undisturbed soil, native habitat, historic geologic formations, and the beach would experience continued, and possibly an increase in, adverse anthropogenic effects.

4.2 Water Resources

Marine
Clark and Sucia Islands are located in the Strait of Georgia in Puget Sound. Washington Department of Ecology (WDOE) initiated the monthly monitoring of marine waters in 1967 to assess water quality in the area. A sampling station was established approximately 2 miles north of Sucia Island in the Strait. Results from 1998-2000 showed hypoxic dissolved oxygen concentrations (less 4 mg/L) in the Strait seasonally, apparently unrelated to anthropogenic causes (Newton et al 2002). No sampling site was located near Clark Island.

ENVAS (20061030) classifies the marine embayments surrounding the islands as priority coastal zone habitat.

Groundwater
There are no rivers and no snowpack upon which to rely for fresh water; therefore, groundwater recharge is dependent on rainfall. The source of the groundwater is a bedrock aquifer. About 3 inches of the 29-35 inch average annual rainfall is available for groundwater recharge.

Water quality
Clark Island has no water wells; therefore, campers must provide their own water supply. In addition there are no pit toilets on Clark Island. All sanitary facilities are vault type toilets.

Sucia Island has two water systems with 5 reservoirs. The surface water wells are classified as "groundwater under the influence of surface water" and are 24-30 feet deep. Reservoirs provide 22,700 gallons of chlorinated potable water, delivering a maximum of 10 gallons per minute. Drinking water is available for campers from April 1 through October 15 (few, if any, campers use the islands in the winter). Sucia Island has high groundwater table from December through March, and depth to saturation is 1.0 to 3.0 feet during this period.

Washington Department of Health (WDOH) tests the well water 1 or 2 times per month. It is during the winter months of high groundwater that the wells have occasional exceedances in total e.Coli (November 22, 2005; January 19, 2006; WDOH 2006). WDOH indicated the occasional exceedances were total, not fecal, coliform and could have come from a variety of sources, not from human sanitary facilities. The system is chlorinated, and these occasional exceedances would have no effect to water quality or human health (Steve Deem, WDOH, pers.comm. 07 Dec 06). The potable water wells are greater than 1500 feet from the sanitary facilities; minimum distance from drinking water required by WDOH is 100 feet. The last permit issued by WDOH was March 01, 2006. Permit restriction stipulated the water system was adequate for the existing uses and capacity; however, system was not considered adequate for adding new service connections, and it has design limitations (WDOH 2006). WA Parks is replacing one campsite for each campsite lost on both islands. Recreational use on the islands is not anticipated to increase.

Compost toilets use wood chips and water to digest the solid waste. Composted liquid effluent from compost toilets is filtered into the ground by a perforated pipe. The volume of effluent from composted toilets is none to very little. The digested compost and effluent are tested by WDOH. The digested compost is spread onto the forest floor. Pit toilets are being abandoned due to a higher possibility of environmental contamination.

Wetlands

Wetlands are defined in E.O. 11990 (44 CFR Part 9.4), as "those areas inundated or saturated by surface or groundwater with a frequency sufficient to support, or that under normal hydrologic conditions does or would support, a prevalence of vegetation or aquatic life typically adapted for life in saturated or seasonally saturated soil conditions." Wetlands function to 1) stabilize the shoreline and curtail coastal erosion, 2) remove wave-wash sediment, 3) protect against wetland plant and habitat degradation, 4) improve water quality, 5) enhance flood control, and 6) buffer storm surges and wave energy. Executive Order (E.O.) 11988, Floodplain Management and E.O. 11990, Protection of Wetlands, direct federal agencies to avoid to the extent possible short-term and long-term adverse impacts associated with the occupancy and modifications of floodplains and wetlands. FEMA's regulations for complying with both Executive Orders are promulgated in 44 CFR Part 9 and FEMA applies the Eight-Step Planning Process.

National policy considers wetlands to be unique and vital natural resources of critical importance and directs federal agencies to provide leadership in minimizing the destruction, loss, or degradation of wetlands. The U.S. Army Corps of Engineers (USACE) is the federal regulatory agency for wetlands (Clean Water Act). The ENVAS priority habitats GIS database (20061030) and the National Wetlands Inventory (NWI) maps (USFWS 2006b) indicates beaches are classified as wetlands.

The NWI classifies the location of the existing campsites and associated trails on Clark and Sucia Islands as Marine Intertidal Unconsolidated Shore Regularly Flooded (M2USN, Cowardin et. al. 1979). This wetland classification refers to open ocean/high energy coastline with little shelter from the wind and waves. It is coastal beach that is regularly flooded at least once per day.

Neither the NWI or ENVAS (20061030) document the freshwater wetland that is directly adjacent to and south of the beach on Clark Island. The wetland is heavily vegetated with freshwater wetland plants and was frequented by waterfowl during the November 2006 site visit.

Environmental Consequences:

Alternative 1 – Relocate Clark and Sucia Islands campsites and trails

Campsites and trails will be moved out of the wetland beach and embayment areas and be relocated upland at least 25-30 feet above and 30-35 feet landward from the bluff edge. The upland relocation of the campsites out of the wetlands will preserve these wetland values on both island beaches. For every pit toilet abandoned, a compost toilet that

completely digests the waste will be installed, thus protecting groundwater quality. For both islands, no increase in campground use is anticipated. WA Parks will not be adding additional campsites, toilets, or new water taps in the campsite relocation. Current capacity is not expected to be exceeded (Jim Neill, WA Parks, pers. comm. 07 Dec 06).

On Clark Island, the upland relocation will significantly support the aquatic productivity on the beach, protect the water quality of the bay, and protect the freshwater wetland adjacent to the beach for wildlife use and flood storage. On Sucia Island, the relocation to Echo Bay will stop the erosion of the wetland beach at Ewing Cove caused by recreational activities. The erosion has caused loss of the fossiliferous and honey comb unique land formations, which negatively affects nearshore water quality.

The only effect to the beaches will be the mooring of the boat on shore for access to the islands. Contact with USACE indicated no USACE 404 permit will be required for either site (Kathy Kunz, USACE, pers. comm. 07 Dec 06).

Alternative 2 – Repair campsites and trails at existing locations

The campsites and trails would be reestablished directly on the wetland beach. Short- and long-term impacts (shoreline erosion, wetland plant lose, and release of sediment from human activities) would continue to degrade wetland functions and nearshore water quality. If geosynthetic material were employed to control the erosion, future storm events would undoubtedly wash the fabric into the Strait. The eight replaced picnic tables and fire pits would be buried or lost into the Strait in similar sorm events. Construction BMPs, conservation measures, project timing, and mitigation measures would be implemented to minimize project and construction impacts. Campsites and trails would receive heavy impact from flooding, human and natural erosion, wind, and waves. Future damage from winter storm surges is reasonably certain to occur on both islands. The freshwater wetland on Clark Island would continue to experience vegetation degradation and human disturbance to wildlife that depend on this wetland for reproduction and freshwater. On Sucia Island, sensitive priority habitats (embayment water quality, geologic landforms, archaeology resources) would continue to be degraded by recreational activities.

Alternative 3 – No Action Alternative

Campsites, trails, picnic tables, fire pits, sanitary facilities would not be repaired or replaced and campers would be allowed to establish their own campsites on the beach. Lack of defined trail locations will encourage hikers to create their own trails through and near the wetland. Removal of wetland/shoreline vegetation and increased human activities in undisturbed areas would adversely affect the wetland functions of flood control, sediment removal, shoreline erosion, and wildlife habitat, especially on Clark Island. Erosion and native vegetation removal would continue to affect freshwater and nearshore water quality. Adverse effects to wetland values and functions, exemplified in Alternative 2, would be equal to or magnified in the No Action Alternative, as campers and hikers would be left to forge their own trails and create their own campsites.

4.3 Vegetation

For both islands, the vegetation communities affected by these projects are classified as a Douglas fir (*Pseudotsuga menziesii*), Pacific madrone (*Arbutus menziesii*), and Salal (*Gaultheria shallon*) forest. They are found near water and occupy the south to southeast aspect ridges 20-80 feet above the beach, where winds are moderate, temperatures are slightly high, and soil moisture is low. Douglas fir and madrone co-dominate the canopy. Western red cedar (*Thuja plicata*), Lodgepole pine (*Pinus contorta*), and Western yew (*Taxus brevifolia*) are minor canopy/understory components. A minor component in the forest is Grand fir (*Abies grandis*). Salal dominates the understory, and Ocean spray (*Holodiscus discolor*) is the common tall shrub. Occasional Honeysuckle (*Lonicera sp.*) and Blue bunchgrass (*Festuca idahoensis*) may be found (WSP 2000).

Environmental Consequences:

Alternative 1 – Relocate Clark and Sucia Islands campsites and trails

About 6000 square feet of existing vegetation will be removal (clearing and grubbing) in preparation for the campsites and the trails on both Islands. Removal of vegetation, including roots, for the new campsites and trails could affect surface runoff and soil erosion. Each campsite (600 square feet) and trail (about 1200 square feet) will be totally surrounded by thick native vegetation. Geosynthetic material (geotextile/geogrid) and/or wood chips/gravel will completely cover the exposed substrate. The native vegetation, geosynthetic material, and/or wood chips/gravel will perform four major functions: 1) separate the exposed native soil from erosive forces, 2) reinforce the campsites and trails, 3) facilitate immediate on-site infiltration (Monolux and Vachowski 2000), and 4) prevent surface runoff and eroded soil transport into nearshore waters.

Work will be conducted in previously undisturbed areas. All vegetation to be removed will be upland plants. The project has been designed so clearing will avoid significant trees, and ground cover will be left undisturbed to the maximum extent practicable. Shoreline/wetland vegetation that attenuates storm surge and aids in flood storage and shoreline stabilization will not be disturbed in the short-term by the construction operation or in the long-term by recreation activities. The beach and freshwater wetland vegetation will be avoided on Clark Island.

On Sucia Island, the WA Park land classification for Ewing Cove shows a natural area is surrounded by a large recreational area. Moving the campsites from Ewing Cove beach to Echo Bay upland bluff would stop the loss of vegetation and erosion by campers and hikers in the natural wetland and recreational areas of Ewing Cove and allow revegetation in these areas. A sparse number of old Western yew are mixed in the understory near the three proposed campsites along the bluff. Robert Fimbel, WA Parks, highly recommended placement of trails and campsites to protect and avoid these remnant trees from the historic old growth that once covered this island.

Alternative 2 – Repair campsites and trails at existing locations

All repair work would be conducted on the beach. Shoreline vegetation that attenuates storm surge and aids in flood storage and shoreline stabilization would repeatedly be impacted in the short-term by the construction operation and in the long-term by repeated camping/hiking activities. The freshwater wetland vegetation that provides wildlife habitat on Clark Island would be continually disturbed by campers/hikers. Although previously disturbed, shoreline/wetland vegetation has begun to reclaim the beach, especially at Clark Island, and some additional removal of wetland/shoreline vegetation may be necessary. On Sucia Island, vegetation at Ewing Cove has been removed by long-term human activities along the shore. Repair of campsites at Ewing Cove would limit the possibility of shoreline revegetation and would continue the adverse anthropogenic (human activities) effects of erosion in the natural and recreational areas.

Alternative 3 – No Action Alternative

Vegetation would be allowed to reclaim the beach and attenuate future storm surges and aid in flood storage and shoreline stabilization. However, with no structured campsites and trails, campers and hikers would establish and define their own campsites and paths. This would continue to impact shoreline/wetland vegetation on the beach and would allow human encroachment into the undisturbed habitat and natural areas.

4.4 Threatened and Endangered Species

Section 7 of the Endangered Species Act (ESA) of 1973 requires federal agencies to determine the effects of their actions on threatened and endangered species of fish, wildlife and plants, and their habitats, and to take steps to conserve and protect these species. FEMA's Geographic Information System (GIS) database was used to determine the presence of federally-listed threatened and endangered species and their critical habitats on both Islands. Using this GIS data as a baseline, consultation with the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Washington Department of Fish and Wildlife (WDFW) and Tribal fisheries biologists was conducted by FEMA staff to determine the potential effects of the project to species and habitat.

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is protected as a state and federally-listed, threatened species in Washington. Important factors that can affect bald eagle productivity and survival are prey availability and human disturbance. Preferred prey of bald eagles is birds. Human activities near nest sites during the nesting season, such as construction and camping activities can disturb eagles and lead to abandonment of the nest or reduction of reproductive success.

An analysis of the ENVAS (ENVAS 20061030) data regarding federally-listed species shows the proposed project on Clark Island is located in a bald eagle territory. One nest is in the area of the proposed project. The closest proposed campsite will be approximately 400-450 feet from the bald eagle nest to the northeast. The damaged beach campsites were also 400-450 feet from the same nest to the north. A site visit

revealed the proposed and damaged campsites and trails are not in the line-of-sight of the nest.

On Clark Island, it has been documented that courtship and nest-building activities begin in late December and January and egg-laying begins in late February to mid-March. The eaglets hatch in mid-March to mid-April and fledge in late June (WA Parks 2006). For this reason, the construction work window for this project on Clark Island is August 1-December 15 of any year. This timing refers to the use of small motorized equipment, including the wood chipper.

Prey is plentiful around Clark Island, as the area encompassing the island is in the San Juan Island National Wildlife Refuge.

On Clark and Sucia Islands, camping started in 1964. ENVAS data and contact with WDFW confirm the nesting territory has been active and regularly productive since 1975, and fledgling survival has been documented as annually successful by aerial surveys prior to 2003. The eagles appear to have become acclimated to humans during over 40 years of camping activity on the island, and it does not appear to have affected reproductive success or led to nest abandonment.

On Sucia Island, the closest bald eagle nest from the damaged campsites at Ewing Cove is 0.25 mile away. The closest nest from the proposed campsites and trails is over 0.5 mile from the proposed campsites.

Marbled Murrelet

Marbled murrelets (MAMU, *Brachyramphus marmoratus*) were listed as threatened by USFWS on October 1, 1992, and are currently listed as threatened with WDFW. MAMU use the waters around the islands year-around for foraging (Bower 2003, DOI 2006, Speich and Wahl 1995, Strachan et. al. 1995, Wahl et. al. 1981), as they forage in sheltered waterways and harbors generally within 1.2 miles of shore. Pacific sand lance constitutes over 65 percent of their diet, especially in the breeding season. Studies by WDFW and Friends of the San Juan show there is favorable forage fish spawning habitat around the islands, especially, Sucia, but there is no documented use of the beaches by forage fish.

MAMU nest in mature and old growth forests within 60 miles of marine waters. The islands were logged in the 1900s, and little, if any, old growth is left on the islands. Also, MAMU choose nests that are not directly adjacent to the ocean and where wind is not a factor (71 FR 53838, 09/12/06). Wind and proximity to the ocean are factors that would limit MAMU from choosing to nest on the islands.

Salmonids, forage fish, critical habitat, and essential fish habitat

There are no ESA-listed salmon (*Oncorhynchus spp.*) or bull trout (*Salvelinus confluentus*) in the vicinity of the projects.

The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires federal agencies to consult with NMFS on activities that may adversely affect Essential Fish Habitat (EFH).

The object of this EFH assessment is to describe potential adverse effects to designated EFH for federally managed West Coast groundfish, Pacific salmon, and coastal pelagic species. The EFH assessment describes conservation measures proposed to avoid, minimize, or otherwise offset potential adverse effects to designated EFH resulting from the Preferred Alternative. The area has not been designated as Essential Fish Habitat (EFH) by NMFS.

Around Sucia and Clark Islands, there is suitable forage fish habitat and eel grass (*Zostera sp.*) in abundance; however, spawning surf smelt (*Hypomesus pretiosus*), sand lance (*Ammodytes hexapterus*), and Pacific herring (*Clupea harengus pallasi*) have not been documented (FSJ/WDFW 2004a and b, FSJ 2006, WDFW 2000). Sucia Island Echo Bay has been designated as 'potential forage fish habitat (FSJ/WDFW 2004a and b).

Environmental Consequences:

Alternative 1 – Relocate Clark and Sucia Islands campsites and trails

In the past 40 years, camping appears to have had no effect on reproductive success of the bald eagles on Clark Island, and recreational activities have not led to abandonment of the nest. The location of the old and new campsites are equal in distance from the bald eagle nest, and both sites are out of the line-of-sight of the nest; therefore, the long term effects of the new campsite construction will pose *no effect* to the eagles.

Clearing and grubbing of 6000 ft^2 of vegetation for the campsites and trails and the chipping of the vegetation removed from the sites may cause short-term noise disturbance to the eagles on Clark Island, especially during the nesting season. The island's bald eagles have been documented to nest and fledge one month earlier than those on the mainland. Consultation with USFWS (Brian Missildine pers.comm. 2006) determined the Preferred Alternative *may affect, but is not likely to adversely affect* bald eagles on Clark Island, provided a work window is established to protect nesting bald eagles. Therefore, work will only be allowed August 1-December 15 of any year on Clark Island to protect the nesting bald eagles.

On Sucia Island, the repaired campsites and trails would be greater than 0.5 mile from any bald eagle nest and not within the line-of-sight of the nest; therefore, it has been determined the construction will have *no effect* on bald eagles (USFWS 2006).

There is no marbled murrelet nesting habitat on the either island. MAMU use the marine area around the islands for foraging and rearing. The distance that MAMU forage from shore and the limited construction activity and noise that will be generated during the two projects will result in *no effect* to MAMU using the area around the islands (USFWS 2006). Therefore, no daily timing restrictions are necessary.

On Clark and Sucia Islands, construction will have little effect on the aquatic environment. The campsites and trails will be at least 25 feet above the MHHW and at least 30-35 feet landward of the bluff edge in an upland location. To control surface runoff and erosion from entering the aquatic environment and to separate the native soil

from erosive activities, the exposed surfaces of the trail and campsites will be covered with geosynthetic material and chipped wood. Since the action area of Clark and Sucia Islands contains no ESA-listed salmonids, critical habitat, forage fish, or EFH, these projects will have *no effect* on ESA-listed fish, their critical habitat, or EFH (USFWS 2006a).

Alternative 2 – Repair campsites and trails at existing locations

Repairs would reestablish the campsites and trails on Clark and Sucia Islands on the beach. For 40 years on Clark Island, the campsites and trails have been located at this site. During those years, no adverse effect has been recorded regarding the reproductive success of the bald eagles using the nest. As with the Preferred Alternative, the noise disturbance from construction *may affect, but is not likely to adversely affect* the bald eagles. Consequently, USFWS will require a work window (August 1-December 15 of any year on Clark Island) to protect nesting bald eagles from construction impacts.

On Sucia Island, the repaired campsites and trails would be 0.3 miles from two bald eagle nests and not within the line-of-sight of the nests; therefore, it has been determined the construction will have *no effect* on bald eagles (USFWS 2006).

Effect to MAMU from the repair of the campsites and trails on both islands will be the same as the Preferred Alternative. USFWS has determined there will be *no effect* to MAMU using the area around the islands (USFWS 2006).

The repair of the facilities would to continue to add sediment to the aquatic environment from erosion caused by human activities on the beach. However, for the same reasons cited in the Preferred Alternative, these projects will have *no effect* on ESA-listed fish, their critical habitat, or EFH (USFWS 2006).

Alternative 3 – No Action Alternative

Construction impacts to bald eagles would be avoided. However, if campers and hikers were left to define and establish their own campsites and trails, harm and harassment to nesting bald eagles could become a problem. This could lead to nest abandonment by the adult bald eagles and a decline in reproductive success. The No Action Alternative is *likely to adversely affect* bald eagles. USFWS might require other reasonable and prudent measures to reduce construction impacts.

There would be *no effect* on MAMU (USFWS 2006), listed salmonid species, their critical habitat, or EFH.

4.5 Historic, Archaeological and Cultural Resources

Consideration of impacts to cultural, historic, and archaeological resources is mandated under Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. Federal agencies are required to take into account the effect of their actions on any district, site, building, structure, or object that may be potentially impacted by a

proposed project. Impacts to archaeological and cultural resources also need to be addressed whenever any previously undisturbed area may be impacted, including excavation at construction sites. As defined in 36 CFR Part 800.16, the Area of Potential Effect (APE) is "the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist." And Undertaking is "a project, activity, orprogram funded in whole or in part under the direct or indirect jurisdiction of a Federal agency including those carried out with Federal financial assistance". For the purposes of this document: the term "archaeological resources" is used to refer to prehistoric or historical subsurface sites or objects; the term "historic resources" refers to above-ground historic buildings, sites, objects, structures, or districts.

Prior to European settlement, the San Juan Islands were part of the traditional area of the Central Coast Salish: Squamish, Halkomelem, Nooksack, Northern Straits (includes Lummi), and Klallam Tribes. The Coastal Salish people have inhabited the area for at least 11,000 years; however, little evidence remains archaeologically to document their long occupation of the land. The San Juan Islands were once seasonal homes for local Indians. The Songish, Samish, and the Lummit tribes have used the islands as summer homes, performing hunting, fishing, and collecting berries for winter (SJID 2006).

According to FEMA's ENVAS database for historical and archaeological sites (20061030), listed with the Washington State Office of Archaeology and History (OAHP), there are numerous mapped archaeological sites and districts on the islands. On Clark Island at the extreme north end, a 1947 survey mentions a partially buried stone circle exists, and midden was exposed. In the proposed project area, the soils are extremely thin, weathered glacial till, and no archaeological resources were found at the south end of the island. This is documented in the archaeological survey report (Meatte 2006). On Sucia Island, numerous archaeological/cultural resources were documented. At Ewing Cove, the area of the damaged campsites and trails, prehistoric shell midden (45SJ103: ENVAS 20061030, Meatte 2006) is exposed. At Echo Bay, the proposed campsite/trail relocation sites, the archaeological survey reports thin glacial till soil and no archaeological or cultural resources were found (Meatte 2006). Shell midden has been documented in the vicinity of Echo Bay; however, the location is over 0.5 mile to the east of the proposed campsite area (45SJ101: ENVAS 20061030, Meatte per. comm. 2006).

The Lummi and Samish Tribes were each contacted and provided with project information and photos. Both Tribes requested an archaeological survey be conducted in the Area of Potential Effects to ensure cultural resources would not be adversely affected by the ground disturbing activities. The requested assessment was completed by Dan Meatte, WA Parks Archaeologist, on December 19, 2006 (See Appendix A "Report To Suzy Lutey from Dan Meatte").

Environmental Consequences:

Alternative 1 – Relocate Clark and Sucia Islands campsites and trails

The Area of Potential Effect (APE) for Clark Island will include the area around the proposed new campsites, trail, and composting toilet at the southwest end of the Island (see Figure 4) and for Succia Island will include the area around the proposed new campsites, trail, and composting toilet landward of the bluff at the head of Echo Bay (see Figure 5). An archaeological assessment was performed on November 9, 2006 by Dan Meatte, WA State Parks Archaeologist. The APEs for both islands are located in areas considered to have no potential for interference with archaeological and cultural resources; therefore Dan Meatte's conclusion was the project would not affect historic, archaeological, or cultural resources with the following conditions: camping will be restricted to designated sites and geosynthetic materials will be used to separate historic soils from camping activities.

The archaeological/cultural assessment by WA Parks concurs with the selected sites (both Islands), because the relocations are 1) upland and away from future storm surge influence, thus reducing potential management and maintenance issues, and 2) removed from Ewing Cove archaeological resources, thus eliminating potential for unanticipated disturbances from camping related activities (Meatte 2006).

Alternative 2 – Repair campsites and trails at existing locations

The Area of Potential Effect (APE) for Clark Island will include the area around the existing campsites on the gravel beach at the south end of the Island. The archaeological assessment revealed no archaeological cultural resources are documented in the damaged beach camping area on Clark Island. Although archaeological/cultural resources were not recorded on the Clark Island beach, Dan Maette commented this beach would have been an area of high cultural use, especially adjacent to the freshwater wetland in a sheltered cove.

The Area of Potential Effect (APE) for Sucia Island will include the area around the existing campsiteson the beach of Ewing Cove on the east side of the Island. The damaged Ewing Cove campsites are in an area of archaeological and cultural importance (ENVAS 20061030, Maette 2006). Historic shell midden has been found at this site and has been disturbed in the past. Therefore, archaeological/cultural resources would be affected by this action.

Alternative 3 – No Action Alternative

The Area of Potential Effect (APE) for both Islands could become the entire Islands because facilities would not be provided and campers and boaters would not be restricted to designated areas. Island visitors would define and establish their own trails, campsites, and toilet facilities; therefore, native soil and habitat would undoubtedly be disturbed, with the possibility of increasing the adverse anthropogenic effects to archaeological resources. Archaeological/cultural resources would be adversely affected by this action.

4.6 Socioeconomic and Environmental Justice (E.O. 12898)

Executive Order 12898, Environmental Justice, directs federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects on minority and low-income populations in the United States resulting from federal programs, policies and activities.

Clark and Sucia Islands are owned by WA Parks. Clark Island was acquired from the U.S. Bureau of Land Management in 1964. Sucia Island was purchased in five parcels from 1952-1974. According to the "San Juan Marine State Park Area Management Plan" (WSP 2000) WA Parks manages Clark Island as resource recreation or natural areas and Sucia Island as resource recreation, natural forest, or natural areas. Both Islands specialize in primitive camping, hiking, picnicking, and saltwater activities. There are no permanent residences on either island. No Native Americans live on either island, as in the distant past. Access to the Islands is by boat, canoe, or kayak.

Environmental Consequences:

Alternative 1 – Relocate Clark and Sucia Islands campsites and trails

Access to and use of the Parks (Islands) is open to the public without regard to socio-economic status. There would not be a disproportionately high or adverse effect on any low-income or minority populations, would not cause adverse economic impacts, and is compliant with E.O. 12898.

Alternative 2 – Repair campsites and trails at existing locations

Access to and use of the Parks (Islands) is open to the public without regard to socio-economic status. There would not be a disproportionately high or adverse effect on any low-income or minority populations, would not cause adverse economic impacts, and is compliant with E.O. 12898.

Alternative 3 – No Action Alternative

WA Parks would not receive funding to relocate the campsites and the trails. There would not be a disproportionately high or adverse effect on any low-income or minority populations and complies with E.O. 12898.

5.0 CUMULATIVE IMPACTS

Cumulative impacts are those effects on the environment resulting from the incremental effect of the action when added to past, present and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time.

Clark and Sucia Islands have no permanent residents. WA Parks classifies the areas of use as recreational and performs routine maintenance on the trails and camping areas.

Environmental Consequences:

Alternative 1 – Relocate Clark and Sucia Islands campsites and trails

The campsites on both Islands will be moved to an upland location, thus eliminating the possibility of damage to the campsites from future storm and tidal surges and from erosion due to wave-wash. These relocations would reduce, if not eliminate, cumulative and repetitive disturbance impacts to the environment, such as repeated harm and harassment to bald eagles from equipment use and long-term sediment impacts from campsite damage and wetland vegetation loss. The employment of geosynthetic materials would significantly reduce surface runoff and erosion that results from continued recreational activities. Replacement of pit toilets with compost toilets would greatly reduce the possibility of ground and surface water contamination. The expected Island use will remain as projected. Cumulative impacts would be reduced, if not eliminated.

Alternative 2 – Repair campsites and trails at existing locations

Erosion and sediment impacts on both Islands would be repetitive due to future campsite damage from storms and high tides and use of the beaches by campers. Ewing Cove on Sucia Island would frequently experience heavy erosional damage to the unique geological formations and historic archaeological resources. Vegetation loss from the wetland beach areas would be on-going. Equipment disturbances to bald eagles during campsite repair by WA Parks would be repetitive over-time. The expected Island use will remain as projected. Cumulative effects would be continual.

Alternative 3 – No Action Alternative

Cumulative effects would be the same as Alternative 2. In addition, campers and hikers would be allowed to define and establish their own trails and campsites and would not be restricted to designated areas. Erosion and sediment impacts, encroachment on native habitat and vegetation, increase in harm and harassment to bald eagles would be cumulatively significant and be spread over a broader area on both islands. The possibility of incremental damage to the unique geological formations and archaeological resources at Ewing Cove on Sucia Island would be more probable. The expected Island use will remain as projected. Cumulative impacts would be frequent and very significant.

6.0 PUBLIC INVOLVEMENT

A public notice (See Appendix B) is required for this draft EA. The public will be provided an opportunity to comment on the EA for 30 days after the publication of the public notice. The notice identifies the action, location of the proposed sites, participants, location of the draft EA, and who to contact to contribute comments.

Copies of the public notice will be posted at: Both Clark and Sucia Island State Parks and published in the San Juan Journal.

The Draft EA will be available for review at:

Washington State Parks & Recreation Commission
Northwest Region Office
220 N. Walnut Street
Burlington, WA 98233

Orcas Island Public Library
500 Rose Street
Eastsound, WA 90245

7.0 CONSERVATION MEASURES

Conservation Measures refers to actions that would minimize or eliminate potenetial adverse environmental impacts that could result from the proposed action. The potentially adverse impacts described in the previous sections are minor. Conservation Measures for Alternative 1 include:

- The repairs/relocation shall be in compliance with the "San Juan State Park Area Management Plan.
- WA Parks is required to obtain and comply with all required local, State, and Federal permits and approvals prior to implementation.
- The applicant is responsible for selecting, implementing, monitoring and maintaining Best Management Practices (BMPs) to control erosion and sediment, reduce spills and pollution, and provide habitat protection.
- Brush and small trees (less than 6 inches in diameter) will be removed from the trail/campsites by hand and cut off level with the ground and chipped. The wood chips will be spread over geosynthetic material used to surface the trails and campsites. Geogrid with Geotextile will be installed to 1) reinforce the substrate from rutting and wear; 2) minimize erosion; 3) separate the new trail/campsite activity from historic soil; 4) reduce the need for additional fill; and 5) support drainage across and along the trail and campsites
- New composting toilets will be installed near the new campsites. Toilet installation will depend on user accessibility, maintenance effort, and system capacity. For every pit toilet abandoned, a composting toilet that completely digests the waste will be installed.
- Work will be limited to the period between August 1 and December 15 of any year to protect the nesting bald eagles.
- In the event historically or archaeologically significant materials or sites (or evidence thereof) are discovered during the implementation of the project, the project shall be halted and all reasonable measures taken to avoid or minimize harm to property until such time as FEMA (in consultation with the State Historic Preservation Officer (SHPO), Lummi and/or Samish Tribal Historic Preservation Offier (THPO), and WS-EMD) determines appropriate measures have been taken to ensure that the project is in compliance with the National Historic Preservation Act.

8.0 CONCLUSION

The findings of the draft EA conclude the proposed relocation of the campsites and trails on Clark and Sucia Island would result in no significant environmental impacts to the human or natural environment. The Preferred Alternative meets the requirements of a Finding of No Significant Impacts (FONSI) under NEPA and the preparation of an Environmental Impact Statement (EIS) is not required.

9.0 REFERENCES

Advanced Composting Systems (ACS). 2005. Using the Phoenix Composting Toilet System in Public Facilities: An Information and Application Guide, Advanced Composting Systems, LLC.

Albertson, S.L., K. Erickson, J.A. Newton, G. Pelletier, R.A. Reynolds, and M. Roberts. 2002. South Puget Sound water quality study-phase I. Washington State Department of Ecology. Environmental Investigations and Laboratory Services Program. Publ. #95-345. Olympia, Washington.

Bird, D.M. 1978. Environmental impact: wildlife/vegetation effects. Ontario Naturalist: 23.

Bower, John L. 2003. Assessing southern Strait of Georgia marine bird population changes since 1980: What we know and what we need to know. Proceedings of the 2003 Georgia Basin/Puget Sound Research Conference. 7 p.

Castor, David. Washington State Parks and Recreation. San Juan County, WA. Personal communication. September-December 2006. (360) 376-2073.

Clayton, John. Washington State Parks and Recreation. Personal communication. September 2006. Bogachiel@parks.wa.gov

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. FWS/OBS-79/31. U.S. Department of Interior, U.S. Fish and Wildlife Service. 131 p. http://www.fws.gov/nwi/Pubs_Reports/Class_Manual/class_titlepg.htm .

Deem, Kent Steve. Washington Department of Health. Olympia, WA. Personal communication, 07 December 06. (253) 395-6767.

Drath, Bill. Washington State Parks and Recreation. drathwa@aol.com, Personal communication. September 2006.

FEMA Region X Geographical Information System (GIS) site map: PW 073 and 077 _San Juan County_ENVAS_20061030.pdf.

Fimbel, Robert. Washington State Parks and Recreation. Personal communication, 19 December 06. (360) 902-8592. Robert.Fimbel@parks.wa.gov .

Flood Insurance Rate Map (FIRM), Community Panel No. 530021-0235D, effective date December 5, 1989.

Fonda, R.W., and J.A. Bernardi. 1976. Vegetation of Sucia Island in Puget Sound, Washington. Bulletin of the Torrey Botanical Club. 103:99-109.

Friends of the San Juans (FSJ). 2004a. Documented surf smelt and Pacific sand lance spawning beaches in San Juan County with a summary of protection and restoration priorities for forage fish habitat. Friday Harbor, Washington. In cooperation with Washington Department of Fish and Wildlife. 28 p.

Friends of the San Juans (FSJ). 2004b. Exploratory Pacific herring spawning habitat surveys for San Juan County, Washington 2004. Friday Harbor, Washington. In cooperation with Washington Department of Fish and Wildlife. 35 p.

Friends of the San Juans. 2006. San Juan County nearshore impact assessment. Friday Harbor, Washington. 39 p.

Hitchman, M., and A. Hanners. 1995. Washington Native Plant Society plant list for Sucia Island , San Juan County, Washington. Koma Kulshan Chapter list.3 p.

Kunz, Kathy. U.S. Army Corps of Engineers. Seattle, WA. Personal communication. November 2006. (206) 764-3708. Kathleen.s.Kunz@usace.army.mil .

Meatte, Dan. 2006. Sucia and Clark Islands archaeological assessment. 19 December 06. Washington State Parks and Recreation. Burlington, WA.

Maette, Dan. Washington State Parks and Recreation. Burlington, WA. Personal communication. December 2006. (360) 902-8637.

Missildine, Brian. U.S. Fish and Wildlife Service. Olympia, WA. September-December 2006.

Monlux, S. and B. Vachowski. 2000. Geosynthetics for trails in wet areas. Tech. Rep. 0023-2838-MTDC. Missoula, MT. U.S. Department of Agriculture, U.S. Forest Service, Missoula Technology and Development Center. 18 p.

Moulton, L.L., and D.E. Pentilla. 2000. San Juan County forage fish assessment project: Forage fish spawning distribution in San Juan County and protocols for sampling intertidal and nearshore regions. Northwest Straits Commission and San Juan County Marine Resources Committee. Friday Harbor, Washington. 56 p.

Natural Resource Conservation Service (NRCS). 2006. Soils resource website. http://websoilsurvey.nrcs.usda.gov/.

Neill, Jim. Washington State Parks and Recreation. Burlington, WA. Personal communication. December 2006. (360) 755-9231.

Newton, J.A., S.L. Albertson, K. Van Voorhis, C. Maloy, and E. Siegel. 2002. Washington State Marine Water Quality, 1998-2000. Publ. No. 02-03-056. Washington Department of Ecology, Lacey, WA. http://www.ecy.wa.gov/pubs/0203056.pdf. 111 p.

Nissley, Steve. Natural Resources Conservation Service. Personal communication. October 2006. (360) 428-7684 ext. 131.

Nysewander, D.R., J.R. Evenson, B.L. Murphie, amd T.A. Cyra. 2005. Report of marine bird and marine mammal component, Puget Sound Ambient Monitoring Program Puget Sound Ambient Monitoring Program (PSAMP). 1992-1999. Washington Department of Fish and Wildlife. Olympia, Washington. 187 p.

San Juan Island Directory (SJID). 2006. http://www.sanjuanislandsdirectory.com/history.htm (12/11/06).

Smith, Ted. Assistant Region Manager, NW Region. Washington State Parks. 220 North Walnut Street, Burlington, WA 98233, (360) 755-9231, ted.smith@parks.wa.gov, www.parks.wa.gov, personal communication.

Speich, S.M., and T.R. Wahl. 1995. Marbled murrelet populations of Washington-marine habitat preferences and variability of occurrence. USDA Forest Service. Gen. Tech. Rep. PSW-152. 313-327 p.

Strachan, G., M. McAllister, and C.J. Ralph. 1995. Marbled murrelet at-sea and foraging behavior. U.S. Forest Service. Gen. Tech. Rep. PSW-152. 247-254. http://www.fs.fed.us/psw/publications/documents/gtr-152/chap23.pdf (12/08/06).

Topozone. October 24, 2006. http://www.topozone.com/.

U.S. Fish and Wildlife Service (USFWS). 2006a. Designation of critical habitat for marbled murrelet; proposed rule. Federal Register, Vol. 71, No. 176, September 12, 2006. pp. 53838-53951.

U.S. Fish and Wildlife Service (USFWS). 2006b. National Wetlands Inventory data/mapper. http://wetlandsfws.er.usgs.gov/NWI/index.html.

Wahl, T.R., S.M. Speich, D.A. Manuwal, C.V. Hirsch, and C. Miller. 1981. Marine bird populations of the Strait of Juan de Fuca, Strait of Georgia, and adjacent waters in 1978-79. Environmental Protection Agency, Washington D.C.

Wahl, T.R. 2002. Trends in numbers of marine birds wintering in Bellingham Bay. Washington Birds, 8:29-40.

Washington Department of Fish and Wildlife (WDFW). 2000. Critical spawning habitat for herring, surf smelt, sand lance, and rock sole in Puget Sound, Washington. Olympia, Washington. 151 p.

Washington Department of Health (WDOH). 2006. Office of Drinking Water: Sucia Island State Park well reports. http://www.doh.wa.gov (11/16/06).

Washington Natural Heritage Information System. 2000. Special plants, plant communities, and native wetlands: Sucia Island State Park.

Washington State Parks and Recreation (WSP). 2000. San Juan Marine State Park area management plan. Washington State Parks and Recreation Commission. 25 p.

Whitlam, Rob. Archaeologist, Washington State Office of Archaeology and History (OAHP). (360) 586-3080, personal communication.

Online:

Schlumberger Oilfield Glossary Search: http://www.glossary.oilfield.slb.com/search.cfm (11/03/06).

What is the Olympic rain shadow? http://www.komotv.com/weather.faq/4306627.html (11/07/06).