

Chapter 4: Environmental Consequences

4.1 INTRODUCTION

This chapter describes the potential environmental consequences (effects/impacts) of each alternative on the relevant resources described in chapter 3. It presents the scientific and analytic basis for comparisons of the alternatives.

This chapter is organized by alternatives, with the impacts of each resource included under the individual alternative heading. Resource topics are listed in the same sequence as presented in chapter 3.

4.1.1 Terms and Definitions

Information collected and interpreted regarding the project alternatives and their effects on the surrounding environment are difficult to measure and affirm with absolute confidence. The following process for impact assessment is based on directives of the NPS DO-12 Handbook. Impacts are assessed on natural, cultural, and social resources as defined by the *context*, *duration*, and *intensity* of the effect.

4.1.1.1 Context

The *context* of a resource impact may range in scale from local to global depending on the resource and the action. For this document, most of the impact analysis is based on the project area or project vicinity as shown in figure 3.1. Impacts to some resources may be analyzed on different scales such as the “area of potential effects” as defined under Section 106 of the National Historic Preservation Act. The context of impacts may also be considered on larger scales, as appropriate, including impacts to the Cattle Point peninsula, San Juan Island, San Juan County, and the northwest Washington/southwest British Columbia region. The analysis area context for each resource is defined under the individual resource descriptions below.

4.1.1.2 Duration

The specific timing or *duration* of environmental impacts indicates the amount of change in the following categories.

- Short-term impacts/effects occur from an activity in the immediate future, typically less than a year from the event.
- Long-term impacts/effects occur from an activity over a longer period, typically more than five years.

4.1.1.3 Intensity

Intensity refers the degree to which the action may affect a resource. Impacts can be adverse or beneficial. Impact intensity in this document is expressed quantitatively or qualitatively (or both), depending on the resource. Quantitative information is expressed as a number; for example, the number of acres of vegetation impacted by an alternative. Qualitative information is expressed as a description of the relative intensity to which a resource could be impacted by a project alternative. Qualitative intensity thresholds are defined as: negligible, minor, moderate, or major.

4.1.1.4 Impact Type

Effects and impacts as used in this document are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, and social; whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and adverse effects. Effects include:

- Direct impacts/effects are caused by the action and occur at the same time and place.
- Indirect impacts/effects are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable.
- Cumulative impacts/effects are the summation of impacts on a resource resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

4.1.2 Methodology and Assumptions

Where possible, resource impacts are analyzed using quantified data to assess the environmental consequences of each alternative. In most cases, however, analysis is based largely on qualitative conclusions drawn from comparative analyses. The qualitative determination of potential impacts is based on professional judgment and experience with similar actions.

Qualitative intensity thresholds are defined as: negligible, minor, moderate, or major. Intensity thresholds are described differently for each resource. The following sections define the intensity thresholds of environmental impacts for each resource to establish consistent language for comparing the alternatives. It is important to note that the definition of terms used in this document may differ from the definitions used in other legal and guidance documents such as the Endangered Species Act and the National Historic Preservation Act. Any differences in terms will be defined under the appropriate resource impact descriptions.

4.1.2.1 Topography, Geology, and Soils

The analysis area for topography, geology, and soils is the project vicinity including the Cattle Point peninsula. The information used for the analysis is based on available NPS, FHWA, and consultant information and surveys. Potential effects are described quantitatively in acres impacted by project actions as well as qualitatively to describe relative changes under each alternative.

For the purpose of this analysis, the thresholds of change for the intensity of impacts are defined as follows:

- Negligible:* The effect to geologic features and processes would not be detectable.
- Minor:* An action could result in a change to a geologic feature or process, but the change would be so small that it would be slightly detectable.
- Moderate:* An action could result in a change to a geologic feature or process and the change would be measurable and of consequence.
- Major:* An action could result in a noticeable change to a geologic feature or process; the change would be measurable and the level of disturbance would be severe.

4.1.2.2 Air Quality

The analysis area for air quality is the project area and the San Juan Islands. Potential effects are based on anticipated changes to ambient air visibility in the project area and from base data and the National Ambient Air Quality Standards (NAAQS) as measured at authorized stations at Oak Harbor, Anacortes, and Mt. Vernon.

For the purpose of this analysis, the thresholds of change for the intensity of impacts are defined as follows:

- Negligible:* An action would have no perceptible visibility effects. The highest three-year maximum for each criteria pollutant (established under the Clean Air Act) would be less than NAAQS standards.
- Minor:* Visibility effects would be slightly perceptible on fewer than 180 days per year. The highest three-year maximum for each criteria pollutant would be less than NAAQS standards.
- Moderate:* Visibility effects would be moderately perceptible on fewer than 180 days per year or slightly perceptible on 180 days or more per year. The highest three-year maximum for each criteria pollutant could be greater than NAAQS standards.
- Major:* Visibility effects would be highly perceptible on 180 days or more per year. The highest three-year maximum for each criteria pollutant would be greater than NAAQS standards.

4.1.2.3 Water Resources

The analysis area for water resources is the drainage basin to the south of the hydrologic divide on Mt. Finlayson including the near-coastal marine environment. The information used for the analysis is based on available NPS, FHWA, and consultant information and surveys.

For the purpose of this analysis, the thresholds of change for the intensity of impacts are defined as follows:

- Negligible:* Effects on water quality (established by the Clean Water Act) and hydrologic systems would be at or below the level of detection and would occur in a small area. Changes would not be measurable or perceptible.
- Minor:* Effects on water quality and hydrologic systems would be detectable, but localized, and well below water quality standards.
- Moderate:* Effects on water quality and hydrologic systems would be readily detectable and have localized consequences, but would be at or below water quality standards and conditions.
- Major:* Effects on water quality and hydrologic systems would be detectable and would alter the systems from the historic baseline or desired water quality conditions.

4.1.2.4 Vegetation

The analysis area for effects on vegetation is the project area. The information used for the analysis is based on available NPS information and surveys in the Cattle Point area. Potential effects are described quantitatively in acres of vegetation directly impacted by project actions as well as qualitatively to describe relative changes in vegetation under each alternative.

For the purposes of this analysis, the thresholds of change for intensity of impacts are defined as follows:

- Negligible:* Effects on individual plants or communities would not be measurable. The abundance or distribution of individual plants or communities would not be affected or would be slightly affected. Ecological processes and biological productivity would not be affected.
- Minor:* An action would not decrease or increase the overall biological productivity. The abundance or distribution of individual plants or communities would be affected in a localized area but the viability of local or regional populations or communities would not be affected.
- Moderate:* An action would result in a change in overall biological productivity in a small area. A local population would be affected enough to cause a change in abundance or distribution, but the viability of the regional population or communities would not be affected. Changes to ecological processes would be of limited extent.
- Major:* An action would result in a change in overall biological productivity in a relatively large area. A regional or local population would be affected enough to cause a change in abundance or distribution to the extent that the population or community would not likely return to its former level. Key ecological processes would be altered.

4.1.2.5 Wildlife and Fish

The analysis area for wildlife is the project vicinity including the Cattle Point peninsula and areas within 0.5 miles of the project. Wildlife impacts are closely related to habitat impacts. The analysis considered whether actions would be likely to displace some or all individuals of a species in the project vicinity or would result in loss or creation of habitat conditions needed for the viability of local or regional populations. The information used for this analysis is based on available NPS, WDFW, USFWS, and NOAA Fisheries Service information and surveys.

For the purpose of this analysis, the thresholds of change for the intensity of impacts are defined as follows:

- Negligible:* Effects would be short-term and at or below the level of detection. Changes to a species' population would not be measurable or perceptible.
- Minor:* Effects would be detectable but localized and small. Actions would have little impact on species' population. Mitigation measures, if needed to offset adverse impacts, would be simple and would have a high level of confidence for success.
- Moderate:* Effects would be readily detectable but localized. Actions would affect the population level. Mitigation measures, if needed to offset adverse impacts, would be extensive and would have a high level of confidence for success.
- Major:* Effects would be obvious and would result in a substantial, permanent change to a species' population at a regional level. Extensive mitigation measures would be needed to offset adverse impacts and the success of mitigation could not be guaranteed.

4.1.2.6 Threatened, Endangered, and Protected Species

The analysis area for this topic is the suitable and known occupied habitat in the Cattle Point peninsula and areas within 0.5 miles of the project area. The information used for the analysis is based on available NPS, WDFW, USFWS, and NOAA Fisheries Service information and surveys.

Under section 7 of the ESA, federal agencies are directed to utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of threatened and endangered species. In addition, federal agencies are required to consult with USFWS or NOAA Fisheries to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of habitat. For section 7 consultation, a “no effect” determination is appropriate when an action would have no affect whatsoever on a listed species or its designated critical habitat. A “may affect, not likely to adversely affect” determination is appropriate when the effects of the action on a listed species or designated critical habitat would be discountable (unlikely to occur), insignificant (not meaningfully detectible, or measurable), or wholly beneficial. A “may affect, likely to adversely affect” determination is appropriate if any adverse effects on a listed species or designated critical habitat may occur as a direct or indirect result of the action or its interrelated actions, and the effect is not discountable, insignificant, or beneficial (NMFS 1996).

For the purpose of this analysis, the thresholds of change for the intensity of impacts are defined as follows:

- Negligible:* An action would have no measureable effect on a listed or protected species or its critical habitat. The ESA determination would be “no effect.” No consultation with the USFWS would be required.
- Minor:* The effects of an action would be discountable, insignificant, or totally beneficial. Any effect would be small and localized. The ESA determination would be “may affect, not likely to adversely affect.” Informal consultation with USFWS or NOAA Fisheries would be required.
- Moderate:* The effects of an action would result in some change to a population or individuals of a listed or protected species or its designated critical habitat. The change would be measurable and important. The ESA determination would be “may affect, not likely to adversely affect.” Informal consultation with USFWS or NOAA Fisheries would be required.
- Major:* The effects would result in a noticeable change to a population or individuals of a listed or protected species or its designated critical habitat. Any direct or indirect adverse effect would be likely to occur and would be important. Incidental *take* of the protected species could occur. The ESA determination would be “may affect, likely to adversely affect.” Formal consultation with the USFWS or NOAA Fisheries would be required.

4.1.2.7 Cultural, Historic, and Archaeological Resources

The discussion of cultural resources includes analysis of potential effects to the cultural landscape, historic landmark, and archaeological resources. The intensity definitions are described together because of the interconnectedness of these resources.

The analysis area for cultural resources is the project area of potential effects (APE) and the cultural landscapes of the American Camp unit of the park. Information used in the assessment was obtained from relevant literature and documentation, maps, and consultation with cultural resource specialists as well as direct sampling at the project area.

The National Historic Preservation Act (NHPA) requires agencies to take into account the effects of their actions on properties listed or eligible for listing in the National Register of Historic Places (NRHP). This process also includes consultation with the State Historic Preservation Office (SHPO) under section 106 of the NHPA. Under section 106 of the NHPA, if an action could change in any way the characteristics that qualify the resource for inclusion in the NRHP, it is considered to have an effect. “No adverse effect” means there could be an effect, but it would not be harmful to the characteristics that qualify the resource for inclusion in the NRHP. “Adverse effect” means the action could diminish the integrity of the characteristics that qualify the resource for the NRHP.

For the purpose of this analysis, the thresholds of change for the intensity of impacts are defined as follows:

- Negligible:* The effects on cultural resources would be at the lowest levels of detection, barely measurable without any perceptible consequences, either beneficial or adverse. The section 106 determination of effect would be “no adverse effect.”
- Minor:* The effects on cultural resources would be perceptible or measurable, but would be slight and localized within a relatively small area. The action would not affect the character or diminish the features of a NRHP eligible or listed resource, and it would not have a permanent effect on the integrity of the resource. The section 106 determination of effect would be “no adverse effect.”
- Moderate:* The effects would be perceptible and measurable. The action would change one or more character-defining feature of a cultural resource, but would not diminish the integrity of the resource to the extent that its NRHP eligibility would be entirely lost. Under section 106, the resources’ eligibility would be threatened and the determination of effect would be “adverse effect.”
- Major:* The effects on cultural resources would be substantial, discernible, measurable, and permanent. For a NHRP eligible or listed resource, the action would change one or more character-defining feature, diminishing the integrity of the resource to the extent that it would no longer be eligible for listing in the NRHP. Under section 106, NRHP eligibility would be lost and the determination of effect would be “adverse effect.”

4.1.2.8 Land Use, Local Plans

The analysis area for land use and local plans is the Cattle Point peninsula. The plans that apply to activities within the area are the *San Juan Island National Historical Park Final General Management Plan and EIS* (NPS 2008), the *Natural Resources Conservation Area State-Wide Management Plan* (1992; www.dnr.wa.gov/Publications/amp_nrca_statewide_mgt_plan_9_1992_2.pdf), and the *San Juan County Comprehensive Plan* (adopted December 20, 1998, revised July 2006). The analysis of effects to land use and local plans consists of a qualitative assessment of whether or not the proposed alternatives fulfill the management direction and guidelines of the applicable plans.

4.1.2.9 Visitor Uses, Trails, and Visual Quality

The analysis area for these topics is the Cattle Point peninsula including the American Camp unit of the park, the NRCA, the BLM, and their view-sheds. The information used for this analysis is based on available NPS, DNR, and county information. Potential effects on trails are described quantitatively in length of trail directly impacted by project actions. Effects to visitor uses, trails, and visual quality are also described qualitatively to depict relative changes under each alternative.

For the purpose of this analysis, the thresholds of change for the intensity of impacts are defined as follows:

- Negligible:* Effects would be barely detectable to the visitor and expected to have no discernible effect related to interpretation and education, recreational opportunities, and scenic resources.
- Minor:* Effects would be slightly detectable to the visitor, though not expected to have an overall effect on the visitor experience related to interpretation and education, recreational opportunities, and scenic resources.
- Moderate:* Effects would be clearly detectable to the visitor and could have an appreciable effect on the visitor experience related to interpretation and education, recreational opportunities, and scenic resources.
- Major:* Effects would be substantial, have a highly noticeable influence on the visitor experience and could permanently alter access to, and availability of, various aspects of the visitor experience related to interpretation and education, recreational opportunities, and scenic resources.

4.1.2.10 Transportation (Roads System, Special Vehicles, Bicycles, Pedestrians, Road Safety)

The analysis area for these topics is the Cattle Point peninsula. The information used for this analysis is based on available NPS, county, and FHWA data.

For the purpose of this analysis, the thresholds of change for the intensity of impacts are defined as follows:

- Negligible:* Effects would not be detectable and would have no discernible effect on the road condition or traffic flow.
- Minor:* Effects would be slightly detectable but there would not be an overall effect on road condition or traffic flow.
- Moderate:* Effects would be clearly detectable and the action could have an appreciable effect on road condition or traffic flow.
- Major:* Effects would be substantial and highly noticeable; road conditions and traffic flow could be permanently altered.

4.1.2.11 Socioeconomics (Population, Demographics, Local Industry, Employment and Income, Environmental Justice, Relocation, Public Health and Safety, Utilities)

The analysis area for these topics is the Cattle Point peninsula and San Juan County. The information used for the analysis is based on available NPS, county, and U.S. Census data.

For the purpose of this analysis, the thresholds of change for the intensity of impacts are defined as follows:

- Negligible:* Effects are not detectable.
- Minor:* Effects are small but detectable, and only affect a small number of businesses and /or a small portion of the population. The impact is slight and not detectable outside the affected area.
- Moderate:* Effects are readily apparent. Any effects result in changes to socioeconomic conditions on a local scale within the affected area.
- Major:* Effects are readily apparent. Measurable changes in social or economic conditions at the county or regional level occur. The impact is severely adverse or exceptionally beneficial within the affected area.

4.1.2.12 Hazardous and Solid Waste

The analysis area for these topics is the project area. The information used for the analysis was based on available NPS and EPA information. The thresholds of change for impacts are either *no effect* or *hazardous waste site affected*. A *no effect* determination would be appropriate only when an action would have no affect whatsoever on hazardous and solid waste.

4.1.2.13 Energy

The area of analysis for these topics is the Cattle Point peninsula, San Juan county, and nationwide. The information used for this analysis is subjective, based on the estimated level of energy required to construct each alternative and the long-term use of energy for road maintenance and residential needs.

For the purpose of this analysis, the thresholds of change for the intensity of impacts are defined as follows:

- Negligible:* Effects would not be detectable and would have no discernible effect on overall energy consumption either locally, county-wide, or nationally.
- Minor:* Effects would be slightly detectable but there would not be an overall effect on energy consumption either locally, county-wide, or nationally.
- Moderate:* Effects would be clearly detectable locally but would not have an overall effect on energy consumption county-wide or nationally.
- Major:* Effects would be substantial and highly noticeable locally and may have an effect on energy consumption county-wide or nationally.

4.1.2.14 Noise

The analysis area for this topic is the Cattle Point peninsula. The information used for the analysis is based on available NPS information. Context, duration, and intensity together determine the level of noise impact for an activity. Noise for a certain period and intensity would be a greater impact in a highly sensitive context. In addition, a given noise intensity would be a greater impact if it occurred more often, or for a longer duration. For example, in low level ambient soundscapes, noises can be much more audible, thereby having greater impact intensities. It is usually necessary to evaluate all three factors together to determine the level of noise impact.

For the purpose of this analysis, the thresholds of change for the intensity of impacts are defined as follows:

- Negligible:* Impacts would not be detectable and would have no effect on ambient noise levels.
- Minor:* Impacts would be slightly detectable and in close proximity to the source, but would not be expected to have an appreciable effect on ambient noise levels.
- Moderate:* Impacts would be clearly detectable and could have an appreciable effect on ambient noise levels; moderate adverse impacts may include introduction of noise associated with an activity or facility into an area with little or no ambient noise.
- Major:* Impacts would be clearly audible against ambient noise levels, or would have a substantial, highly-noticeable effect on ambient noise levels.

4.1.2.15 Light

The area of analysis for this topic is the Cattle Point peninsula and its view-sheds. The information used for the analysis was based on available NPS information and subjective observations by resource professionals.

For the purpose of this analysis, the thresholds of change for the intensity of impacts are defined as follows:

- Negligible:* Effects would not be detectable and would have no discernible effect on the night sky.
- Minor:* Effects would be slightly detectable but there would not be an overall effect on the night sky.
- Moderate:* Effects would be clearly detectable locally but would not have an overall effect on the night sky of distant view-sheds.
- Major:* Effects would be substantial and highly noticeable locally and would have an effect on the night sky of distant view-sheds.

4.1.2.16 Prime and Unique Farmland, Coastal Zone, and 4(f)

The analysis area for these topics is the project area. The information used for the analysis of *Prime and Unique Farmland* is based on the Natural Resources Conservation Service (NRCS) Web Soil Survey. Coastal Zone consistency analysis is based on WDOE (easement/ROW) information. Section 4(f) analysis is based on NPS, DNR, and FHWA information.

Prime and unique farm lands are protected by the Farmland Protection Policy Act, enacted to minimize the impact of federal projects on the irreversible conversion of farmland to nonagricultural uses.

Washington's coastal zone is protected under the Coastal Zone Management Act, aimed at the wise use of the land and water resources within the coastal zone. The coastal zone includes all lands within the coastal counties and waters from the coastline seaward for three nautical miles.

Section 4(f) of the Department of Transportation (DOT) Act of 1966 stipulates that the FHWA (and other DOT agencies) cannot use lands from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless there is no feasible and prudent avoidance alternative; the action includes planning to minimize harm to the property; or the FHWA determines that use of the property, including measures to minimize harm, will have a *de minimis* impact on the property.

The analysis of effects to these topics consists of a qualitative assessment of whether or not the proposed alternatives fulfill the requirements and guidelines of the applicable laws.

4.1.3 Cumulative Impacts

Cumulative impacts/effects are the summation of impacts on a resource resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative impacts are considered for all impact topics and alternatives. It is assumed that current types of uses in the project area would continue into the future; however, there may also be new or different future uses.

Because of the relative isolation of the island environment and the location of Cattle Point at the southeast tip of the island, the cumulative effects boundary is limited to the Cattle Point peninsula and its adjacent near-shore environment. The cumulative effects time frame generally extends from the establishment of the park in 1966 through the life of the proposed Cattle Point Road improvements, although earlier activities have been described in a general, historic context.

To determine potential cumulative impacts, projects in the area were identified by examining existing plans by local, state, and federal agencies. These projects were considered regardless of the agency, organization, or person who undertakes them. Past actions in the project area are described in section 3.4.1. These past actions along with the following present and potential future actions make up the cumulative impact setting.

4.1.3.1 Present Actions

The San Juan Island National Historical Park completed its General Management Plan (GMP) and EIS in 2008. The plan provides general direction for management of NPS units as well as specific guidelines for the management of park resources and proposed projects. As part of plan implementation, the NPS is currently performing experimental plantings for native prairie restoration, control of exotic vegetation, and wild-fire fuels management.

At the NRCS day-use site, the DNR has recently replaced toilets, graveled the parking lot and walkways, and performed repairs to the block house, including a new roof, painting, and tile floor installation (Alison Hitchcock, DNR, personal communication, email July 28, 2009).

On-going projects include routine county road maintenance as well as maintenance of trails and facilities by the NPS and DNR.

4.1.3.2 Future Actions

Due to NPS and DNR protections, the Cattle Point peninsula is relatively undisturbed. The remaining undeveloped private residential lots in the Cattle Point subdivisions may be developed in limited numbers. There is no opportunity for creating additional lots in the existing subdivisions.

Future projects at American Camp proposed in the preferred alternative of the 2008 GMP include the following:

- Remove the double-wide trailer currently servicing as the visitor's center and replace with a 5,400 square foot visitor center at the existing site.
- Enlarge the existing parking lot at the visitor's center to include approximately 30 parking spaces.

- Add restrooms at the existing fire cache (located near the visitor's center).
- Convert the existing road to a trail from the intersection at Pickett's Lane to the redoubt. Restore the redoubt parking lot to natural conditions. Develop a small parking lot near Pickett's Lane.
- Reconfigure the parking lot at Jakle's Lagoon and Mt. Finlayson to include additional parking spaces and a restroom facility.
- Reconfigure existing parking lots at South Beach and Fourth of July Beach within their existing footprints to accommodate more vehicles.
- Restore the historic prairie to improve native species composition, ecological function, and visual quality to conditions as they existed during the encampment period. Eliminate or control invasive plant species and manage woody vegetation to prevent intrusion into portions of the landscape that were open grassland during the historic period.

Because the GMP is a programmatic level plan, construction of park projects is dependent on securing funding and individual project NEPA compliance.

Future DNR projects include improving beach access near the block house and updating interpretive signs (Alison Hitchcock, DNR, personal communication, email July 28, 2009.).

The NPS and San Juan Island Trails Committee plan trail connections to the park and eventually through Cattle Point. One segment would follow Cattle Point Road south to terminate near False Bay Road. Another segment would continue the trail to the park.

Though not in the county transportation improvement plan, it is the intent of the county and park to add shoulders to the section of Cattle Point Road from the False Bay intersection through the park.

4.1.4 Offsite Construction Impacts

Project construction may require work outside of the project area in unspecified locations for activities needed to support the project. This includes work related to:

- Obtaining construction materials, including a rock and soil material source,
- Hauling equipment and materials,
- Staging and storing equipment and materials,
- Obtaining water for dust control and use in road construction, and
- Disposing of excess earth and road materials.

Since the exact location of these activities cannot be determined until construction, the effects of the project alternatives on offsite resources are discussed in general terms. The general nature and intensity of these effects are estimated based on the work required for construction of each alternative.

Some of these construction activities may take place in areas outside of the project area or vicinity. Activities at these sites could require ground disturbance, occupation, or clearing which may result in environmental impacts. These activities could take place at either commercial or non-commercial sites. Commercial sites are defined as established sites which have provided material to public and private entities on a regular basis over the last two years,

have appropriate state and local permits, and do not require expansion outside their currently established and permitted area.

Should a non-commercial site be selected for project-related activities, the FHWA will require that use of the site:

1. Will have a determination of “no historic properties affected” or no more than a “no adverse effect” on properties on or eligible for listing to the National Register of Historic Places (NRHP) and *de minimis* impact on 4(f) resources;
2. Will have a determination of no more than a “no effect” to species or habitat listed as threatened or endangered under the federal ESA; and
3. Will not encroach into waters of the U.S. or wetlands protected under Executive Order 11990.
4. Will have no adverse effect on remnant prairie habitats of San Juan Island.

FHWA will not approve use of any non-commercial site until these conditions are met.

Impacts from offsite activities that have the potential to be substantially different from those disclosed in the EIS would require further evaluation under NEPA.

Because of local restrictions on barge landings, it is likely that sites on San Juan Island would be used for offsite construction activities and the existing ferry service would be used for transport of construction materials and equipment obtained from outside of the island. An existing commercial gravel pit located on San Juan Island about 10 miles from the project area could provide aggregate material for the project.

In order to minimize potential impacts from offsite uses, the following mitigation measures are incorporated into all action alternatives (B, C, and D):

- No staging or stockpiling of material would be allowed in the park or NRCA outside of the construction disturbance area.
- Construction activities near residences and sensitive wildlife areas would use timing restrictions to minimize impacts.
- Construction schedule and offsite disturbance areas would be approved by the FHWA in coordination with any affected local resources.

4.1.5 Incomplete or Unavailable Information

CEQ implementing regulations for NEPA (1502.22) specifies how agencies should address incomplete or unavailable information in an EIS. The regulations state that the agency shall always make clear that such information is lacking and use existing credible scientific evidence to evaluate impacts.

Incomplete or unavailable information used in this document include:

- Bluff retreat rate: Assumptions are made based on information available from existing studies (see section 3.2.2).
- Socioeconomic information: The social statistics used in this section are for the entire county or island and are not specific to the Cattle Point area. Information sources used were the most recent and readily available for population and unemployment data characterized

by race and gender relevant to this project. The information is on a regional level; data were gathered at a single moment in time and should not be interpreted as annual averages. Assumptions on the population specific to Cattle Point were extrapolated from county and regional information as well as from personal observations and discussions with NPS employees, the County Health Office, the Senior Services Director, the local ambulance service provider (San Juan Island Emergency Medical Services), the County Sheriff, the San Juan Island School District, and two residents of the Cattle Point subdivisions. Obtaining additional data would take a substantial effort and is unlikely to be essential in comparing the impacts of the alternatives and in meeting the project purpose and need.

4.2 IMPACTS COMMON TO ALL ALTERNATIVES

The following resources would be impacted equally by all project alternatives. The resource topics detailed below will not be repeated under each alternative discussion, except as noted. Determinations represent effects in both the short-term and long term except where noted.

4.2.1 Floodplains, Wetlands, and Waterbodies

There are no streams, lakes, ponds, wetlands, or other waterbodies within the project area and no surface hydrologic connection between the project area and any waterbodies (fresh water and marine) or wetlands.

Cumulative Impacts

The nearest waterbody to the project site is the saltwater shoreline at the base of the eroding bluff. Other water resources in the Cattle Point peninsula include groundwater-fed water supply wells, springs, seeps, and temperate marine lagoons. These resources have been impacted by development of water sources for past agricultural, military, and residential needs. Old Town Lagoon and adjacent coastal resources were impacted by old San Juan Town and its buildings and residential and commercial uses. Coastal resources have been impacted by construction of roads, visitor's services, parking areas, trails, and residential development in close proximity to the coast. Due to NPS and DNR land management protections, many past activities have reverted to natural conditions and most of the peninsula is largely undeveloped. Future construction within the federal and state properties focuses mainly on improvements to existing visitor facilities. No new facilities or roads are planned. There are some lots in the Cattle Point Estates and Cape San Juan residential areas that could be developed in the future. Future residential building could affect any springs or seeps in the area. New residences would require a water source for household needs.

There are no streams, lakes, ponds, wetlands, springs, or other waterbodies within the area of the proposed road realignment. The proposed alternatives would have no direct or indirect effect on these resources; therefore, they would not contribute to cumulative impacts.

Conclusion

The proposed project alternatives would have no effect on floodplains, wetlands, and waterbodies.

4.2.2 Fish

There is no fish habitat in the project area as there are no streams, lakes, ponds, or other waterbodies, and no surface hydrologic connection between the project area and any waterbodies (fresh water or marine).

Cumulative Impacts

The nearest fish habitat to the project area is the marine environment, located about 200 feet south of the existing roadway. The Cattle Point peninsula is surrounded on three sides by marine waterbodies. There are no other permanent waterbodies providing fish habitat within the Cattle Point peninsula. Coastal development in the Cattle Point peninsula that may affect marine fish habitat has been very limited in scope. Old Town Lagoon and adjacent coastal resources were impacted by old San Juan Town and its buildings and residential and commercial uses. Commercial and recreational fishing currently takes place in adjacent marine waters. Due to NPS and DNR land management protections, many past land-based activities have reverted to natural conditions and most of the peninsula is largely undeveloped. Future development that might impact coastal fish habitat in the Cattle Point peninsula is also limited by NPS and DNR land management protections. Future construction within the federal and state properties focuses mainly on improvements to existing visitor facilities; no new facilities are planned. There are some lots in the Cattle Point Estates and Cape San Juan residential areas that could be developed in the future. Most undeveloped residential lots are located inland. Commercial and recreational fishing would continue and would likely increase within regulatory limits.

There is no fish habitat or hydrologic connection to fish habitat within the area of the proposed road realignment. The proposed alternatives would have no direct or indirect effect on these resources; therefore, they would not contribute to cumulative impacts.

Conclusion

Since there is no fish habitat in the project area, the proposed project alternatives would have no effect on fish.

4.2.3 Federally-Listed Threatened, Endangered, and Protected Species

The proposed project area and vicinity were evaluated by the consultant and NPS biologists to determine which federally-listed and protected species may occur based on the presence of habitat types, biological requirements of the species, and known observations. The following federally-listed threatened or endangered species are not known to occur or do not have habitat within the project area or vicinity:

- Bull trout
- Golden paintbrush
- Chinook salmon
- Humpback whale
- Marbled murrelet
- Marsh sandwort
- Southern resident killer whale
- Steelhead

Steller sea lion

Cumulative Impacts

Marbled murrelet may feed in waters off Cattle Point. Golden paintbrush has habitat in the project vicinity. Humpback whale and southern resident killer whale are found in marine waters adjacent to San Juan Island. Seals and sea lion haul-outs are located on Goose Island off the east shore of the Cattle Point peninsula, as well as on isolated rocks to the north and east. Development of land resources from past agricultural and military activities, construction of roads, visitor's services, parking areas, trails, and residential development has resulted in habitat fragmentation, introduced exotic species, and loss of habitat which has affected terrestrial threatened and endangered species. Human activities in the near-shore environment that have affected marine species include marine vessel traffic, water quality impacts from manufacturing and agriculture, and reduction of food sources from fish harvesting.

While the above federally-listed threatened or endangered species may be found in adjacent areas, these species are not present and do not have suitable habitat in the project area; therefore, the proposed alternatives would not contribute to cumulative impacts to these species.

Conclusion

The proposed alternatives would have no effect on the federally-listed threatened or endangered species listed above because they are not known to occur or do not have habitat within the project area.

Effects to federally-listed and protected species that are present or have suitable habitat in the project area are analyzed under each alternative discussion.

4.2.4 State-Listed Threatened and Endangered Species

The proposed project area and vicinity were evaluated by consultant and NPS biologists to determine which state-listed species may occur based on the presence of habitat types, biological requirements of the species, and known observations. The following state-listed threatened or endangered species are not known to occur or do not have habitat in the project area or vicinity:

- Bear's foot sanicle
- Erect pygmy weed
- Northern sea otter
- Northwestern pond turtle
- River lamprey
- Sharp fruited peppergrass
- Streaked horned lark
- Whulge (Taylor's) checkerspot

Cumulative Impacts

There is suitable habitat for the Whulge checkerspot in the project vicinity. Northern sea otter are found in marine waters adjacent to San Juan Island. Development of land resources from past agricultural and military activities, construction of roads, visitor's services, parking areas, trails, and residential development has resulted in habitat fragmentation, introduced exotic species, and loss of habitat, which has affected terrestrial threatened and endangered species.

Human activities in the near-shore environment that have impacted marine species include marine vessel traffic, water quality impacts from manufacturing and agriculture, and reduction of food sources from fish harvesting.

While the above state-listed threatened or endangered species may be found in adjacent areas, they are not present or do not have suitable habitat in the project area; therefore, the proposed alternatives would not contribute to cumulative impacts to these species.

Conclusion

The proposed alternatives would have no effect on the state-listed threatened or endangered species listed above because they are not known to occur or do not have habitat within the project area.

Effects to state-listed threatened and endangered species that are present or have suitable habitat in the project area are analyzed under each alternative discussion.

4.2.5 Other Special Status Species

The proposed project area and vicinity were evaluated by consultant and NPS biologists to determine which special status and candidate species may occur based on the presence of habitat types, biological requirements of the species, and known observations. The following special status and candidate species are not known to be present or do not have habitat in the project area or vicinity:

Annual sandwort

Coho salmon

Harbor seal

Long-legged myotis

Nuttall's quillwort

Propertius duskywing

River lamprey

Cumulative Impacts

Seals and sea lion haul-outs are located on Goose Island off the east shore of the Cattle Point peninsula, as well as on isolated rocks to the north and east. Development of land resources from past agricultural and military activities, construction of roads, visitor's services, parking areas, trails, and residential development has resulted in habitat fragmentation, introduced exotic species, and loss of habitat which has had an impact on terrestrial threatened and endangered species. Human activities in the near-shore environment that have impacted marine species include marine vessel traffic, water quality impacts from manufacturing and agriculture, and reduction of food sources from fish harvesting.

While the above special status species may be found in adjacent areas, they are not present or do not have suitable habitat in the project area; therefore, the proposed alternatives would not contribute to cumulative impacts to these species.

Conclusion

The proposed alternatives would have no effect on the special status species listed above because they are not known to occur or do not have habitat within the project area.

Effects to special status species that are present or have suitable habitat in the project area are analyzed under each alternative discussion.

4.2.6 Essential Fish Habitat

The Pacific Fisheries Management Council has designated Essential Fish Habitat (EFH) for several species in the marine waters offshore of the project area. There are no streams or other waterbodies within the project area and no surface hydrologic connection between the project area and offshore waters.

Cumulative Impacts

The nearest EFH to the project area is the marine environment, located about 200 feet south of the existing roadway. The Cattle Point peninsula is surrounded on three sides by marine waterbodies. There are no other permanent waterbodies providing fish habitat within the Cattle Point peninsula. Coastal development in the Cattle Point peninsula that may affect marine fish habitat has been very limited in scope. Due to NPS and DNR land management protections, many past activities have reverted to natural conditions and most of the peninsula is largely undeveloped. Future construction within the federal and state properties focuses mainly on improvements to existing visitor facilities; no new facilities are planned. Commercial and recreational fishing occurs in adjacent marine waters. Most undeveloped residential lots in the Cattle Point peninsula are located inland. Commercial and recreational fishing will continue and will likely increase within regulatory limits.

There is no EFH or hydrologic connection to EFH within the area of the proposed road realignment. The proposed alternatives would have no direct or indirect effect on these resources; therefore, they would not contribute to cumulative impacts.

Conclusion

There is no EFH or hydrologic connection to EFH within the area of the proposed road realignment; therefore, the proposed alternatives would have no effect on this resource.

4.2.7 Environmental Justice

There are no known minorities or low-income populations residing in the project vicinity. Impacts to visitors resulting from the project alternatives would not vary by race or income status. Any action alternative (B, C, or D) chosen may have temporary impacts on residents and tourists visiting the area due to temporary travel disruptions from construction activities. The no action alternative (A) would also impact residents and visitors due to loss of vehicle access to the east end of Cattle Point. These impacts would affect both high and low-income populations equally.

Conclusion

None of the proposed alternatives would have disproportionately high and adverse effects on minorities, low-income populations or communities, or Indian Tribes as defined in the Council on Environmental Quality *Environmental Justice Guidance under the National Environmental Policy Act* (1997). No residences or businesses would be displaced or relocated as a result of the alternative. Negative impacts and benefits of the alternatives would affect all road users equally.

The proposed alternatives would have no direct or cumulative effect on environmental justice.

4.2.8 Relocation

All alternatives are located on federal and state property. There are no residences or businesses in the project area. None of the alternatives would displace developed structures except for the existing road itself. No individuals have been identified outside of the project area whose needs would require relocation because of the project. Assuming that construction would occur prior to failure of the existing road, the construction of any action alternative (B, C, or D) would be staged to allow continued traffic access to the residential areas on Cattle Point.

Conclusion

No residences or businesses would be displaced or relocated as a result of the alternative. Therefore, the proposed project alternatives would have no direct or cumulative effect on relocation.

4.2.9 Prime and Unique Farm Lands

The U.S. Department of Agriculture NRCS Web Survey (websoilsurvey.nrcs.usda.gov) identifies one soil unit in the project area that is classified as prime farmland if irrigated. The unit is located in the grassland area on the flat ridgeline on the south flank of Mt. Finlayson. This unit is located on park and DNR property, and no agriculture has taken place in the area during recent decades. The area would not be suitable for agriculture since irrigation is not readily available in the vicinity, and farming is not compatible with the purposes for which the park and DNR property are managed. The realignment sections of the proposed project alternatives would impact a small amount of the prime farmland unit; however, since the area is not presently used for agriculture and since agriculture is not compatible with current land uses, no productive farmland would be converted to non-agricultural use.

Cumulative Impacts

Most of the grassland prairie located on the south half of the Cattle Point peninsula is considered to be suitable farmland if irrigated. In the project area, the grassland prairie has been converted to other uses due to development of land resources from past military activities, construction of roads, visitor's services, parking areas, trails, and residential development. Some of the prairie grassland was used for grazing and limited production of garden crops beginning in the early 1800s until the park was set aside in 1966. Residential development in the Cattle Point area began in the 1950s and 1960s. Due to NPS and DNR land management protections, many past activities have reverted to natural conditions and most of the peninsula is largely undeveloped. Future construction within the federal and state properties focuses mainly on improvements to existing visitor facilities; no new facilities are planned. The remainder of the property in the Cattle Point peninsula is subdivided for residential use. There is currently no farming taking place in the Cattle Point peninsula. With current federal, state, and county land management restrictions, no farming would likely take place in the foreseeable future.

The proposed alternatives would not convert functional farmland to other uses. The proposed alternatives would have no direct or indirect effect on this resource; therefore, they would not contribute to cumulative impacts.

Conclusion

The proposed alternatives would not convert functional farmland to non-agricultural uses and would therefore have no effect on prime and unique farm lands.

4.3 IMPACTS OF ALTERNATIVE A: NO ACTION

This alternative would continue present road management in its current location. Under this alternative, no work would be undertaken to deal with bluff erosion and the roadway would eventually fail at this site. Current road maintenance activities would continue on the Cattle Point Road; however, once the road fails, it would not be restored or maintained. All of the impacts described are long term, except as stated. The short-term effects of no action are assumed to be the same as present conditions.

4.3.1 Topography, Geology, and Soils

Coastal bluff erosion would continue to erode the soil and rock of the coastal shoreline and bluff in the project area into the foreseeable future. The bluff would continue to retreat into the coastal topography until it reaches less erosive bedrock. The total area potentially affected by coastal erosion is unknown. This is a natural process and would occur regardless of the alternative.

Cumulative Impacts

Coastal bluff erosion impacts the topography and soils along much of the south shoreline of the Cattle Point peninsula. However, most of the coast along the remainder of San Juan Island is rocky and more resistant to erosion, or is protected by shoreline trees and shrubs. Coastal erosion is a natural process and federal actions associated with alternative A would have no influence on its progression.

Soils in the Cattle Point peninsula have been impacted by past agriculture and military activities, construction of roads, visitor's services, parking areas, trails, and residential development. These activities cause changes to the soil by adding or changing chemicals, changing parent materials, and changing the rate of erosion. Due to NPS and DNR land management protections, many past activities have reverted to natural conditions and most of the peninsula is largely undeveloped. Future construction within the federal and state properties focuses mainly on improvements to existing visitor facilities; no new facilities are planned. Expansion of current facilities would have a minimal impact on adjacent soil and thus contribute to cumulative impacts. There are some lots in the Cattle Point Estates and Cape San Juan residential areas that could be developed in the future; however, most residential development at the east end of the Cattle Point peninsula is complete. The extent of future residential development is limited by the number of lots available and county zoning. Future construction of residences would have a small contribution to cumulative effects on soil.

Alternative A involves no new construction that would impact the topography, geology, or soils in the project area. The alternative would have no direct or indirect effect on these resources; therefore, it would not contribute to cumulative impacts.

Conclusion

The no action alternative would have no effect on topography, geology, and soils in the project area. Coastal bluff erosion would continue to impact these resources into the foreseeable future; however, this is a natural process and would occur regardless of the alternative.

4.3.2 Air Quality

Under the no action alternative, the road would eventually fail, cutting off road access between the east end of the Cattle Point peninsula and the remainder of San Juan Island. When the road eventually fails, auto use to the east of the bluff erosion site would likely decrease due to the lack of road access to the remainder of the island. Locally, a reduction in auto use would result in a reduction of air pollutants from auto emissions. However, use of other small vehicles (such as 4-wheelers and motorcycles) by residents to travel within the eastern end of the Cattle Point peninsula could increase. In order to access the rest of San Juan Island and the mainland, Cattle Point residents would increase their use of water transport and floatplanes, resulting in a minor increase in air pollutants from these motor vehicles. Emissions from increased use of boats, floatplanes, and small vehicles could offset any reduction in emissions gained from the loss of auto access. Loss of auto access could also reduce the likelihood for future development of vacant property on the east end of the Cattle Point peninsula. This could reduce the potential to generate air pollutants from new residences such as smoke from wood stoves and fireplaces and emissions from additional vehicles in the area.

Cumulative Impacts

Past and present sources of impacts on air quality in the Cattle Point peninsula are motor vehicles, campfires, prescribed fires, generators, and heating systems. Most air pollution affecting the Cattle Point peninsula comes from outside of the area, notably the Shell Oil Products and Tesoro oil refineries near Anacortes and Bellingham, Washington and the Port Townsend Pulp and Paper Mill in Port Townsend, Washington. As population growth continues in western Washington, additional cars, marine vessels, and infrastructure would increase air pollution emissions, and could result in minor adverse impacts to air quality in the Cattle Point area.

The no action alternative could lead to a reduction in vehicular traffic and a reduction in future population growth potential in the east end of the Cattle Point peninsula. These factors could lead to a reduction in sources of pollutant emissions in the local area. While this could have a negligible beneficial effect on the air quality in the local area, it would not likely result in a cumulative improvement in air quality region-wide.

Conclusion

Overall, this alternative could have a negligible beneficial effect on air quality in the Cattle Point peninsula, but would have no effect on air quality in the region.

4.3.3 Hydrology

Bluff erosion could affect the movement of surface and ground water in the affected area; however, this is a natural process and would continue regardless of the alternative. The existing road surface is made up of impermeable pavement that does not allow water to penetrate the ground over the road surface area. Impermeable surfaces accelerate the movement of water, causing higher transport capacities and increasing erosion as well as changing runoff characteristics of a watershed. Because of the low level of residential development and low road density in the project area, the amount of impermeable surface in the project area is low. The no action alternative would lead to obliteration of the existing roadway at the bluff site through natural erosion. This would lead to a slight reduction in impermeable road surface in the project area.

Cumulative Impacts

Hydrologic systems in the Cattle Point peninsula have been affected by past agricultural uses, military activities, construction of roads, parking lots, visitor facilities, and residential development. Due to NPS and DNR land management protections, many past activities have reverted to natural conditions and most of the peninsula is largely undeveloped. Future construction within the federal and state properties focuses mainly on improvements to existing visitor facilities; no new facilities are planned. There are some lots in the Cattle Point Estates and Cape San Juan residential areas that could be developed in the future; however, most residential development at the east end of the Cattle Point peninsula is complete. Because the area is largely undeveloped and road density is low, these actions have had a minor cumulative effect on hydrologic systems.

Alternative A involves no new construction and would therefore not contribute to cumulative impacts to hydrology.

Conclusion

Overall, implementation of the no action alternative would result in a negligible beneficial effect on the hydrology in the drainage basin and Cattle Point peninsula.

4.3.4 Water Quality

Continued bluff erosion could potentially discharge sediment into the Strait of Juan de Fuca. This is a natural process that takes place throughout coastal areas. As the bluff retreats, the road would eventually be destroyed by erosive forces. Road pavement would eventually slough off with the retreating slope and there is the potential that sections of pavement could eventually fall into coastal waters. The leaching of petroleum from the asphalt pavement could affect water quality in the near-coastal area. Testing conducted by the University of New Hampshire to determine the leaching characteristics of reclaimed asphalt pavement show that petroleum contaminants were below the detection level and below applicable state regulatory groundwater concentrations (Eastern Research Group 2001).

Cumulative Impacts

Coastal water quality has been affected by natural geologic processes such as coastal erosion as well as pollution from marine vessels, shoreline development, agriculture, and manufacturing. Surface and ground water has been impacted by human development and agricultural uses. Due to NPS and DNR land management protections, many past activities have reverted to natural conditions and most of the peninsula is largely undeveloped. Future construction within the federal and state properties focuses mainly on improvements to existing visitor facilities; no new facilities are planned. Visitation in the park is expected to increase into the foreseeable future. Increased human presence along the beaches and adjacent to coastal lagoons could contribute to cumulative impacts on water quality in the Cattle Point area. There are some lots in the Cattle Point Estates and Cape San Juan residential areas that could be developed in the future, which would increase the population of the area and potentially impact water quality along adjacent coastal areas and waterbodies.

Alternative A involves no new construction. The existing road would eventually fail at the bluff erosion site, eliminating road access to the east end of the Cattle Point peninsula. This would reduce future visitor use and potentially reduce the growth of new residential construction on private property. When added to other past, present, and future activities, these actions could

have a negligible beneficial effect on water quality locally, but would have no measurable cumulative effect region-wide.

Conclusion

Because of these factors, implementation of alternative A would have a negligible adverse effect on water quality in the project area.

4.3.5 Visual Quality

The ability of visitors to access the scenic vistas to the east of the eroding bluff by motor vehicle would be eliminated when the road fails. Pedestrian access to the east of the road failure would continue via existing trails. Access to vistas to the west of the road failure would not be affected. Views of the road, including the portion of the road visible from the historic South Beach area of American Camp, would remain the same over the short-term. The road would eventually fail at the bluff erosion site; however, this is a natural process and would occur regardless of the alternative. The failed road section at the bluff erosion site would appear similar to other naturally eroding bluff sites along the coast. Under the no action alternative, the failed road section would not be restored, and eventually pieces of road pavement would fall onto the bluff below. This would impact the visual quality of the coastal bluff when viewed from South Beach or from offshore; however, over the long term, continued erosion and natural degradation of the asphalt would eventually break the pavement into small pieces that would be difficult to distinguish from the natural surroundings.

Cumulative Impacts

Past and present development that is viewable from within the Cattle Point peninsula and from offshore has impacted the visual quality of the natural setting. The Cattle Point residential areas began development in the early 1960s. These areas have about 150 residential lots with sizes varying from 0.5 acres to 6 acres. Most of these lots have been developed. Residential areas to the west of American Camp also began development in the 1960s. These areas contain a total of 43 single-family lots averaging about 1 acre in size, over half of which have been developed. The residences on the east end of the Cattle Point peninsula cannot be seen from the historic areas of the park; however, some residential development to the west is visible. Although some residences are screened by topography and vegetation, many can be seen to varying degrees from offshore. Other development of land resources including historic military buildings, visitor's services, parking areas, roads, and trails are visible from various locations on the Cattle Point peninsula and from offshore. Due to NPS and DNR land management protections, most of the peninsula is largely undeveloped and retains its natural appearance. Road density in the Cattle Point peninsula is low, except in residential areas. Future construction within the federal and state properties focuses mainly on improvements to existing visitor facilities. No large improvements to existing facilities and no new facilities are planned that would add to cumulative impacts to visual resources.

Alternative A involves no new construction. The existing road would eventually fail at the bluff erosion site and would erode onto the hillside below. Loss of road access could potentially reduce the growth of future residential construction on private property at the east end of the Cattle Point peninsula. However, since most of the residential lots are currently built-out and the remainder of the area is protected from development by NPS and DNR management, this would have a negligible cumulative benefit to visual quality locally and no measurable effect region-wide.

Conclusion

Overall, implementation of alternative A would have a negligible adverse effect on the visual quality of the Cattle Point peninsula from view-points in the park and from offshore.

4.3.6 Vegetation

The existing roadway impacts approximately 3 acres of prairie vegetation within the project area. Natural coastal erosion has also removed an unknown amount of vegetation as the bluffs erode upslope. Bluff erosion is expected to continue at current rates into the foreseeable future, removing areas of vegetation as the bluff recedes upslope until it meets less erosive rock. The area of potential impact from natural erosion is unknown. Prior to road failure, through-traffic would be closed at a safe location to the east and west of the erosion site. Outside of the eroded segment, the Cattle Point Road would likely be left in place.

Cumulative Impacts

In the Cattle Point peninsula, vegetation has been disturbed in localized areas for residential development and within the park, DNR, and BLM property for visitor services, roads, parking areas, and trails. In the past, the vegetation in the Cattle Point peninsula was affected by agriculture, logging, and military operations. Past logging impacted the forested area on the north side of the Cattle Point peninsula. Most of the area is currently second growth or later succession.

Due to NPS and DNR land management protections, many past activities have reverted to natural conditions. Most of the Cattle Point peninsula is largely undeveloped. Future construction within the federal and state properties focuses mainly on improvements to existing visitor facilities; no new facilities are planned. There are some lots in the Cattle Point Estates and Cape San Juan residential areas that could be developed in the future; however, most residential development at the east end of the Cattle Point peninsula is complete. Future construction would have a negligible contribution to cumulative effects to vegetation in the Cattle Point peninsula.

Prairies are an increasingly rare vegetation resource in the San Juan Islands and the greater Pacific Northwest. Prairies in the Northwest have been adversely impacted from conversion to agriculture, introduction of exotic species, and residential development. The NPS has undertaken a limited amount of prairie restoration in the American Camp unit of the park.

Coastal erosion would continue to impact prairie vegetation in the project area as the bluff recedes upslope until it meets less erosive rock. The potential area of impact from natural erosion is unknown. This is a natural process and would continue regardless of the alternative. Alternative A involves no new construction and would not impact natural processes; therefore, it would not contribute to cumulative impacts to vegetation.

Conclusion

Overall, implementation of the no action alternative would have no effect on vegetation other than the area affected by the existing roadway.

4.3.7 Wildlife

The existing road impacts wildlife and wildlife habitat by direct loss of the habitat area covered by pavement, fragmentation of continuous habitat patches into smaller sizes, road avoidance due

to human activity, noise, and road mortality. Due to the narrow width of the road and low traffic speeds and volumes, these impacts are relatively small.

Eventual failure of the road at the bluff erosion site would result in a large reduction in motor vehicle traffic on the east side of the failure site due to loss of road access to the remainder of the island. This would result in a reduction in vehicle-related human activity and noise as well as a reduction in wildlife road mortality.

Motor vehicle traffic on the west side of the failure site would also be reduced due to elimination of commuter travel by Cattle Point residents. Vehicle speeds would decrease on the section of road leading to the dead-end at the road failure site. The reduction in traffic volume and speed would reduce traffic-related disruptions in wildlife travel across the roadway and reduce direct road mortality. Human activity would continue in the project area, but at a lower level due to the absence of through-traffic. Visitor travel on the west side of the road failure site would continue, and would likely increase at levels expected with normal visitor increases over time. Foot access to the east of the road failure site would continue to be available via the existing trail system. Disruptions to wildlife from this activity would continue on both sides of the road failure site.

Cumulative Impacts

Native wildlife in the Cattle Point peninsula and on San Juan Island has been impacted by past agricultural development, military activities, residential development, road construction, park development, and increased human use and visitation. Impacts include habitat loss and fragmentation, introduction of exotic wildlife species, and introduction of pathogens from domestic livestock.

Continued development on San Juan Island would fragment habitat into smaller areas for the remaining wildlife. Habitat loss causes displacement of individuals and reliance on ever-smaller undisturbed areas of habitat. Introduction of exotic wildlife species has also altered habitat and created competition for food and territory. However, because of federal and state land management protections, most of the land in the Cattle Point peninsula is undeveloped, and future development is extremely limited. While the area is undeveloped, the historic and scenic resources attract a large amount of visitor use. The American Camp area averages 140,000 to 200,000 visits per year, mostly in the summer months. Visitation is expected to increase into the foreseeable future. Increased human use would continue to increase wildlife disturbance in the project area.

The eventual loss of the Cattle Point Road through bluff erosion would eliminate through-traffic to the east end of the Cattle Point peninsula and could contribute to a reduction in vehicular traffic along the Cattle Point Road between Friday Harbor and Cattle Point. While residential traffic would decrease, visitor traffic would continue to increase into the future. Total loss of vehicular traffic at the bluff erosion site and on the east end of the Cattle Point peninsula would reduce habitat fragmentation caused by road use in the localized area. While these factors could lead to a reduction in habitat fragmentation and human disturbance in the local area, it would not likely result in cumulative improvement in wildlife habitat and wildlife use on San Juan Island as a whole.

Conclusion

Overall, implementation of the no action alternative would have a minor beneficial effect on wildlife in the project area.

4.3.8 Federally-Listed Threatened, Endangered, and Protected Species

There are currently no federally-listed threatened or endangered species known to be present or having habitat in the project area or vicinity. The following federally-protected species is known to be present and have habitat within the project area and vicinity.

Table 4.2 – Federally-protected species in the project vicinity

Common Name	Status	Occurrence in Project Area
Bald eagle	Federally-protected under BGEPA	Project vicinity contains two bald eagle territories. Six known nesting sites (9 active nests) within 200 feet to 0.5 mi of project area.

Eventual failure of the road at the bluff erosion site would result in a large reduction in motor vehicle traffic on the east side of the failure site due to loss of road access to the remainder of the island. This would result in a reduction in vehicle-related human activity and noise to the east of the road failure site. Reduction in traffic noise and disturbances would be the greatest for the two historic bald eagle nesting sites located east of the road failure site. One of these sites is located within 800 feet of the project area.

The remaining four bald eagle nesting sites are located to the west of the road failure site. One nest site is located in close proximity to the NPS visitor's center. Motor vehicle traffic on the west side of the failure site would be reduced due to elimination of commuter travel by Cattle Point residents. Visitor travel on the west side of the road failure site would continue, and would likely increase at levels expected with normal visitor increases. Foot access to the east of the road failure would continue to be available over the existing trail system. Use of the Mt. Finlayson trail is expected to increase at levels expected with normal visitor increases. The bald eagle nests located on the ridge of Mt. Finlayson are far enough removed from the Cattle Point Road that it is unlikely that the small amount of traffic noise would affect nesting. The nesting eagles near the visitor's center appear to be acclimated to human activity.

Cumulative Impacts

The development of the Cattle Point peninsula and San Juan Island has resulted in bald eagle habitat fragmentation, introduction of exotic species, habitat loss, and human disturbance. Park operations, visitor uses, and residential development in the Cattle Point peninsula continue to impact the bald eagles that use the area for nesting and foraging. Due to NPS and DNR land management protections, many areas of environmental disruptions caused by past human activities have reverted to natural conditions and most of the peninsula is largely undeveloped. Future construction within the federal and state properties focuses mainly on improvements to existing visitor facilities; no new facilities are planned. There are some lots in the Cattle Point Estates and Cape San Juan residential areas that could be developed in the future; however, most residential development at the east end of the Cattle Point peninsula is complete.

Bald eagle nesting in the Mt. Finlayson ridge area is somewhat isolated from most human activity other than foot traffic. The nesting eagles near the NPS visitor's center appear to be acclimated to human activity, and have successfully raised chicks over that last several years.

Implementation of alternative A would lead to a reduction in vehicular traffic near the Mt. Finlayson ridge bald eagle nesting sites; however, foot traffic would continue on local trails in close proximity to historic bald eagle nests. Trail use would likely increase at the same rate

expected with normal increases in overall park visitation. Implementation of the no action alternative would not alter any trends in visitor use. Although the alternative may have a negligible incremental beneficial effect on bald eagles, when added to other past, present, and future activities it would not result in any cumulative change locally or region-wide.

Conclusion

Because of these factors, implementation of the no action alternative is expected to have no effect on bald eagles or bald eagle nesting the project area and Cattle Point peninsula.

4.3.9 State-Listed Threatened and Endangered Species

The following state-listed threatened and endangered species is known to be present and have habitat within the project area or project vicinity.

Table 4.3 – State-listed species in the project vicinity

Common Name	Status	Occurrence in Project Area
California buttercup	State threatened	33 groups (consisting of 2 to 260 individual plants) identified within the project area. Total area of occupancy approximately 0.5 acres.

Natural bluff erosion would continue at current rates, removing areas of vegetation as the bluff recedes upslope until it meets less erosive rock. At this time, the closest group of California buttercup is located approximately 285 feet to the north of the bluff erosion site. At current rates, bluff erosion would not affect this site for 97 to 285 years. During that period of time, the range of the plant could increase or recede based on a number of growing and management conditions.

Cumulative Impacts

In the Cattle Point peninsula, vegetation, including the California buttercup, has been disturbed in localized areas by residential development and within the park, DNR, and BLM property by visitor services, roads, parking areas, and trails. In the past, the vegetation in the Cattle Point peninsula was impacted by agriculture, logging, and military operations. Due to NPS and DNR land management protections, many areas of environmental disruptions caused by past human activities have reverted to natural conditions and most of the peninsula is largely undeveloped. Future construction within the federal and state properties focuses mainly on improvements to existing visitor facilities. No new facilities are planned in the prairie habitat containing California buttercup. There are some lots in the Cattle Point Estates and Cape San Juan residential areas that could be developed in the future; however, most residential development at the east end of the Cattle Point peninsula is complete. Some of these lots are located in prairie grassland vegetation that could contain California buttercup.

Natural bluff erosion would continue to destroy prairie vegetation as the bluff recedes upslope; however, the known California buttercup populations are far removed from the eroding bluff area. This is a natural process and would continue regardless of the alternative. Alternative A involves no new construction and would not contribute to cumulative impacts to California buttercup.

Conclusion

Overall, implementation of the no action alternative would have no effect on any known populations of California buttercup in the project area and Cattle Point peninsula.

4.3.10 Other Special Status Species

The following special status species are known to be present or have habitat present in the project vicinity.

Table 4.4 – Special status species in the project vicinity

Common Name	Status	Occurrence in Project Area
Black oyster catcher	WDFW Priority Habitat and Species Database (WDFW-P)	Breeding colonies located to the east within 1 mile of project area Closest known colony located approximately 0.5 miles from the project area.
Island marble butterfly	Federal species of concern (FSC), State candidate (SC)	Larval host plants present in project area Species observed near Cattle Point Road near east boundary of the park during 2005 survey
Long-eared myotis	FSC	Potentially present in project vicinity, though more likely found in forested areas on north side of Mt. Finlayson
Moss' elfin	State monitor list (SML)	Potential habitat in project area, though not found during 2005 survey
Northern goshawk	SC	Potentially present in project vicinity, though most likely found in forested areas
Olive-sided flycatcher	FSC	Potentially present in project vicinity, though most likely found in forested areas
Oregon vesper sparrow	SC	Potentially present in project area
Osprey	WDFW-P	Nest located about 1 mile northwest of project area Could potentially forage in project area
Pacific Townsend's big-eared bat	SC	Potentially present in project vicinity

Common Name	Status	Occurrence in Project Area
Peregrine falcon	FSC, State sensitive species (SS)	Potentially present in project area
Valley silverspot	FSC, SC	Potentially present in project area
Western toad	SC	Potentially present in project area
Slender crazyweed	SS	Potential habitat in project area

Natural bluff erosion would continue at current rates, removing areas of vegetation as the bluff recedes upslope until it meets less erosive rock. The areas lost to erosion may include special status plants or habitat for special status wildlife species. This is a natural process and would continue regardless of the alternative.

Cumulative Impacts

Habitat for special status species in the Cattle Point peninsula and on San Juan Island has been affected by past agricultural development, military activities, residential development, road construction, park development, and increased human use and visitation. Impacts include habitat loss and fragmentation, introduction of exotic wildlife species, and introduction of pathogens from domestic livestock. In the Cattle Point peninsula, habitat for special status species has been disturbed in localized areas for residential development and within the park, DNR, and BLM properties for visitor services, roads, parking areas, and trails. In the past, habitat in the Cattle Point peninsula was impacted by agriculture, logging, and military operations. Due to NPS and DNR land management protections, many areas of environmental disruptions caused by past human activities have reverted to natural conditions, and most of the peninsula is largely undeveloped. Coastal bluff erosion sites could contain special status plant species or habitat for special status plant and wildlife species. Coastal erosion could continue to impact special status species in the project area as the bluff recedes upslope until it meets less erosive rock. This is a natural process and would continue regardless of the alternative.

The eventual loss of the Cattle Point Road through bluff erosion would eliminate through-traffic vehicular access to the east end of the Cattle Point peninsula. This would reduce habitat fragmentation caused by road use in the bluff area and reduce human disturbance of special status wildlife species. Foot traffic would still be present on local trails and in the residential areas, but human presence would be reduced considerably at the bluff erosion site. These factors could have a beneficial effect on special status species in the local area; however, it would not likely result in a cumulative improvement in habitat and use on San Juan Island as a whole when added to other past, present, and future actions.

Conclusion

Because of these factors, implementation of the no action alternative would have no effect on special status species in the project area and Cattle Point peninsula.

4.3.11 Cultural, Historic, and Archaeological Resources

No cultural, historic, or archaeological resources have been identified in the area of potential road failure other than the National Historic Landmark. Natural bluff erosion could potentially impact cultural resources that have yet to be discovered. This is a natural process and would occur regardless of the alternative.

Cumulative Impacts

Archaeological resources on San Juan Island have been impacted by past development and construction of roads, trails, visitor's services, parking areas, residential development, unintentional disturbance, artifact hunting, and vandalism, as well as natural processes such as fire and erosion. Over the years, historic structures have been adversely affected by natural processes and natural wear and tear. Some historic structures were removed from their historic settings and modified prior to establishment of the park. The cultural landscapes in the park have been adversely affected by human development. However, due to NPS and DNR land management protections, most of the peninsula is largely undeveloped and cultural resources are protected.

Cattle Point Road would eventually be destroyed by coastal bluff erosion; however the remainder of the road would likely be left in place. Natural bluff erosion could impact cultural resources that have not been discovered; however, this is a natural process and would continue regardless of the alternative. Alternative A involves no new construction. Implementation of this alternative would not alter current trends and would not contribute to cumulative impacts on cultural, historic, and archaeological resources.

Conclusion

The no action alternative involves no new construction; therefore it would have no effect on cultural, historic, and archaeological resources.

4.3.12 Land Use

The project area is located on federal and state property. The no action alternative would not change these land use designations including county land use zoning. Since the Cattle Point Road is the only road access, the eventual failure of the road at the bluff erosion site would result in a complete loss of motor vehicle access to the east end of the Cattle Point peninsula (figure 4.1) including NRCA, BLM, and residential property, as well as the Coast Guard lighthouse located on BLM property. Loss of road access would not change the status of the NRCA, BLM, or lighthouse properties. The U.S. Coast Guard currently uses the Cattle Point Road to service the lighthouse. When the road fails, the lighthouse could be serviced by boat or helicopter; however, this would be more difficult and costly than road access (Lieutenant John Lane, U.S. Coast Guard, personal communication, February 3, 2009). Although the residential areas would lose vehicular access to the remainder of San Juan Island, it would have no effect on use of the land for residential purposes or its county land use zoning.

Cumulative Impacts

Land use in the Cattle Point peninsula and San Juan Island has changed considerably throughout history. Native peoples used the islands to fish and collect camas and berries for thousands of years. The Hudson's Bay Company set up a wharf and established agricultural operations in the Cattle Point peninsula beginning in the 1850s. The American military began a 12-year

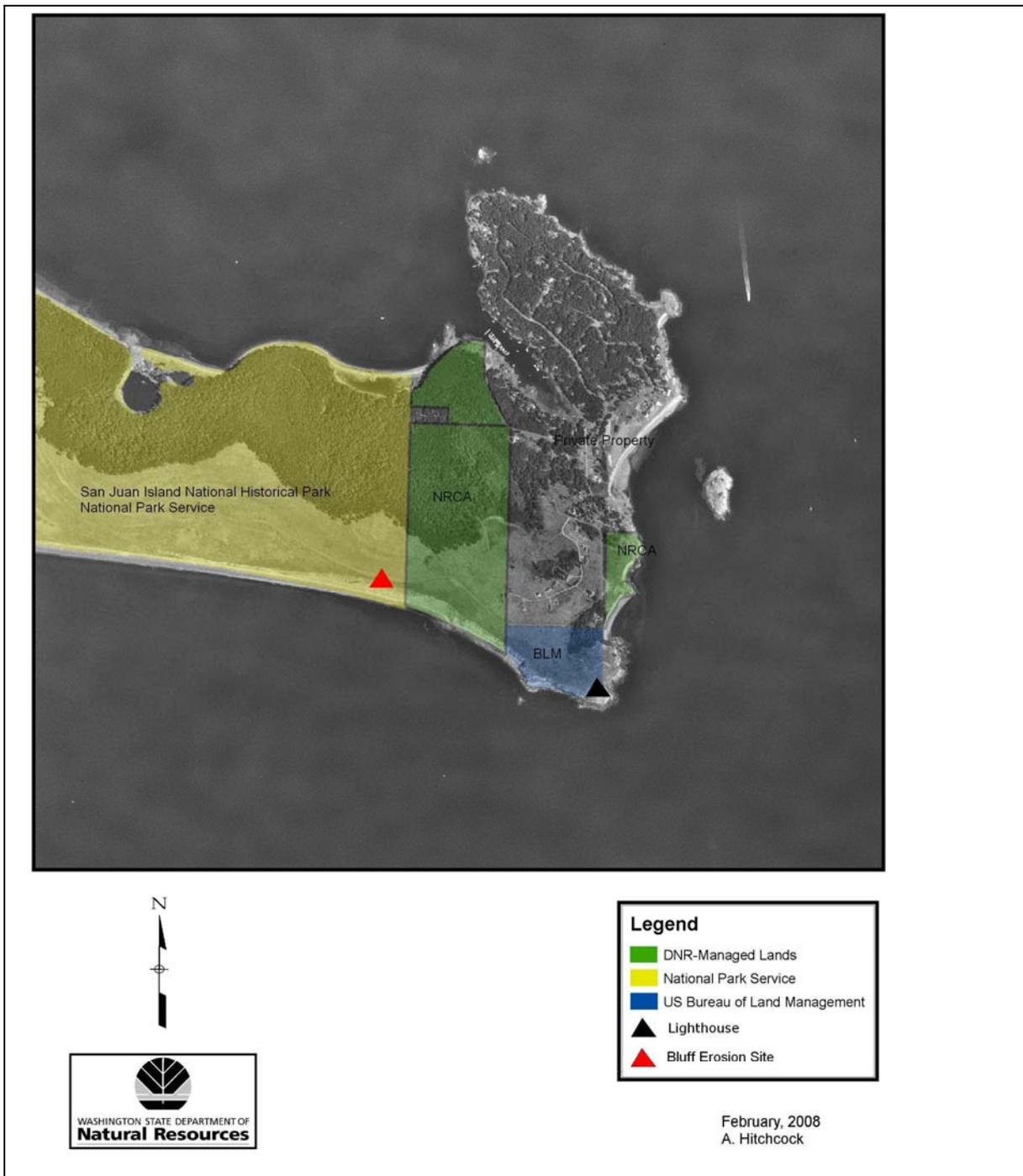


Figure 4.1 – Property at east end of Cattle Point peninsula

occupation of American Camp in the early 1860s. A village sprang up on Griffin Bay following the arrival of American forces. After the military departed, the area reverted to agriculture and the village was abandoned. Logging took place in the forested area on the north side of the Cattle Point peninsula. In 1951, the state of Washington began to acquire historic properties at American Camp and English Camp. In 1966, the lands were donated to the federal government to create the San Juan Island National Historical Park. The east end of the Cattle Point peninsula was subdivided and began residential development in the 1960s. The NRCA was created by the state of Washington in 1987. Due to NPS and DNR land management protections, most of the peninsula is largely undeveloped.

Alternative A involves no changes to current land uses. Implementation of this alternative would not alter current trends and would not contribute to cumulative impacts.

Conclusion

Because of these factors, implementation of the no action alternative would have no effect on land use in the project area

4.3.13 Local Plans

Local plans applicable to management of the project area are the *San Juan Island National Historical Park GMP and EIS* (2008; referred to as the GMP), the *Natural Resources Conservation Area State-Wide Management Plan* (1992), and the *San Juan County Comprehensive Plan* (2006). The no action alternative would lead to the eventual failure of the Cattle Point Road from bluff erosion and the loss of motor vehicle access to the east end of Cattle Point. The loss of vehicular access between Cattle Point and the remainder of the island does not comply with the following management direction and guidelines:

San Juan Island National Historical Park GMP and EIS (2008):

- Maintain vehicular road access for residents at Cape San Juan and Cattle Point Estates and visitors to the Cattle Point Interpretive Area.
- Work cooperatively with the state and county to provide appropriate access to private land adjacent to the park where rights-of-way exist.

Natural Resources Conservation Area State-Wide Management Plan (1992):

- Existing roads will remain open to the general public when they meet DNR recreation road standards for safe public access and where an existing public ROW already exists or the road is determined as essential to access of the site for low-impact use.

San Juan County Comprehensive Plan (2006)

- Recognize the needs and desires of residents of each island in making decisions regarding transportation facilities and their operation.
- Accommodate diverse modes of transportation.
- Establish standards for road improvements that are responsive to preferences of island residents and that are in accordance with types and intensities of land use to be served as well as volumes of traffic to be accommodated.

4.3.14 Visitor Uses, Special Vehicles, Bicycles, and Pedestrians

The eventual failure of the road at the bluff erosion site would result in a complete loss of motor vehicle and bicycle visitor uses on the east end of the Cattle Point peninsula. However, visitor uses on the west end of Cattle Point, including most of the park, would not be affected.

Based on a traffic estimate by the San Juan County Public Works Department, approximately 253,000 cars traveled the Cattle Point and American Camp roads in the year 2000. About 100,000 of those cars (40 percent) traveled solely to park locations while the remaining 60 percent (about 153,000 cars) traveled as far as the Cape San Juan residential area. It is unknown how many of these motorists were tourists and how many were residents; however, given the small number of year-round residents on the Cattle Point peninsula, it is likely that much of the traffic comes from tourist travel.

Most of the visitor uses in the American Camp area would not be affected by failure of the Cattle Point Road at the bluff erosion site. The NPS visitor's center, historic interpretive opportunities, and most of the trails and overlooks would still be accessible by motor vehicle, bicycles, and pedestrians. Motor vehicle and bicycle access to a small portion of the far eastern edge of the American Camp unit would be lost following road failure. Because only a very small area of the American Camp unit is located to the east of the road failure and because there are no historic resources in this area, the impact to the park would be negligible. Scenic vistas from park property would continue to be available from the area to the west of the road failure site. The native prairie surrounding the project area would continue to be accessed by pedestrians from both the west and east side of the road failure site.

Loss of road access to the east of the road failure site would eliminate access to all of the NRCA and BLM property by visitors who rely on motor vehicles, especially the elderly and disabled. The area could be accessed by pedestrians over the existing trails; however, access to this area by bicycles, mopeds, and other special vehicles would be eliminated following road failure. At this time, bicycle and motorized vehicle use is not permitted on area trails. Visitor use of the day-use facilities, lighthouse, and scenic vistas on DNR and BLM property at the east end of Cattle Point would likely decrease. However pedestrian access to these facilities would continue to be available at the end of an approximately 0.75-mile hike from the road failure site.

Cumulative Impacts

The park and other public lands are a primary source of recreation for both visitors and island residents. These public lands provide public access to a wide variety of recreational opportunities that are important for the enjoyment of the population. As private development continues throughout the San Juan Islands, there is a shrinking land base for public recreation, making the recreational opportunities provided by public lands more important. Continuing growth in San Juan County and increasing numbers of visitors has resulted in congestion along established recreation corridors during peak periods. Local and county efforts are underway to improve bicycle routes by establishing wider road shoulders. Volunteer groups are working to create a network of non-motorized trails connecting destinations throughout San Juan Island.

The eventual loss of road access to the east end of the Cattle Point peninsula would eliminate vehicular and bicycle access to about 140 acres of public lands. This area could still be accessed by boat and on foot over existing trails. The east end of the Cattle Point peninsula makes up a very small portion of the far-east end of American Camp. However, the entire DNR and BLM properties, including the Coast Guard lighthouse, would become inaccessible by

motor vehicles and bicycles. These properties make up about 6 percent of the public lands on San Juan Island. These areas would not be available for direct vehicular access; however, they could be accessed by foot over existing trails. While implementation of the no action alternative would contribute a negligible cumulative impact on motor vehicle and bicycle recreational opportunities on San Juan Island, it would not contribute to cumulative impacts to pedestrian recreational uses. When added to other past, present, and future actions overall motorized and bicycle recreational opportunities would not change in a measurable way.

Conclusion

Overall, implementation of alternative A would have a minor adverse effect on visitor uses, special vehicles, bicycles, and pedestrians in the Cattle Point peninsula, but would have a negligible effect on these uses county-wide.

4.3.15 Trail System

Most of the trails in the Cattle Point peninsula are located in the park and to the north of Mt. Finlayson. Trailheads are located in American Camp near the Visitor's Center, South Beach, Fourth of July Beach, and Old Town Lagoon. The DNR and BLM properties on the east end of the Cattle Point peninsula also contain a system of local trails and connectors with the NPS trail system. Trails in the immediate project area include the Mt. Finlayson Trail located in the park along the Mt. Finlayson ridge and DNR trails connecting the east end of the Mt. Finlayson Trail and Cattle Point Road (east of the bluff erosion site) to Third Lagoon.

Natural bluff erosion and eventual failure of the Cattle Point Road would not directly impact trails in the project area. Loss of road access to the east end of the Cattle Point peninsula would not affect access to park trails; however, it would limit motor vehicle access to trail heads located on DNR and BLM properties. However, visitors and residents could continue to access the DNR and BLM trail system by foot or boat.

Cumulative Impacts

The Cattle Point peninsula contains about 9 miles of trails (San Juan Island Trails Committee 2006). Most of the developed trails have been developed since the mid 1960s when the park was established. The park trails provide an infrastructure that connects adjacent DNR and BLM trails in east Cattle Point with roads and trails to the west of American Camp, forming a vital recreational opportunity for visitors and residents. As private development throughout San Juan Island continues, there is an ever shrinking land base for development of public trails. Loss of road access would eliminate direct motor vehicle and bicycle access to about 1 mile of trails on DNR and BLM properties in the east end of the Cattle Point peninsula; however, these areas could still be accessed by foot. Therefore, this alternative would not contribute to cumulative impacts to the trail system locally or on San Juan Island.

Conclusion

Implementation of the no action alternative would have no effect on trails in the project area or Cattle Point peninsula.

4.3.16 Transportation and Road System

In the short-term, bluff erosion in close proximity to the Cattle Point roadway is likely to increase the need for road maintenance at the site until the time that the road fails completely. Over the long term, the no action alternative would lead to erosion of the roadway structure and

the eventual loss of road access between the east end of the Cattle Point peninsula and the remainder of San Juan Island. Following road failure, lack of vehicle access would affect the ability of the county to maintain the Cattle Point Road east of the bluff area. As a result, following bluff failure, maintenance costs for the east end of the Cattle Point Road would increase due to its isolation, and the area would likely receive less maintenance than it currently receives.

Cattle Point Road is the only road access between the Cattle Point peninsula and the remainder of San Juan Island, including the island's major population center in Friday Harbor. Failure of the road at the bluff erosion site would cut off motor vehicle access for Cattle Point residents to schools, emergency services, the airport and ferry terminal, businesses, consumer goods, and employment. The only transportation between the east end of the Cattle Point peninsula and the remainder of the island or off the island would be by boat, helicopter, or floatplane. These methods of transportation may not be available to all Cattle Point residents. Reliable transportation between the Cattle Point peninsula and the remainder of the island would be difficult and impractical for most residents. Development of a commercial or state-run water shuttle service would need to be explored.

Boat access would add considerable travel time between Cattle Point residences and Friday Harbor. Currently, the 9 miles between the Cattle Point residential areas and Friday Harbor takes about 20 minutes to drive. Boat travel from Cattle Point would involve walking or small vehicle transport from residences to a dock, a 10-mile water route to Friday Harbor, followed by a walk from the Friday Harbor dock into town or to a parked vehicle. Travel time would be dependent on the type of boat used, but would likely take over one hour. Floatplane or helicopter would provide faster transportation, but at a much higher cost.

Cumulative Impacts

The county currently maintains about 96 miles of seal-coated, gravel, and asphalt roads on San Juan Island (www.co.san-juan.wa.us/publicworks/pw_index.aspx, 2009). Roads throughout the county are routinely maintained and upgraded as needed to preserve the level of service to residents. The Cattle Point Road is the only through-road in the project area. A small network of residential roads connects the residences of Cattle Point Estates and Cape San Juan with the Cattle Point Road. The existing road system provides adequate access for residents. Future residential expansion is limited by the small number of vacant lots in the existing subdivisions and the large amount of public land that is not available for future residential or commercial development. There are no plans for construction of additional roads in the project area. The area of Cattle Point Road between the bluff erosion site and the end of the road is about 1.4 miles in length. This area makes up about 1 percent of the road system on the island and loss of this area to the overall road transportation system on San Juan Island would be minimal.

Conclusion

Because of these factors, implementation of the no action alternative would have a major adverse effect on the transportation and road system in the east end of the Cattle Point peninsula. However, the effects of this alternative on the county-wide transportation system would be negligible.

4.3.17 Road Safety

In the short term, an unexpected catastrophic road failure at the bluff erosion site could increase the chance of vehicular accidents during a period of low visibility. However, the county would

monitor conditions and close the road prior to catastrophic failure. Warnings would slow traffic prior to reaching the end of the road.

Over the long term, the eventual elimination of through-traffic between the Cattle Point residential areas and the remainder of San Juan Island would eliminate local commuter traffic on the road. In the year 2000, approximately 253,000 cars traveled the Cattle Point and American Camp roads (San Juan County 2008). About 100,000 cars (40 percent) traveled solely to park locations while the remainder traveled as far as the Cape San Juan residential area. It is not known how many of these cars were residents and how many were visitors. Given that there are approximately 150 residential lots in the Cattle Point residential areas, most of which are built, it can be assumed that most of the 100,000 cars traveling to the end of Cattle Point Road belong to residents.

Accident data since 2003 indicate that the accident rate between MP 6 and 9 on Cattle Point Road is lower than the county-wide average. There have been no reported accidents on this section of road since 2007.

Elimination of through-traffic from Cattle Point residents would reduce the number of motor vehicles using the east end of the Cattle Point Road. This would reduce the potential for motor vehicle accidents between each other and between bicycles, pedestrians, and special vehicles using the area.

Cumulative Impacts

The Cattle Point Road was built in 1963, and is the only through-road on the east end of the Cattle Point peninsula. There are no plans for construction of additional roads or visitor facilities in the project area that would lead to a change in traffic volume or contribute to an increase in visitor or residential use. Future residential expansion is limited by the small number of vacant lots in the existing subdivisions and the large amount of public land that is not available for future residential or commercial development. Visitation to American Camp has experienced annual fluctuations; however, overall, visitor use has increased by 23 percent between 1993 and 2006 (NPS 2008). The increase in park visitation has resulted in an increase in motor vehicle traffic as well as an increase in use by pedestrians, bicycles, and special vehicles in the project area.

Implementation of Alternative A would nearly eliminate motor vehicle traffic by residents of Cattle Point Estates and Cape San Juan. This would contribute to a minor cumulative reduction in the amount of local traffic traveling the Cattle Point Road from Friday Harbor; however, traffic from park visitors is expected to increase at a steady rate into the foreseeable future. Use of the Cattle Point Road by pedestrians, bicycles, and unconventional vehicles is also expected to increase. Accident figures for the Cattle Point Road since 2007 show that the accident rate in the project area is lower than the county average. Over the same period, the accident rate for all roads in the county has declined by about 12% (www.wsdot.wa.gov/mapsdata/tdo/accidentannual.htm). The minor reduction in motor vehicle traffic attributed to Cattle Point residents is not likely to alter overall trends in traffic volume locally or county-wide, but it may have a minimal contribution to cumulative improvement in overall road safety on the Cattle Point peninsula and county-wide.

Conclusion

Because of these factors, the no action alternative is expected to have a minor beneficial effect on road safety in the local area and a negligible beneficial effect to overall road safety county-wide.

4.3.18 Socioeconomics

A socioeconomic impact assessment examines how the proposed project would change the lives of current and future residents of a community. For the purpose of this analysis, the community is considered to be two tiered. The community primarily affected by project activities is the Cattle Point community, which includes the residents of the Cattle Point Estates and Cape San Juan residential areas. Friday Harbor and the remainder of San Juan Island would be affected to a lesser extent. Impacts to both communities are analyzed as appropriate to the subject.

Cumulative Impacts

The demographics of San Juan County have changed dramatically since World War II as the economy of the area has shifted from agriculture and fishing to tourism. Popularity of the county for retirement and second homes has led to gentrification, where a large portion of the population is comprised of seniors and the wealthy. The current populace of the Cattle Point community generally fits the current county profile. Residential subdivision of farm land on the east end of the Cattle Point peninsula began in the 1960's. Prior to that, the population in the area was limited to a few homesteads. The existing subdivisions contain about 150 residential lots, some of which have not been developed. All of the private property on the east end of the Cattle Point peninsula is currently subdivided. The remainder of the land is publically-owned by the NPS and DNR, and would not be available for future development. County zoning of the private property as rural residential would limit future development to residential and home-based business. Construction of new residences has slowed recently due to the slowing of the overall economy.

The eventual loss of road access between the east end of the Cattle Point peninsula and the remainder of San Juan Island would result in isolation of the area from the economic center of the island in Friday Harbor. County zoning would limit the local development of businesses on Cattle Point to replace the loss of access to goods and services in Friday Harbor. This isolation combined with the recent declining economy would likely have a major contribution toward a slowing or decline in population in the local area, further gentrification, and a shift toward a younger population more suited to isolated living; however, it would have no cumulative effect on socioeconomics county-wide when added to other past, present, and future actions.

Population and Demographics

Given the high property values in the east Cattle Point residential communities, it is likely that most of the current residents and landowners are retired or have higher incomes. Loss of road access to employment and schools located on the remainder of San Juan Island would have a minor impact on these residents; however, access to medical facilities and business in Friday Harbor would have a major impact. Over the long term, loss of road access to the east end of the Cattle Point peninsula would likely slow or reverse current increases in population in the Cattle Point community. Demographics would shift to a population less dependent on road access to medical facilities, employment, goods, and services, and more interested in remote living.

Conclusion

Though locally noticeable, these factors would have a minor impact on demographics and population county-wide.

Local Industry

Lack of motor vehicle access to the east end of the Cattle Point peninsula, which makes up a small portion of San Juan Island, would not influence overall tourist visitation to the island. Popular scenic attractions and NPS sites would remain accessible by motor vehicle. The residential population of Cattle Point would become more isolated from the goods and services available in Friday Harbor. As demographics shifted to a population accustomed to remote living, they would likely keep large stocks of necessities on site and reduce their reliance on the readily available goods found in Friday Harbor.

Conclusion

Overall, loss of road access to the east end of the Cattle Point peninsula would have a negligible adverse effect on local industry and the economy of Friday Harbor and the remainder of the county.

Employment and Income

Loss of road access to the east end of the Cattle Point peninsula would increase commuting time and expense for residents who are employed elsewhere on the island, and might result in their relocation outside of the Cattle Point community. Although this would have severe impacts on a small number of people locally, the impact on employment and income on the island as a whole would be negligible. Loss of motor vehicle access to Cattle Point would not likely affect the employment and income of retired residents or part-time residents. The cost of living in the Cattle Point community would increase somewhat due to increased costs of transport outside of the Cattle Point peninsula. This could adversely impact residents on fixed incomes; however, because of the relatively affluent lifestyle of the area, this impact is expected to be minor.

Conclusion

Because of these factors, this alternative is expected to have a minor adverse effect on employment and income county-wide.

4.3.19 Public Health and Safety

With loss of road access, emergency medical assistance to the east end of the Cattle Point peninsula would have to be provided by helicopter. Non-emergency medical services in Friday Harbor would be time consuming and inconvenient to obtain. In the event of non-medical emergencies, such as fire or natural disaster, there would be no quick access for emergency vehicles, and any assistance would need to come by air or water.

Cumulative Impacts

Health care has been provided on San Juan Island since the 1950's. The present medical center was built in Friday Harbor in 1976, providing non-surgical medical services and on-call physicians. Law enforcement, fire, emergency services, and medical transport are also available in Friday Harbor. Major medical services are located off-island with transport by ferry or air. Plans for construction of a hospital on San Juan Island are currently in discussion. The new hospital would likely be located in Friday Harbor. The existing public health and safety

infrastructure currently provides an adequate level of services to the population of San Juan County and Cattle Point. Alternative A would not affect or change public health and safety services in San Juan County; however, it would directly affect access to these services by east Cattle Point residents when road access is lost. No other projects or activities are planned in the project area or the county that would affect public health and safety services or access to these services. When added to the already isolated nature of San Juan County and the Cattle Point peninsula, the eventual loss of road access to public health and safety services would add to the isolation of Cattle Point area residents and reduce their sense of security; however, when added to other past, present, and future action it would have no cumulative effect on these resources county-wide.

Conclusion

Because of these factors, the no action alternative would have a major adverse effect on public health and safety in the Cattle Point community; although health and safety services and access to these services would not be affected county-wide.

4.3.20 Utilities

Bluff erosion would eventually reach the utilities that are buried adjacent to the existing roadway, causing major damage to the electrical, telephone, and other telecommunication lines servicing the east end of the Cattle Point peninsula. This is a natural process, and would continue regardless of the alternative chosen. To avoid disruption of service, underground utilities would eventually need to be relocated to an area safe from bluff erosion. The new utility route would be located on park property and would require an easement from the NPS. The exact location would be determined by the utility companies and NPS. If the no action alternative is selected, utility relocation would be performed as a separate project at a later date as determined by the utility companies. NEPA clearance for the project would be performed by the NPS prior to approval of a new utility easement. There are no future projects planned in the area that would affect utility services. All of the private property on the east end of the Cattle Point peninsula is currently subdivided. Future residential expansion is limited by the small number of vacant lots in the existing subdivisions and the large amount of public land that is unavailable for future residential or commercial development. Implementation of alternative A would, in itself, have no direct, indirect, or cumulative effect on utility services.

4.3.21 Hazardous and Solid Waste and Materials

No hazardous wastes or materials have been identified or documented in the project area by the NPS or DNR, and past land uses in the Cattle Point project area are not likely to have produced hazardous materials. There are no future projects planned in the area that would produce hazardous materials. Based on current information, it is unlikely that continued bluff erosion would uncover or otherwise impact hazardous waste. The current residential and visitor uses in the Cattle Point peninsula create solid waste, which is managed by the county. There are no plans for construction of visitor facilities in the project area that would contribute to an increase in solid waste in the future. All of the private property on the east end of the Cattle Point peninsula is currently subdivided. Future residential expansion is limited by the small number of vacant lots in the existing subdivisions and the large amount of public land that is unavailable for future residential or commercial development. Therefore, implementation of alternative A would have no direct, indirect, or cumulative effect on hazardous and solid waste and materials.

4.3.22 Energy

Lack of road access would eliminate traffic between the Cattle Point residential areas and the remainder of the island and would therefore reduce highway vehicle use by Cattle Point residents. However, other types of motorized transportation would increase as boats and floatplanes would be used by residents for transport to the remainder of the island and the mainland. The number of boats and floatplanes would likely be fewer than the number of highway vehicles they replaced. The number of trips taken by residents between the residential area and the remainder of the island would likely decrease as the time and effort needed for the trip increased. This would likely result in an overall reduction of fossil fuel use by Cattle Point residents.

Cumulative Impacts

Growth in energy use is linked to population growth through increases in residential development, transportation, manufacturing, and services. Since San Juan County is one of the fastest growing counties in Washington, it can be assumed that energy use in the county has grown as population has increased. However, the main industries in San Juan County are limited to tourism, services, and retail sales, which account for relatively minor energy use. Being an island, energy used by vehicular travel within the county is limited; however, tourists from off the island expend energy to reach the area by car, ferry, boat, and air. The county estimates that traffic in the project area would increase by 7.46 percent annually, adding to increased energy use. There are no future NPS or DNR projects planned in the area that would affect energy use. The eventual loss of road access the east end of the Cattle Point peninsula would lead to loss of through-traffic and a reduction in energy consumed by the vehicles of east Cattle Point residents; however, due to projected increases in park visitation, this is not likely to alter overall trends in motor vehicle use locally or county-wide. Loss of road access would likely contribute to a trend toward a slowing or decline in population and residential development in east Cattle Point, which would lead to a reduction in the growth of residential energy consumption locally. However, the minor beneficial effects on local energy consumption associated with this alternative; however, when added to other past, present, and future actions it would have no measurable effect on this resource region-wide.

Conclusion

Over the long term, implementation of the no action alternative could have a negligible beneficial effect on energy consumption by east Cattle Point residents; however, it would have no effect county-wide.

4.3.23 Noise and Light

The eventual failure of the road at the bluff erosion site would eliminate through-traffic to the east end of the Cattle Point peninsula. This would greatly restrict visitor use and associated noise from highway vehicle use in the east end of Cattle Point. However, use of boats and floatplanes for access between the east end of the Cattle Point peninsula and the remainder of the island and mainland would increase, resulting in a minor increase in noise off-shore from these uses. Use of small vehicles such as all-terrain vehicles and scooters for travel within the east end of the Cattle Point peninsula may also increase. Motor vehicle use and associated noise in the area immediately west of the road failure site would also be reduced due to lack of through-traffic.

Lack of road access would likely slow the construction of new homes in the east end of the Cattle Point peninsula, which would reduce the trend toward addition of residential lighting and noise locally. Reduced visitor use would also reduce light pollution; however, night visitation to the area is extremely small as there are no overnight facilities.

Cumulative Impacts

Increases in noise and light on Cattle Point and San Juan Island are linked to growth in population and tourism through increases in residential development, transportation, and services. Impacts to the soundscape in the area generally come from over-flights by small and commercial aircraft, boat traffic, highway vehicle traffic, and residential uses. Commercial fishing and whale-watching boats, as well as private boats can often be heard off-shore. Currently there are no plans to expand the airport at Friday Harbor for increased commercial traffic; however, increased development on the island could result in additional use of private floatplanes flying over the area. There are no future projects planned in the east end of the Cattle Point peninsula that would affect noise levels. The eventual loss of road access would eliminate most noise from highway vehicles in the east end of the Cattle Point peninsula. However, it would also lead to increased noise from use of private and commercial boats and sea planes for access to the remainder of the island and the mainland. Loss of road access would likely contribute to a trend toward a slowing or decline in population and residential development in east Cattle Point, which could lead to a reduction in noise locally. Therefore, the local noise impacts associated with this alternative would contribute minimally to the impacts of other current and future projects, and would not contribute to cumulative impacts county-wide.

Impacts to the naturally dark night sky come from the small amount of light generated by Cattle Point residences and vehicles as well as light generated from the town of Friday Harbor to the north and the city of Victoria, British Columbia, visible in the sky to the west. Elimination of night use by highway vehicles and the potential reduction in population growth and construction of new homes on the east end of the Cattle Point peninsula could contribute to a reduction of the appearance of light sources in the local area. However, because of the small population potential of the area, when added to other past, present, and future actions the cumulative change to overall noise and night sky would not be measurable.

Conclusion

Overall, implementation of the no action alternative could have a negligible adverse effect on noise locally and regionally over the long term. Conversely, alternative A would have a negligible beneficial effect on the lightscape in the local area; however, the overall effects on the night sky would not be detectible.

4.3.24 Coastal Zone

This alternative would entail no federal action; therefore, compliance with coastal zone requirements is not applicable.

4.3.25 Unavoidable Adverse Impacts

Unavoidable adverse impacts are those in which there are no reasonably practicable mitigation measures to eliminate the impact.

The unavoidable adverse impacts associated with the no action alternative would be the permanent loss of road access for the residents of the Cattle Point community and the change in lifestyle, public health and safety, and demographics that would result.

Natural bluff erosion would continue to impact the vegetation, soil, and topography in the adjacent area as the bluff recedes upslope until it meets less erosive rock. This is a natural process and would continue regardless of the alternative.

4.3.26 Relationship of Short-Term Uses and Long-Term Productivity

This alternative would not involve uses or impacts to the productivity of resources in the project area.

4.3.27 Irreversible and Irretrievable Commitment of Resources

Irreversible commitments are those that cannot be regained, such as the extinction of a species or the removal and use of fossil fuels. Irretrievable commitments are those that are lost for a period of time such as the loss of production, harvest, or use of renewable resources.

Under this alternative, limited road construction would be performed to erect barriers at the bluff erosion site and to end the Cattle Point road at safe locations on both the east and west sides of the eventual road failure site. Construction of these facilities would involve a limited commitment of natural, physical, biological, human, and fiscal resources. Fossil fuels, labor, and construction materials, such as aggregate, would be irreversibly expended in road construction. Labor and fossil fuels would be consumed during operation of construction equipment for grading, material movement, and construction activities. In addition, labor and natural resources would be used in the fabrication and preparation of construction materials. Construction would also require an expenditure of funds that could not be used by any other project. Following the eventual failure of the existing road, the residents of the Cattle Point community would need to travel from their residences to obtain goods and services and would continue to expend fossil fuels for transportation by boat and floatplane.

4.4 IMPACTS COMMON TO ALL ACTION ALTERNATIVES (B, C, D)

All of the action alternatives would require new construction on undeveloped sites and restoration of the abandoned road section. The following discussion of impacts is common to all action alternatives regardless of which one is chosen and whether or not a tunnel would be constructed. The resources detailed below will not be repeated under each alternative discussion.

4.4.1 Air Quality

Construction activities common to all of the action alternatives include site preparation, earthmoving, general construction, and road surfacing. Site preparation includes activities such as land clearing and grubbing, including disposal of cleared material. Earthmoving includes cut and fill operations, trenching, soil compaction, grading, and transport of excess soil and rock material offsite. General construction and road surfacing includes the preparation of road base and asphalt roadway surfacing.

Alternatives C and D also involve tunnel construction. Construction of the long tunnel in alternative C would likely involve excavation with conventional earth moving equipment and

transport of excess soil and rock material offsite. Construction of the short tunnel in alternative D would likely be accomplished using a cut and cover method which involves excavating a trench, constructing the tunnel structure, and subsequently covering the structure with compacted earthen materials and soils. Alternative D would also involve transport of excess soil and rock material offsite. In the tunnel alternatives, blasting could be necessary if rock or large boulders are encountered. Though based on limited geologic research, this is unlikely to occur.

Air pollutants generated from road construction activities include emissions from heavy equipment and worker commute trips, dust from soil disturbance, aggregate placement, blasting, loading and transport of excess material and aggregate, traffic on unpaved surfaces, and evaporative emissions from asphalt paving. The finished tunnels in alternatives C and D would also enclose pollutants from motor vehicles emissions. Construction activities associated with alternative B are expected to last for 1 to 2 years. Construction for alternatives C and D are expected to last 1.5 to 3 years.

Hot asphalt or chip seal surfacing would likely be used for all of the action alternatives. Asphalt would be provided from a local commercial source. Asphalt plants are required to adhere to local and state air quality requirements. According to research conducted by Eastern Research Group, Inc (2001), on-site hot asphalt application produces minimal evaporative emissions (Volatile Organic Compounds [VOCs] and Hazardous Air Pollutants [HAPs]) and would therefore have a negligible effect on air quality.

Dust nuisance would be the major air pollutant during the construction phase. Impacts from dust would be intermittent over the construction period. Most dust would occur at the road construction and road restoration sites; however, some dust would be generated along haul routes between the construction site and the waste sites and aggregate source, likely located to the west of the project area. Since the construction site is located in a rural undeveloped area, there are a small number of receptors in the project area. Approximately seven residences are located within 500 to 1,000 feet of the east end of the construction area. Residents and visitors traveling through the construction site would also be subjected to airborne dust for a short period of time. Depending on the location of offsite waste and aggregate sites, there would be a number of residences along potential haul routes; however, due to the rural character of the island, numbers are likely to be low.

Over the long term, none of the action alternatives would change the capacity, function, or service of the road. The alternatives would preserve the existing access to the Cattle Point area and would not impact the number of visitors to the area or growth in residential population, nor would it result in a change (either increase or reduction) in traffic in the area beyond that expected with normal growth.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.2.

Implementation of the action alternatives would not change the capacity, function, or service of the road that would lead to an increase in traffic volume. However, traffic volume on the Cattle Point Road is expected to increase in the future at a rate equal to normal increases in visitation. There is the potential for construction of a small number of new residences on vacant lots in the Cattle Point Estates and Cape San Juan residential areas. Population growth on the remainder of

San Juan Island and in western Washington is also expected to continue into the future. As population grows, additional cars, marine vessels, and infrastructure would lead to increased air pollutant emissions, and could result in a minor adverse impact on air quality in the Cattle Point area. Implementation of the action alternatives would not alter any trends in vehicle use or population growth and, therefore, would not contribute to cumulative impacts.

Conclusion

With mitigation measures in place, short-term impacts to air quality from construction activities would be negligible and limited in area. Implementation of any of the action alternatives would have no long-term effect on air quality in the project area or San Juan Island. The Class II status of the project area would not be affected.

Mitigation Measures: The following air quality mitigation measures would be implemented as part of alternatives B, C, and D. These mitigation measures incorporate air quality mitigation measures outlined in the San Juan Island National Historical Park GMP (NPS 2008).

AQ-1: Burning restrictions. Burning would not be allowed at the construction site or in the park or NCRA.

AQ-2: Construction equipment pollution controls. Construction equipment would be in good operating condition and be used efficiently to minimize emissions. All construction-related engines would be tuned to the engine manufacturer's specifications and not adjusted in order to increase engine horsepower. Equipment would include particulate traps, oxidation catalysts, and other suitable air pollution control devices. Equipment would not idle for more than five minutes, unless it is necessary for the particular operation.

AQ-3: Dust Control Measures. A dust palliative or water would be applied to traffic areas and unpaved haul routes to minimize airborne dust from construction operations. A tarp or other load covering would be required for trucks hauling soil or other dust-producing loads. Haul trucks would employ low speeds on unpaved roads.

AQ-4: Tunnel Ventilation. In accordance with design standards, the tunnels proposed in alternatives C and D would include appropriate ventilation to prevent the build-up of noxious fumes.

4.4.2 Hydrology

During construction, grading activities and realignment of the road further up-slope from its present location could affect localized surface and sub-surface water drainage patterns within the drainage basin to the south of the hydrologic divide on Mt. Finlayson. Because there are no streams or other waterbodies in the project area, storm water runoff from the new road alignment would flow over the road surface and road cut and fill-slopes, through roadside ditches and ditch-relief culverts and be dispersed into adjacent vegetation.

Tunnel alternatives C and D would involve underground excavation and construction of a permanent underground structure that could potentially affect the hydraulic gradient or direction and rate of groundwater flow. Tunnel design would incorporate a drainage system to manage surface drainage as well as any groundwater infiltration into the tunnel to prevent moisture and ice accumulation on the roadway within the tunnel. The tunnel structure would function to intercept and divert subsurface water flow down the length of the tunnel.

Over the long term, all of the action alternatives would change the topography of the project area, which would affect surface and subsurface drainage. These changes vary by alternative and would change the runoff pattern of localized areas. However, these impacts would not change the overall hydrology of the area and are not likely to have a broad-scale impact on watershed processes in the project area.

Each action alternative would involve small changes in the amount of impermeable surface over the current condition due to construction of new road alignment pavement and removal of existing road alignment pavement in the project area. Alternative B would increase the amount of impermeable surface by approximately 1 acre, alternative C would reduce the amount of impermeable surface by about 1 acre, and alternative D would involve no increase or reduction in the amount of impermeable surface.

Restoration of the abandoned road alignment in all alternatives would involve removal of the existing impermeable road pavement and road base, contouring the road prism to blend with adjacent topography, and revegetating the area with native vegetation, which would restore natural drainage patterns in that area. While a new road alignment would be added, the existing road alignment would be obliterated; therefore, the road density in the drainage basin would be effectively unchanged.

Potential impacts of alternative B on hydrology and drainage patterns within the basin would be negligible. This alternative moves the existing road alignment up-slope, further from the marine environment. Since there are no streams in the project area, runoff from the impermeable road surface would infiltrate into adjacent soils and vegetation.

Potential impacts of alternatives C and D on hydrology and drainage patterns within the basin would likely be minor. The tunnel structures would disrupt subsurface drainage patterns along the length of the tunnel in the immediate project area. However, subsurface flow would be redirected a short distance along the tunnel sides or down-slope over its length, dissipating through the soil at lower end of the tunnel.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.3.

The action alternatives would add new impermeable road pavement over the new road alignment; however, restoration of the abandoned road segment would removed existing impermeable road pavement and restore natural conditions under all alternatives. Alternative B would increase the impermeable surface in the project area by 1 acre. Alternative C would reduce the amount of impermeable surface by 1 acre. Alternative D would not change the amount of impermeable surface in the project area. The road density in the project area is currently low and is not expected to increase substantially in the future due to federal and state land management restrictions. Actual cumulative changes in impermeable surface area and resultant effects on hydrology in the project area would be negligible.

Conclusion

Overall, alternative B would have a negligible adverse short-term and long-term effect on hydrology in the project area and alternatives C and D would have a minor adverse effect.

4.4.3 Water Quality

Construction of any of the action alternatives would result in soil disturbance within the construction limits of the new road alignment and road obliteration site as well as at equipment staging areas, and stockpile and borrow sites. Disturbed soils that are exposed to stormwater have the potential to erode and deposit sediment into surrounding down-slope areas, potentially affecting the water quality of adjacent waterbodies. In addition, petroleum products stored at staging areas and used in construction machinery could potentially be a source of pollutants if spilled. Since there are no streams, lakes, ponds, wetlands, or other waterbodies within the project area and no surface hydrologic connection between the project area and any waterbodies or wetlands, sediment would be deposited down-slope into adjacent vegetation. Potential petroleum spills could seep into surrounding soil and vegetation. The closest water body is the marine shoreline at the base of the eroding bluff, to the south of the project area. At its closest, the shoreline is approximately 200 feet down-slope from the south edge of the project area. Due to the distance between the construction site and the shoreline, and low average precipitation during the construction season, with sediment and erosion controls in place, it is unlikely that sediment runoff would reach marine waters. With hazardous spill prevention and response measures in place, a petroleum spill would be unlikely to reach marine waters or the groundwater table.

Construction activities that disturb one acre or more are regulated under the National Pollutant Discharge Elimination System (NPDES) storm water program. Regulated construction sites are required to obtain an NPDES permit and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP outlines measures, called Best Management Practices (BMPs), which would be actively used at the construction site to prevent soil erosion, sediment, and other pollutants from leaving the construction site due to storm water runoff. As a permanent erosion and sediment control measure, all disturbed sites would be revegetated with native plant species.

Cape San Juan Water District (CSJWD) well number 3 is located within the project area near the Mt. Finlayson ridge, in the fringe area between the prairie grassland and forested vegetation just east of the DNR property boundary. The 10-year protection boundary for well number 3 extends in a 395-foot radius from the wellhead.

GPS data show that at its closest, the horizontal distance between CSJWD wellhead number 3 and the preliminary road alignment of alternative B is approximately 480 feet at centerline and 400 feet at the upper construction limits (figure 4.1.1). This would put the alignment for alternative B outside of the 395-foot wellhead protection zone.

Since the alternative B road alignment and construction limits are outside of and down-slope from the 10-year wellhead protection zone for CSJWD well 3, it is highly unlikely that the road alignment or polluted stormwater runoff from the new roadway would have a permanent effect on the wellhead protection zone. Road construction would involve operation of excavating, hauling, grading, compacting, and paving equipment along the road alignment. While the upper edge of the construction limits would be about 5 feet outside of the wellhead protection zone, there would be no permanent source of potential contamination located within the construction limits. During construction, excavating and grading machinery would be in operation on the road cut slopes closest to the wellhead protection zone. Machinery has the potential to leak or spill petroleum products; however, with mitigation measures in place, it would be unlikely that temporary construction activity would have an impact on water quality within the wellhead protection zone.

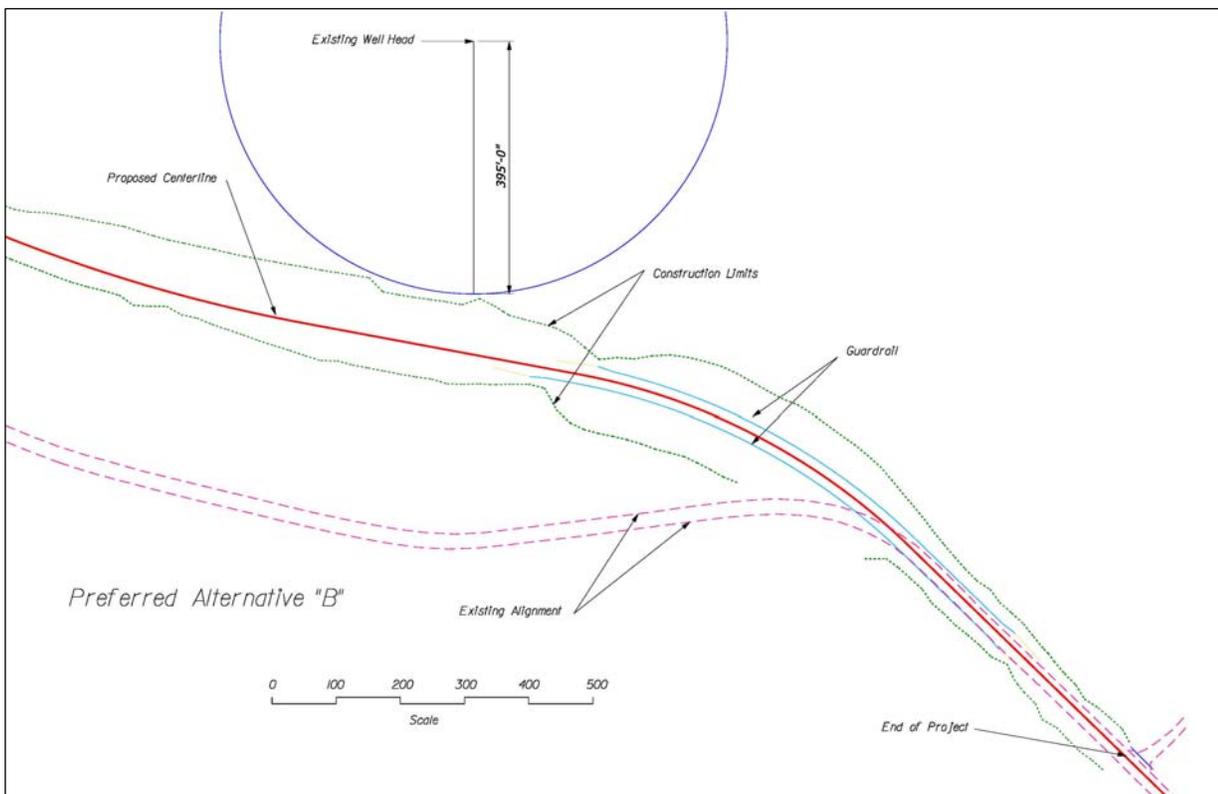


Figure 4.1.1 – Alternative B alignment proximity to well 3 protection zone

GPS data show that at its closest, the preliminary alignment for alternative C is about 470 feet horizontal distance from CSJWD wellhead number 3 (figure 4.1.2). This would put the alignment for alternative C outside of the 395-foot wellhead protection zone.

The tunnel portion of alignment C would be the closest structure in proximity to the wellhead protection zone. Since the tunnel would be constructed by boring or conventional underground excavation, the construction limits of the tunnel would be limited to about 30 to 40 feet of the road centerline. At its maximum depth, the tunnel would be about 100 feet below the ground surface; however, in the area closest to the wellhead protection zone, the tunnel would be approaching the east portal and would be much closer to the ground surface. The static water level for CSJWD well 3 is 264 feet (CSLDW 1998). Tunnel construction would involve underground operation of tunnel excavation and casting machinery, hauling, grading, compacting, and paving equipment within the construction limits. Machinery has the potential to leak or spill petroleum products; however, with mitigation measures in place, there would be no impact to water quality within the wellhead protection zone. Following construction, the finished roadway would be confined to the tunnel, thus enclosing and preventing polluted road runoff from coming in contact with groundwater. Since the alternative C alignment and construction limits are outside of and down-slope from the 10-year wellhead protection zone for CSJWD well 3, it is unlikely that the tunnel construction or operations would have a permanent effect on the wellhead protection zone.

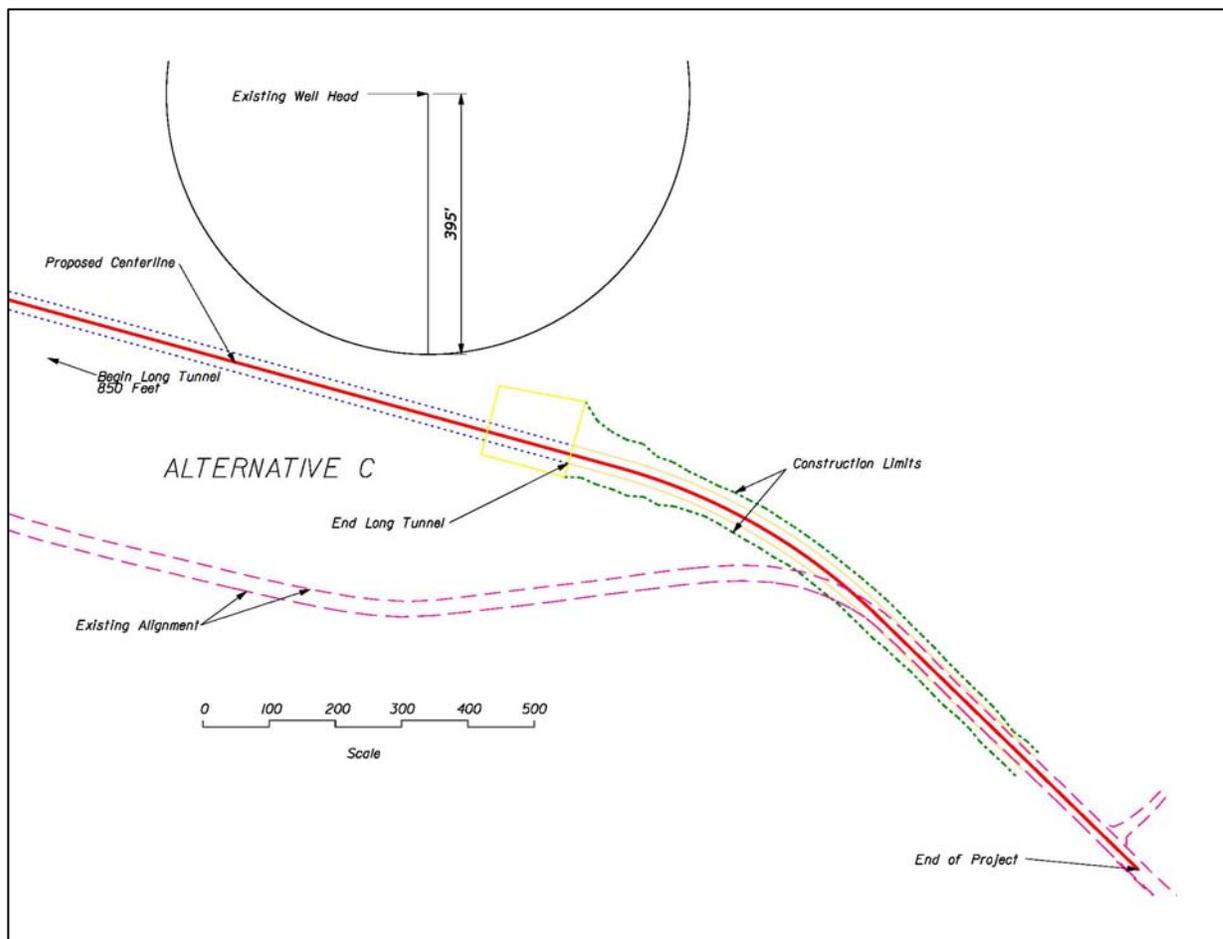


Figure 4.1.2 – Alternative C alignment proximity to well 3 protection zone

GPS data show that, at its closest, the horizontal distance between CSJWD wellhead number 3 and the preliminary road alignment of alternative D is approximately 335 feet at centerline and

275 feet at the upper construction limits (figure 4.1.3). A portion of the tunnel (about 410 linear feet) would be within the 10-year wellhead protection zone of CSJWD well number 3.

Since the tunnel would likely be constructed using the “cut and cover” method, the construction limits would be extensive. The total area within the wellhead protection zone that would be affected by the tunnel and construction limits would be about 1 acre. At its maximum depth, the tunnel would be about 65 feet below the ground surface; however, in the area closest to the wellhead the tunnel would be approaching the east portal and would be much closer to the ground surface. The static water level for CSJWD well 3 is 264 feet (CSLDW 1998). During construction tunnel excavation and casting machinery and hauling, grading, compacting, and paving equipment would be operating within the construction limits. Machinery has the potential to leak or spill petroleum products; however, with mitigation measures in place, potential impacts to water quality within the wellhead protection zone would be negligible. Following construction, the finished roadway would be confined to the tunnel, thus enclosing and preventing polluted road runoff from coming in contact with groundwater. Although the tunnel would be located below the ground surface, it would not come in contact with the static water level of well 3. No high risk potential contamination sources would be permanently located within the wellhead protection zone. Although alternative D alignment and construction limits would be within the 10-year wellhead protection zone for CSJWD well 3, it is unlikely

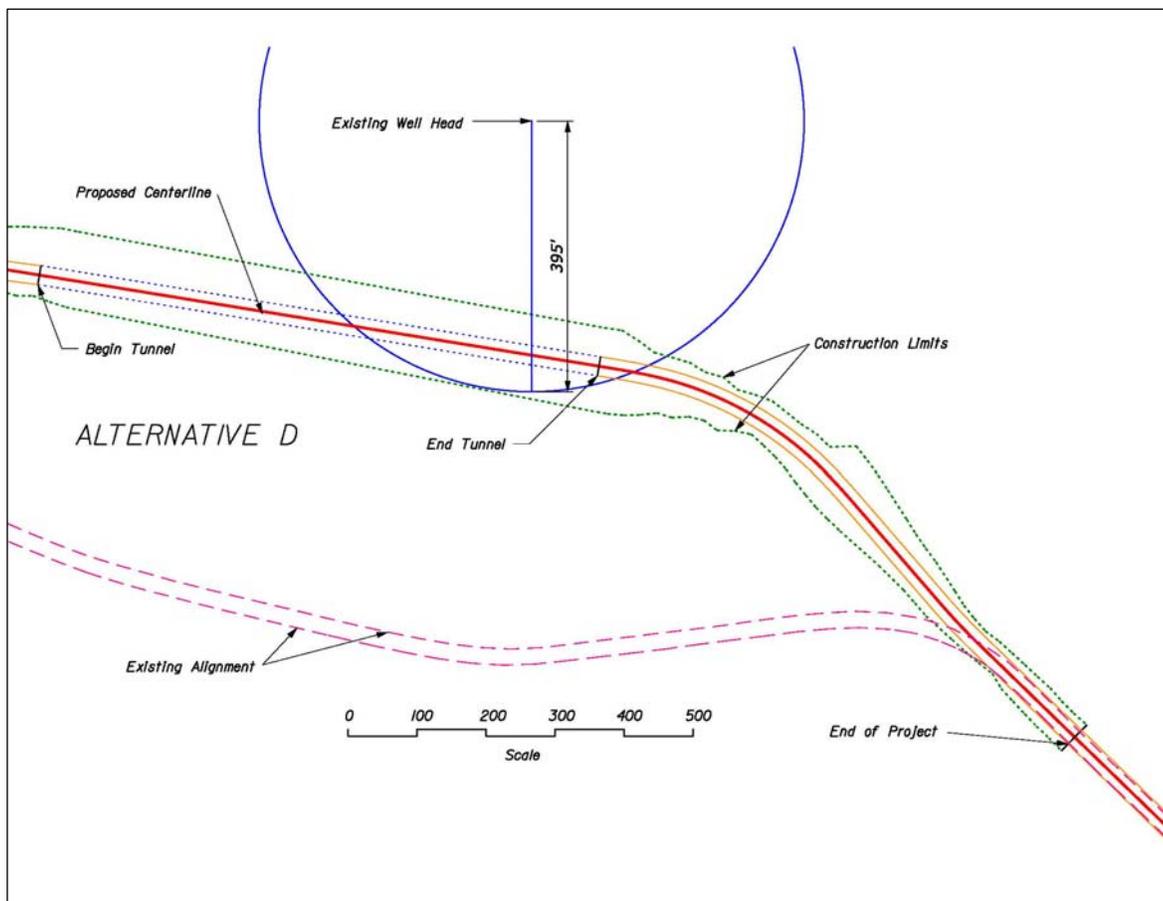


Figure 4.1.3 – Alternative D alignment proximity to well 3 protection zone

that the tunnel construction or operation would have a permanent effect on water quality in the wellhead protection zone.

No staging or fueling of equipment or stockpiling of material would be allowed within the 395-foot wellhead protection zone for CSJWD well number 3. The contractor would be required to develop and follow a Spill Prevention, Control, and Countermeasures (SPCC) Plan or Hazardous Spill Plan (HSP) (whichever is applicable). The plan would describe actions to be taken in case of a spill and incorporate preventative measures to be implemented such as the placement of refueling facilities, storage and handling of hazardous materials. Equipment that is found to be leaking fluids would be removed from the construction site and repaired immediately. A supply of absorbent materials would be kept at the job site in the event of spills. Soil contaminated by petroleum spills would be removed to a hazardous waste site.

Use of petroleum products in construction machinery could potentially result in petroleum spills within the construction area of alternative D, a portion of which is located within the 10-year wellhead protection zone of CSJWD well number 3. With mitigation measures in place and given the 10-year travel time estimated for contaminants to reach the aquifer from within the wellhead protection zone, it is highly unlikely that construction contaminants would reach the aquifer.

Following construction, heavy metals, inorganic salts, hydrocarbons, and suspended solids can accumulate on the road surface from normal vehicle operation and road maintenance activities such as salting and sanding. During normal operation, vehicles using the road drop oil, grease, rust, hydrocarbons, rubber particles, and other solid materials on the road surface. These materials may then be washed off the roadway by rain or snow, potentially impacting surface or ground water quality in adjacent areas. Since there are no surface waters in the project area, pollutants would be washed into roadside ditches and dispersed into adjacent vegetation. Since all action alternatives would be replacing an existing road alignment along the coastal bluff with an alignment that is 100 to 140 feet further upslope, the potential for contaminated road runoff reaching the marine environment would be reduced, because down-slope vegetation would filter most road pollutants before they reached ocean waters. All alternatives would incorporate storm water runoff management features such as vegetated ditches to the extent possible.

Roadway contaminants washed into roadside ditches and adjacent vegetation could potentially pass through the sands, silts, and gravels overlying the aquifer. The static water level of CSJWD well number 3 is about 264 feet below ground surface level. Downward percolation would result in extended natural filtration before surface water would reach the water table. Alternative B roadside ditches in closest proximity to CSJWD well 3 would be lined with either impermeable material or with filtration material and vegetation selected for its ability to filter roadside pollutants.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.4.

Implementation of the action alternatives would not alter current trends that would affect water quality. While this alternative may have negligible indirect effect, when added to other past, present, and future actions overall water quality would not change in a measurable way locally and county-wide.

Conclusion

Overall, the action alternatives would have negligible adverse short-term and long-term effects on water quality in the project area.

Mitigation Measures:

WQ-1: SWPPP. Prior to construction, the FHWA would develop a Storm Water Pollution Prevention Plan (SWPPP) for implementation during construction. The SWPPP would include measures, Best Management Practices (BMPs), for temporary erosion and sediment control devices during construction for control of concentrated storm water runoff.

In addition, the SWPPP would include BMPs for housekeeping measures to address the safe storage, handling, and spill prevention of hazardous construction materials.

WQ-2: Revegetation. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. See appendix A.

WQ-3: Road Design for Storm Water Runoff Management. Alternative B roadside ditches in closest proximity to CSJWD well 3 would be lined with either impermeable material or with filtration material and vegetation selected for its ability to filter roadside pollutants. All alternatives (B, C, and D) would incorporate storm water runoff management features such as vegetated ditches to the extent possible.

WQ-4: Staging, Stockpiling, and Fueling. No staging or fueling of equipment or stockpiling of material would be allowed within the 395-foot wellhead protection zone for CSJWD well number 3 or within xxx feet of any waterbody.

WQ-5: Hazardous Spill Plan. Prior to construction, the contractor would be required to develop and follow a SPCC or HSP describing actions to be taken in case of a spill and incorporate preventative measures to be implemented. A supply of absorbent materials would be kept at the job site in the event of spills. Soil contaminated by petroleum spills would be removed to a hazardous waste site.

4.4.4 Other Special Status Species

Table 4.4 lists the special status species that may be present or have habitat in the project vicinity.

The action alternatives would involve construction in the grassland habitat on the south slopes of Mt. Finlayson. The alignment of alternatives B, C, and D are all located close to the forested fringe at the ridge of Mt. Finlayson. Construction of these alternatives could potentially impact a small amount of forested habitat, but would not likely involve removal of mature trees. The small trees that have grown up in the old quarry site near the Mt. Finlayson ridge would be impacted by all of the action alternatives. None of the alternatives involve impacts to waterbodies or wetland habitat.

The following special status species are most commonly found in forested and wetland habitats.

- Long-eared myotis
- Northern goshawk

- Olive-sided flycatcher
- Pacific Townsend's big-eared bat
- Western toad

The following special status species are found in grassland habitat or may forage in the project area.

- Oregon vesper sparrow
- Osprey
- Peregrine falcon
- Island marble butterfly
- Moss' elfin
- Valley silverspot
- Slender crazyweed

Temporary noise impacts would occur during construction within a 0.5-mile radius of the project area. These would consist of general construction noise and would not include blasting, pile driving, or other loud noise activities. As the existing noise environment is fairly quiet, construction activities would noticeably change the existing noise level in terms of loudness, duration, and types of noise, which could impact wildlife. Studies have shown that wildlife is commonly disturbed by noise, particularly noise that is new to an area (Widener & Associates 2005). Noise from the project may cause wildlife to change behavior and move away from the noise source or influence individuals to forage or nest in other areas. Construction of alternative B is expected to last 1 to 2 years, and construction of alternatives C and D are expected to last 1.5 to 3 years. After construction is completed, the increased road grade, particularly at the eastern end of the project corridor, is expected to increase the noise resulting from vehicles accelerating as they go uphill and braking as they go downhill. Realignment of the road further upslope from its current location would shift traffic noise closer to the forest habitat. Long term traffic noise associated with alternatives C and D would be slightly less than alternative B, since a portion of the roadway would be enclosed in a tunnel.

Road realignment would pass through a section of previously undisturbed grassland prairie. Impacts to grassland habitat could directly impact rare plants and butterflies by direct loss of habitat for foraging and mortality from road traffic.

The slender crazyweed plant could be directly impacted by ground disturbing activities. Although habitat for slender crazyweed is potentially present in the project area, no individual plants were found during plant surveys of the project area. In addition, while habitat for the Moss' elfin and valley silverspot butterflies is potentially present in the project area, neither host plants nor individuals of these species were found during surveys of the project area (NPS 2005 in Widener 2006).

The island marble butterfly inhabits certain open grasslands on San Juan and Lopez islands. The life cycle of the butterfly is closely associated with its host plants. The island marble butterfly has been observed feeding on approximately 10 different plant species within the park (Pyle 2004 in Widener 2006). The 2005 plant survey found that seven of these plants were present, but uncommon, in the project area (NPS 2005 in Widener 2006).

In 2006, the NPS and USFWS developed *A Conservation Agreement and Strategy for the Island Marble Butterfly* to guide management of the island marble butterfly in the park. Measures

contained in the agreement would be incorporated into construction plans for all action alternatives. These measures include preconstruction survey and removal or relocation of host plants and larva. Following construction, all disturbed areas would be revegetated using native species. Restoration of the abandoned road segment would include removal of the road pavement, recontouring the road cut to blend with the adjacent topography, and revegetating with native prairie species. Prior to construction, a restoration and revegetation plan would be developed that would outline methods and standards for revegetation of areas disturbed during road construction as well as restoration of the abandoned road segment. The revegetation plan would include planting of island marble butterfly host plants as well as other special status plants and host plants for other special status butterflies. Over the long term, project mitigation could potentially provide the means for improvement of island marble butterfly and other special status species habitat and populations in the project area.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.10.

Implementation of the action alternatives would disturb vegetation along the new alignment routes that would add to the cumulative impacts to special status plant species and habitat for special status plant and wildlife species. Alternative B would temporarily impact about 17 acres, alternative C would temporarily impact about 10 acres, and alternative D would temporarily impact about 20 acres. The roadside cut and fill slopes, tunnel covering, abandoned roadway segment, and equipment staging areas would all be revegetated. New road pavement would permanently impact vegetation, which could affect special status species or their habitat. Alternative B would have a net increase in vegetation impacts of 1 acre, alternative C would have a net reduction in vegetation impacts of 1 acre, and alternative D would have no increase or reduction in vegetation impacts over the present. Both temporary and permanent vegetation disturbance could displace special status species and would have a minor contribution to adverse cumulative impacts to this resource.

Implementation of the action alternatives would not change the capacity, function, or service of the road that would lead to an increase in traffic volume. However, traffic volume on the Cattle Point Road is expected to increase in the future at a rate equal to normal increases in visitation. This could lead to increased disturbances to special status species and their habitat from visitor and residential uses. There is the potential for construction of a small number of new residences on vacant lots in the Cattle Point Estates and Cape San Juan residential areas, which would remove vegetation that may contain special status species or their habitat. When added to other past, present, and future actions, implementation of the action alternatives could result in a minimal incremental impact on special status species locally and region-wide.

Conclusion

Overall, the action alternatives would have a minor adverse short-term effect on special status species and their habitat. With mitigation measures in place, long-term effects of the action alternatives would be negligible.

Mitigation Measures:

OSSS-1: Revegetation. Same as WQ-2. Following active construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. See appendix A.

In addition, the revegetation plan would include planting of island marble butterfly host plants as well as prairie habitat for other special status wildlife and plants.

OSSS-2: Conservation Measures for Island Marble Butterfly. Project activities would comply with the 2006 NPS/USFWS conservation agreement. Prior to construction, affected areas would be surveyed for host plants and larva. Steps would be taken to avoid impacts to these resources prior to and during construction, including removal or relocation of larval host plants and planting of host plants within the restored abandoned road segment.

4.4.5 Cultural, Historic, and Archaeological Resources

There are two areas of potential effects (APEs) to consider for the proposed alternatives. The first APE includes the project footprint where any ground disturbing construction activities would occur. This APE coincides with the project area shown in figure 3.1. The second APE encompasses a wider area and considers any view-shed impacts that the action alternatives might have on historic properties.

The 2004 cultural resources survey found two isolated Native American cultural resources within the project footprint APE. The cultural resources assessment concluded that neither of the resources met the significance or integrity criteria to be recommended as eligible for listing on the National Register of Historic Places (Northwest Archaeological Associates, Inc. 2004). To avoid inadvertent impacts to archaeological resources during construction, the project would be monitored and if archaeological material is found, construction activities would be suspended and the materials would be evaluated by an archaeologist prior to continuation of construction.

Most of the project area is located within the boundaries of the San Juan Island National Historical Park (park), which is listed on the National Register of Historic Places as a National Historic Landmark. The cultural landscape is a primary and broad contributing element to the eligibility of the National Historic Landmark (Schurke 2009). The American Camp cultural landscape boundary is outside of the project footprint APE; therefore, none of the contributing cultural landscape characteristic features would be impacted by ground disturbing activities associated with the action alternatives.

In addition, none of the contributing cultural landscape views and vistas are located within the project view-shed APE. Portions of the alignments would be remotely visible from within the geographic boundaries of the NRHP eligible American Camp cultural landscape. Figure 4.2 shows the areas east of the American Camp cantonment where the alternative road realignments would be visible. The alternative B alignment could be seen in the distance from any point within the yellow area, the alternative C alignment could be seen in the distance from any point within the magenta area, and the alternative D alignment could be seen in the distance from any point within the blue area.

To alleviate impacts to the cultural landscape, disturbed sites would be revegetated with native plants. To the extent possible, the project design would use shallow cut and fill slopes and

would not use exposed gabions or geometric forms of embankment materials that would be incompatible with the character of the landscape.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.11.

Implementation of the action alternatives would realign a portion of the Cattle Point Road into a new area on the benches below Mt. Finlayson, a maximum of about 300 to 450 feet to the north of its current location. There are no cultural or archaeological resources located within the project footprint APE; therefore, the project would not contribute to cumulative impacts to these resources. The project footprint APE is located outside of the American Camp cultural landscape boundary and none of the contributing cultural landscape views are located within the project view-shed APE; therefore, the alternatives would not contribute to cumulative impacts to the National Historic Landmark cultural landscape characteristic features. However, portions of the new alignments would be remotely visible from within the geographic boundaries of the designated cultural landscape to the east of the American Camp cantonment and portions of South Beach. The existing road alignment is also remotely visible from portions of these areas. The abandoned section of the existing alignment would be restored to natural conditions. There would be no appreciable increase in the amount of road visible from the designated cultural

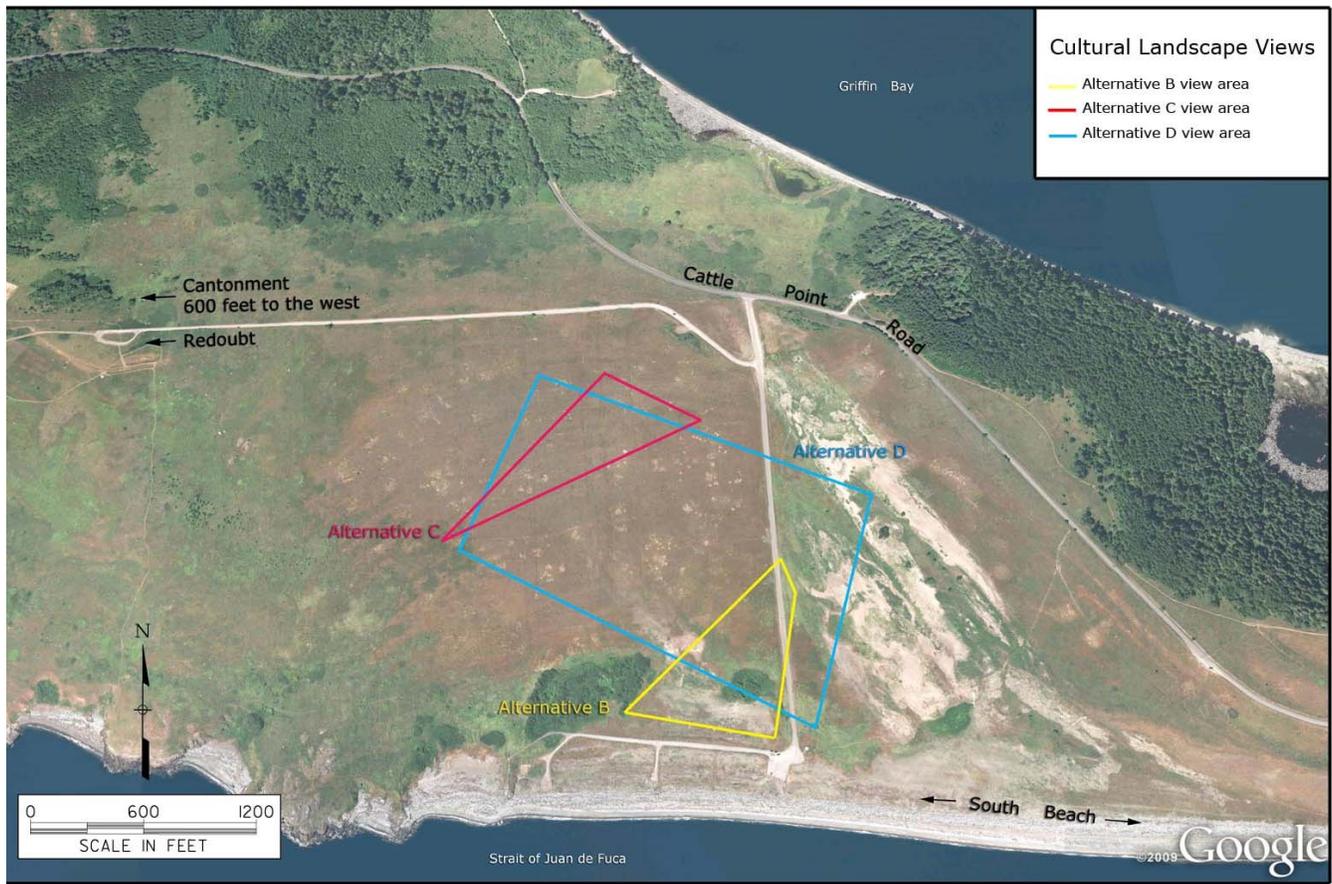


Figure 4.2 – Areas of American Camp having views of alternative road alignments

landscape. When added to other past, present, and future actions overall views from the cultural landscape would not change in a measurable way. .

Conclusion

For the purposes of section 106, there are no properties that are listed or eligible for the NRHP within the project footprint APE other than the American and English Camps San Juan Island National Historic Landmark. The project alternatives would have minor viewshed impacts and no ground disturbing impacts to the NRHP eligible cultural landscape within the American and English Camps San Juan Island National Historic Landmark. In May 2009, the FHWA consulted with the SHPO with a recommendation that the proposed project would have *no adverse effect* on historic properties for purposes of section 106. The SHPO concurred with this recommendation in their June 23, 2009, letter.

Overall, the action alternatives would have a negligible adverse short and long-term effect on cultural, historic, and archaeological resources.

Mitigation Measures:

CR-1: Previously Undetected Cultural Sites. The project footprint APE would be monitored during construction. If previously undetected cultural or archaeological resources are encountered during construction, work would stop in that location until the site could be evaluated by a qualified archaeologist.

CR-2: Revegetation. Same as WQ-2 and OSSS-1. Following active construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. The revegetation plan would include planting of island marble butterfly host plants as well as prairie habitat for other special status wildlife and plants. See appendix A.

CR-3: Road Design. To the extent possible, the project design would use shallow cut and fill slopes and would not use exposed gabions or geometric forms of embankment materials that are incompatible with the character of the landscape

4.4.6 Land Use

Construction would remove land in the project area from its current intended use over a period of time during the construction period of the action alternatives. Temporary land disturbance from construction activities would be approximately 13 acres for alternative B, 9 acres for alternative C, and 17 acres for alternative D. Construction duration would be 1 to 2 years for alternative B and 1.5 to 3 years for alternatives C and D. Following construction of the new road facilities, disturbed sites would be stabilized with vegetation and returned to their original uses.

All action alternatives would require acquisition of new construction easements or rights-of-way (ROW) through the park and NRCA depending on the alternative route chosen. The rerouted section of road would involve a different use of land, both at the new road location and at the existing road location. Following construction of any action alternative, the existing easement/ROW along the abandoned section would be transferred back to the land management agencies. The abandoned roadway segment would be restored to natural conditions by

removing the pavement and road base, contouring the road cut to blend with natural surroundings, and planting with native vegetation. The net impact of new easement/ROW would be offset by restoration of a nearly equivalent area of abandoned roadway. Each action alternative involves approximately 3 acres of new easement/ROW, approximately 90 percent on the park and 10 percent on the NRCA. In addition, reclamation of the abandoned roadway segment would restore approximately 3 acres of native prairie within the park and NRCA; however, some of the restored prairie would eventually be lost due to bluff erosion.

None of the action alternatives would change the capacity, function, or service of the road. The alternatives would preserve vehicular access to the east end of the Cattle Point peninsula and would not result in any permanent changes to land use in the project vicinity. The action alternatives would continue vehicular access for management of park, DNR, and other state and federal properties as well as county road maintenance activities. All action alternatives would maintain vehicular access to the east end of the Cattle Point peninsula during construction.

Conclusion

Construction activities would have a temporary short-term effect on land use in the immediate project area. Over the long term, the action alternatives would have no direct, indirect, or cumulative effect on land use in the Cattle Point peninsula. All alternatives are located on federal and state property. None of the action alternatives would result in a change to the existing federal and state land uses or to the rural residential property in the project vicinity.

Mitigation Measures:

LU-1: Restore Abandoned Road Segment. The abandoned road segment would be restored by removing the road pavement, road base, and buried utility lines and conduits, contouring the road cut with native soil to blend with natural surroundings, and planting with native vegetation. A detailed restoration plan would be developed prior to the beginning of construction

LU-2: Transfer Abandoned ROW to Land Management Agencies. Following construction, the existing easement/ROW for the abandoned section would be transferred back to the appropriate land management agency.

4.4.7 Local Plans

Implementation of any of the action alternatives would meet all policies, guidelines, and desired conditions in the local plans applicable to management of the project area. The project alternatives were developed through an interdisciplinary process based on the expertise of planning team members representing the Federal Highway Administration, National Park Service, Washington State Department of Natural Resources; and San Juan County as well as on scoping with tribes; agencies; and interested publics as required by NEPA and local planning. Alternative development has taken into consideration the compatibility of the proposed facility with the surrounding natural and historic resources and with the access needs of residents.

4.4.8 Visitor Uses

Construction activities common to all of the action alternatives include site preparation, earthmoving, general construction, and road surfacing. Alternatives C and D also involve tunnel construction. Construction of the long tunnel in alternative C would likely involve excavation with conventional earth moving equipment and transport of excess soil and rock

material offsite. Construction of the short tunnel in alternative D would likely be accomplished using a cut and cover method which involves excavating a trench, constructing the tunnel structure, and subsequently covering the structure with compacted earthen materials and soils. Alternative D would also involve transport of excess soil and rock material offsite. In the tunnel alternatives, blasting could be necessary if rock or large boulders are encountered. Though based on limited geologic research, this is unlikely to occur. Construction activities associated with alternative B are expected to last 1 to 2 years. Construction for alternatives C and D are expected to last 1.5 to 3 years.

Construction activities would affect visitor uses by disrupting traffic, blocking access to scenic vistas, and creating nuisance from construction noise, visual impacts, and dust. Construction activities would not affect visitor uses in most of American Camp due to the location of the construction site to the east of most of the historic features of the area. However, there would be an increase in construction traffic leading to the project site due to offsite hauling and transportation of construction personnel and materials. Visitor access to the DNR and BLM properties located in the east end of the Cattle Point peninsula would be affected by construction traffic and activities.

During construction, the existing road would remain open to maintain access to the east end of the Cattle Point peninsula for visitors and residents. Some traffic delays would be expected due to construction traffic and operations. Though most operations for construction of the road realignment and tunnel would take place outside of the existing roadway, some traffic delays would still take place on the Cattle Point Road adjacent to the construction area. Delays would likely be limited to 30 minutes or less. Construction of the short connectors between the existing roadway and the new alignment may require full road closure for up to 4 hours intermittently during a period of approximately 1 to 2 weeks. Construction activities would have the most impact on hikers and bicyclists using the project area. Due to safety considerations, these users could face some restrictions through the construction site during part or all of the construction period.

Construction machinery working on the benches below Mt. Finlayson would be visible to visitors in the eastern portion of American Camp and the east half of the Mt. Finlayson trail. Dust and noise from construction operations would also impact motorists, pedestrians, bicyclists, and special vehicle users.

Over the long term, none of the action alternatives would change the capacity, function, or service of the road. The alternatives would preserve the existing access to the Cattle Point area and would not impact the number of visitors to the area nor would it result in a change (either increase or decrease) in traffic in the area beyond that expected with normal growth. The tunnel alternatives (C and D) would enclose a portion of the road, affecting the visitor's view of the scenic vistas along this portion of the roadway. However, scenic pullouts would be constructed, as space allows, providing additional opportunities for visitors to view the scenic resources of the area.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.14.

None of the action alternatives would change the capacity, function, or service of the road that would lead to a change in visitor use. The alternatives would preserve the existing access to the

east end of the Cattle Point peninsula. Implementation of the action alternatives would not alter current trends in visitor use and would not contribute to cumulative impacts.

Conclusion

Overall, the construction activities involved with the action alternatives would have a moderate adverse short-term effect on visitor uses in the Cattle Point peninsula. Over the long term, the proposed road realignments would have no effect on visitor uses.

Mitigation Measures:

VU-1: Traffic Management. A traffic control plan would be developed specifying road closure times and a public information program. Delays would be limited to 30 minutes or less. Construction of the short connectors between the existing roadway and the new alignment may require full road closure for up to 4 hours intermittently during a period of approximately 1 to 2 weeks.

4.4.9 Road Safety and Public Health and Safety

During construction, construction traffic on local roads and operation of construction equipment at the construction site would affect road safety in the Cattle Point peninsula. In addition, construction-related traffic disruptions could delay access by emergency vehicles to the east end of the Cattle Point peninsula, affecting public health and safety.

The construction contract would include requirements for temporary traffic control and safety measures at the construction site to prevent safety incidents. Safety measures would include compliance with the *Manual on Uniform Traffic Control Devices* standards and Occupational Safety and Health Administration regulations. During construction, at least one lane of road would be available for emergency access at all times.

Design of the new road alignment and tunnels (in alternatives C and D) would use American Association of State Highway and Transportation Officials (AASHTO) design and safety standards. Widened and improved road shoulders would increase safety for special vehicles, bicycles, and pedestrians using the realigned roadway; however, the remainder of the existing roadway on both ends of the new alignment would continue to have one-foot gravel shoulders.

The alternative B road alignment would have steeper grades and tighter curves compared to the existing road, which may result in a minor increase in accident risk. The tunnel alternatives (C and D) would add a new element to the roadway in the project area. While this would increase traffic confinement, European studies have found that the probability of an accident occurring is lower in tunnels than on open stretches of roads; however, injuries from any accidents that do occur in tunnels tend to be more severe (Nussbaumer 2007). Due to the low traffic volume and low design speed, accident rates are not expected to increase due to this facility.

Over the long term, none of the action alternatives would change the capacity, function, or service of the road. The alternatives would preserve the existing access to the Cattle Point area and would not result in a change (either increase or reduction) in traffic in the area beyond that expected with normal growth. Given current and projected future road use, it is expected that the safety of the road and tunnels in the action alternatives would be similar to the existing condition.

Conclusion

With mitigation measures in place, construction activities would have negligible adverse short-term effects on road safety, and public health and safety in the Cattle Point peninsula. Implementation of the action alternatives would not alter current trends in road safety and public health and safety. Over the long term, the proposed road realignments would have no direct, indirect, or cumulative effect on these resources.

Mitigation Measures:

RS/PS-1: Traffic Management. Same as VU-1. A traffic control plan would be developed specifying road closure times and a public information program. Delays would be limited to 30 minutes or less. Construction of the short connectors between the existing roadway and the new alignment may require full road closure for up to 4 hours intermittently during a period of approximately 1 to 2 weeks.

In addition, during construction, at least one lane of road would be available for emergency access at all times. The construction contract would include requirements for temporary traffic control and safety measures at the construction site to prevent safety incidents. Safety measures would include compliance with the *Manual on Uniform Traffic Control Devices* standards and Occupational Safety and Health Administration regulations.

4.4.10 Socioeconomics

The road construction project would provide employment opportunities for island residents as well as construction-related spending with island businesses for supplies, equipment, services, and materials. Collectively, these businesses would make a contribution to the local economy on San Juan Island.

Over the long term, none of the action alternatives would change the capacity, function, or service of the road and all would preserve the existing access to the east end of Cattle Point.

Conclusion

As a result, construction of the action alternatives could have a minor beneficial short-term effect on the local economy and income. Implementation of the action alternatives would not alter current trends in socioeconomic factors. Over the long term, the action alternatives would have no direct, indirect, or cumulative effect on population growth or decline, demographics, local industry, employment, and income in the Cattle Point peninsula and San Juan County.

4.4.11 Utilities

All action alternatives involve relocation of utilities to the new roadway alignment in coordination with road construction activities. This would involve underground installation of utilities adjacent to the new road alignment or in a conduit for the tunnel alternatives. All action alternatives would require new easements for the utility vendors. Utility reroutes would take place within the footprint of new road alignment construction activities; therefore, the environmental impacts of utility installation would be the same as the environmental impacts for roadway construction. Following installation of utilities along the new road alignment, the existing utility lines would be removed from the abandoned road segment. Utility removal and relocation would be coordinated with road construction activities.

Construction activities have the potential to disrupt utility service intermittently during ground disturbing activities. Utility locations would be flagged, and care would be required during excavation in the proximity of utilities.

Conclusion

With mitigation measures in place, the action alternatives would have no direct, indirect, or cumulative effects on utility service in the project area.

Mitigation Measures:

U-1: Utility Coordination. The road contractor would coordinate with the utility companies to relocate underground utilities adjacent to the new road alignment and to remove existing utility lines buried along the abandoned road segment prior to construction. If road construction takes place in proximity to utilities, the location would be marked, and care would be taken to avoid disturbance to utilities during construction.

4.4.12 Hazardous and Solid Waste and Materials

No hazardous wastes or materials have been identified or documented in the project area by the NPS or DNR, and past land uses in the Cattle Point project area are not likely to have produced hazardous materials. Based on current information, it is unlikely that construction of any of the action alternatives would encounter or otherwise impact hazardous waste. If hazardous materials were encountered during construction, removal would be handled in accordance with Washington State Department of Ecology (WDOE) and EPA guidelines.

The construction proposed with the action alternatives would involve use of petroleum products and other potentially hazardous materials during construction activities. If any of the action alternatives were implemented, the FHWA would require that the contractor prepare and follow a Spill Prevention, Control, and Countermeasure Plan (SPCC) in accordance with EPA guidelines. Excess petroleum and other potentially hazardous waste generated by construction activities would be disposed of in accordance with EPA guidelines.

Construction activities would also produce non-hazardous solid waste such as paper, wood, asphalt, concrete, and excess soil and rock. Asphalt would likely be recycled in place and used in the new road surface. Alternatives B and D would likely produce little if any excess soil and rock material. Alternative C would produce considerable excess soil and rock from tunnel excavation. Excess material would be disposed of in existing commercial pits on the island. All alternatives would produce excess solid waste from construction activities and employee use. This waste would be transported to a transfer station for removal from the island.

None of the action alternatives would change the capacity, function, or service of the road that would lead to a change in population or visitation that could affect hazardous or solid waste.

Cumulative Impacts

Past agricultural and historic military land uses on the Cattle Point peninsula are not likely to have produced hazardous materials in the project area. Current management of public property for recreation, historic, and natural resource management have not produced hazardous materials; however, visitor and employee uses produce solid waste. Current residential use on private property at the east end of Cattle Point also produces solid waste. Future construction of new homes and the resulting increase in part-time and permanent population would increase the potential for production of solid waste; however, improvements in recycling could reduce

individual household waste. Since all of the private property in east Cattle Point has been subdivided and the number of vacant residential lots is limited, the increase in population would be small.

Implementation of the action alternatives would not alter current trends in population or visitation that would contribute cumulatively to hazardous or solid waste disposal. The hazardous and solid waste generated from construction activities and personnel would contribute minimally to the cumulative impacts of other current and reasonably foreseeable projects on San Juan Island.

Conclusion

With mitigation measures in place, hazardous wastes from construction activities would have no short-term or long-term effect on the project area or Cattle Point peninsula. The alternatives would have a negligible short-term effect on solid waste disposal on San Juan Island.

Mitigation Measures:

HM-1: Previously Undetected Hazardous Material. If hazardous materials are encountered during construction, removal would be handled in accordance with WDOE and EPA guidelines.

HM-2: SPCC. The construction contractor would prepare and implement a Spill Prevention Control and Countermeasure Plan in accordance with EPA guidelines. Excess petroleum and other potentially hazardous waste generated by construction activities would be disposed of in accordance with EPA guidelines.

4.4.13 Energy

During construction, petroleum products would be used for operation of road and tunnel construction machinery, manufacture of asphalt for pavement, and commuting for the construction workforce. Construction activities associated with alternative B are expected to last 1 to 2 years. Construction for alternatives C and D is expected to last 1.5 to 3 years.

Over the long term, none of the action alternatives would change the capacity, function, or service of the road. The alternatives would preserve the existing access to the Cattle Point area and would not result in a change (either increase or reduction) in traffic in the area beyond that expected with normal growth. Thus, energy consumed by motor vehicle use on the road would not change over that expected with normal growth.

The activities and energy required for routine road maintenance would vary between the action alternatives. Maintenance activities for the alternative B road alignment would be similar to the existing road. Activities would include maintaining adequate drainage, road cleaning, mowing, regular light road resurfacing, maintaining pavement striping, and repairing road structural failures. Alternative C would involve all of the maintenance activities in alternative B as well as additional activities required for the operation and maintenance of the tunnel facilities. Tunnel operations for alternative C would include tunnel cleaning and inspection as well as maintenance and operation of the light, ventilation, and fire systems. The electricity needed for continual operation of the light and ventilation systems could add up to a substantial increase in energy use over the existing condition. The electricity needed for tunnel operations could be accessed by tapping into the residential grid. However, given the location of the site, electricity for tunnel operations could be generated using alternative methods such as solar or wind power. The short tunnel in alternative D would not require a ventilation or fire system; therefore, the

energy required for this alternative would be considerably lower than alternative C. Other maintenance activities would be the same as alternative C.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.22.

Implementation of the action alternatives would not alter current trends in population or visitation that would contribute cumulatively to energy use in the local area or county-wide. Energy used during construction activities would contribute minimally to the impacts of other current and reasonably foreseeable projects.

Conclusion

Because of these factors, the construction activities involved with the action alternatives would have a minor adverse short-term effect on energy use. Long term energy use from implementation of alternative B would be negligible. Long term energy use from implementation of alternatives C and D would be slightly higher, but would still be considered negligible.

Mitigation Measures:

E-1: Alternative Electricity Sources. For alternatives C and D, alternative sources of electricity such as solar or wind generation would be considered for providing power requirements for tunnel operations. Care would be taken to choose a source and location that would not detract from scenic and cultural landscape values.

4.4.14 Noise

The naturally quiet soundscape is an important quality of the Cattle Point project area. Noise producing activities would take place during project construction, which is expected to last 1 to 2 years for alternative B and 1.5 to 3 years for alternatives C and D. Noise producing activities would include use of heavy equipment for site preparation, earthmoving, general construction, abandoned road restoration, hauling, compacting, and road surfacing. Alternatives C and D also involve tunnel construction, which would likely involve excavation with conventional earth moving equipment, soil stockpiling, and transport of excess soil and rock material offsite. Blasting could be necessary if rock or large boulders are encountered during tunnel excavation. However, based on limited geologic research, this is not likely to occur. If blasting becomes necessary, an evaluation would be conducted by the FHWA, and would include involvement with land management agencies and affected publics.

In the naturally quiet ambient conditions of the Cattle Point area, construction noise would be audible to road users traveling through the project area, hikers on the Mt. Finlayson Trail, users of the near-shore area of the Strait of Juan de Fuca, and residences near the east end of the construction site. The closest residence is located about 500 feet to the east of the east end of the project route. Approximately seven residences are located within 500 to 1,000 feet of the east end of the construction area. The construction noise audible in residential areas would be limited because residences are located beyond the east end of the construction site and because the topography of Mt. Finlayson blocks most of the construction site from residences in the northeast end of the Cattle Point peninsula. Since there are no construction material sources located to the east of the construction site, it is expected that there would be no construction hauling through the Cattle Point residential areas. Noise from construction traffic would

increase for residents and users along haul routes located to the west of the construction site. This would include the park visitor's center and the historic section of American Camp. In order to minimize construction-induced noise impacts in the project area, the FHWA would require that construction equipment be equipped with functioning mufflers to limit exhaust noise and that equipment be switched off when not in use. To minimize construction noise audible in the residential areas closest to the construction site, construction activities (having noise levels greater than normal traffic) to the east of the NPS-DNR boundary would not be permitted from 6:00 p.m. to 7:00 a.m.

Over the long term, none of the action alternatives would change the capacity, function, or service of the road. The alternatives would preserve the existing access to the Cattle Point area and would not result in an increase in visitors or a change (either increase or reduction) in traffic in the area beyond that expected with normal growth. Thus, noise produced by motor vehicle and visitor use on the road and adjacent residential areas would not change over that expected with normal growth.

The road alignment in alternative B involves steep grades, which may result in slight increases in engine noise from the additional engine effort necessary to climb the grade and from engine braking during descent. The tunnel alternatives (C and D) would enclose traffic underground over a portion of the realignment. This would reduce traffic noise in the areas immediately adjacent to the tunnels; however, the overall reduction in noise in the larger project area would be barely noticeable because of the low traffic volume and relatively low speeds.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.23.

Implementation of the action alternatives would not alter current trends in population and visitation that would contribute cumulatively to noise impacts locally or county-wide. Noise produced by construction activities would be short-term, and while it would contribute moderately to the noise generated by other current and reasonably foreseeable projects taking place during the construction period, it would not contribute to long term cumulative impacts.

Conclusion

Overall, noise from construction activities involved with implementation of the action alternatives would have a moderate adverse short-term effect in the immediate project area. Over the long term, use of the new road alignment and tunnels in the action alternatives would have no effect on the noise levels in the project area above those expected with normal growth.

Mitigation Measures:

N-1: Equipment Noise Control. Construction equipment would be equipped with functioning mufflers to limit exhaust noise. Equipment would be switched off when not in use.

N-2: Construction Timing. Construction activities (having noise levels greater than normal traffic) to the east of the NPS-DNR boundary would not be permitted from 6:00 p.m. to 7:00 a.m.

4.4.15 Light

The naturally dark sky is an important feature of the Cattle Point peninsula. It is expected that construction activities would create few light producing activities. Some artificial light from construction vehicles may be needed for visibility in the early morning or early evening work hours.

Over the long term, none of the action alternatives would change the capacity, function, or service of the road. The alternatives would preserve the existing access to the Cattle Point area and would not result in an increase in visitors or a change (either increase or reduction) in traffic in the area beyond that expected with normal growth. Thus, light produced by motor vehicle and visitor use on the road and adjacent residential areas would not change over that expected with normal growth.

Alternatives C and D would require a lighting system within the tunnels to provide enough light for motorists, bicycles, and pedestrians to enter, pass through, and exit the enclosure safely. Tunnel lighting would be required during the day when the contrast between outside and inside light is significant, and also at night when contrast is reversed. Stray light from the tunnel enclosure would be visible at the tunnel portals, especially at night. This would provide two constant points of light along the naturally dark hillside of Mt. Finlayson, where nighttime traffic volume is very low. Light from tunnel portals would be dimly visible in the distance from offshore and adjacent islands. Reflected light from the east portal may be dimly visible to residents close to the east end of Mt. Finlayson; however, because of topographic barriers, light from tunnel portals would not be visible to most residents of the Cattle Point peninsula.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.23.

Implementation of the action alternatives would not alter current trends in population or visitation that would affect light. The light impacts associated with the action alternatives would not contribute to impacts of other current and reasonably foreseeable projects.

Conclusion

Overall, light from construction activities involved with implementation of any of the action alternatives would have a negligible adverse short-term effect in the project area. Over the long term, use of the new road alignment and tunnels in the action alternatives would have no effect on the light levels in the project area above those expected with normal growth. Stray light from tunnel portals in alternatives C and D may have a minor adverse effect in the project area but would have no discernible overall effect on the night sky.

4.4.16 Coastal Zone

All action alternatives would be located in the coastal zone. Under the Washington State program, federal activities that affect any land use, water use, or natural resources of the coastal zone must comply with the enforceable policies within the laws identified in the program document. The applicable laws are:

- Shoreline Management Act (including local government shoreline master programs)
- NEPA (or State Environmental Policy Act (SEPA) in the case of state agencies)
- Clean Air Act

- Clean Water Act
- Energy Facility Site Evaluation Council (not applicable)
- Ocean Resource Management Act (not applicable)

The Washington State Shoreline Management Act (SMA) applies to the shorelines of all marine waters and extends 200 feet landward from the edge of these waters. All waters of the Strait of Juan de Fuca have been identified as shorelines of statewide significance.

The action alternatives involve no activities on the shoreline of the Strait of Juan de Fuca. At its closest (at the bluff erosion site), the existing Cattle Point Road is located approximately 200 feet from the shoreline. The action alternatives would move the road alignment landward from 100 to 140 feet upslope from its existing location. This would place the new road and tunnel alignments between 300 to 440 feet from the shoreline, which is outside of the shoreline management area. The abandoned road segment would be restored to blend with its natural surroundings and revegetated using native species. No new structures would be constructed within the shoreline management area. Therefore the action alternatives would comply with the SMA.

NEPA requires that federal agencies consider environmental factors when making decisions, involve the affected and interested public in the environmental analysis process, and document the environmental analysis process. The analysis in this FEIS complies with the provisions of NEPA.

The Clean Air Act is discussed in section 3.2.3 and the Clean Water Act is discussed in section 3.2.4 of this document. The environmental analysis in section 4.4.1 concludes that short-term impacts to air quality from the action alternatives would be minor and limited in area and that there would be no long-term effect on air quality in the project area or San Juan Island. The Class II status of the project area would not be affected. The environmental analysis in section 4.4.3 concludes that the action alternatives would have a negligible adverse short-term and long-term effect on water quality in the project area. Therefore, the action alternatives would comply with provisions of the Clean Air Act and the Clean Water Act.

The Energy Facility Site Evaluation Council coordinates evaluation and licensing steps for sighting energy facilities such as pipelines, electrical transmission lines, petroleum refineries, and alternative energy electrical generation in Washington. The proposed tunnel alternatives may involve alternative electrical generation; however, since these facilities would be located on federal property, review by the state council would not apply.

The Washington State Ocean Resources Management Act pertains to leases for oil and gas exploration, development, or production, and does not apply to this project.

Analysis in the FEIS indicates that implementation of the action alternatives would have no effect on coastal resources. The action alternatives would comply with the applicable laws and would be consistent with Washington's Coastal Zone Management Program.

The FHWA submitted a negative determination and analysis of no effect on coastal resources to the Washington State Department of Ecology (WDOE) on May 26, 2010. The WDOE concurred with the FHWA negative determination in its letter of June 17, 2010.

4.4.17 Relationship of Short-Term Uses and Long-Term Productivity

NEPA requires a review of the balance or trade-offs between short term uses and long term productivity of resources within the project area. Under NEPA, short term refers to the life of the project facilities and long term refers to the time beyond the lifetime of the facilities.

Conversion of an undeveloped portion of the park and NRCA to a roadway represents a short term use that would have a long term effect on the productivity of the land. A roadway already exists through the project area; however, coastal erosion threatens to destroy a portion of the road in its present location. The project would realign the threatened portion of the road to a location that would not be susceptible to coastal erosion for a long period of time. The abandoned road segment would be restored to its natural grassland habitat productivity. The net loss in land productivity (through new paved surface) between the new road realignment and restoration of the abandoned alignment would be approximately 1 acre in alternative B. Alternative C would result in a net gain in land productivity of 1 acre, as the area of abandoned roadway restored would be greater than the area used in the new road alignment. Alternative D would result in no net gain or net loss in land productivity.

The road facilities proposed in the action alternatives would be designed to preserve the natural character of the road corridor. While it would transform a portion of the park and NRCA to a transportation use, it would not adversely affect the current uses of the land nor would it adversely affect the cultural landscape. Long term benefits of the project would be to continue to provide vehicular access the east end of the Cattle Point peninsula for residents and visitors who make up part of the economy of San Juan Island.

4.4.18 Irreversible and Irretrievable Commitment of Resources

Irreversible commitments are those that cannot be regained, such as the extinction of a species or the removal and use of fossil fuels. Irretrievable commitments are those that are lost for a period of time such as the loss of production, harvest, or use of renewable resources.

Construction of the action alternatives would involve commitment of a range of natural, physical, biological, human, and fiscal resources. Fossil fuels, labor, and construction materials, such as aggregate, would be irreversibly expended in the construction of the action alternatives. Labor and fossil fuels would be consumed during operation of construction equipment for grading, transport of construction materials, and other construction activities. In addition, labor and natural resources would be used in the fabrication and preparation of construction materials. Construction would also require an expenditure of funds that could not be used by any other project.

Highway maintenance would consume fossil fuels and labor through operation of maintenance vehicles and by use of aggregate and asphalt for patching. Visitor and residential vehicles would use predominately fossil fuels for commuting, recreational transportation, and the movement of goods and services. The tunnel alternatives would utilize electricity for lighting and ventilation. Design of the tunnels could make use of sustainable highway operations such as solar power or wind power systems for electric generation. Road construction would use recycled asphalt and alternative asphalt compounds to the extent possible. The abandoned road segment would be restored to its natural grassland habitat. Soils disturbed during construction would be revegetated using native species. The net loss in land productivity (through new paved surface) between the new road realignment and restoration of the abandoned alignment would be approximately 1 acre in alternative B. Alternative C would result in a net gain in land

productivity of about 1 acre, as the area of abandoned roadway restored would be greater than the area used in the new road alignment. Alternative D would result in no net gain or loss in land productivity, as the area of new road pavement would be approximately equal to the area of restored abandoned roadway. Land that would be used in the construction of the action alternatives has the potential to be reclaimed when it is no longer needed for transportation purposes.

4.5 IMPACTS OF ALTERNATIVE B - HYBRID MID-SLOPE REALIGNMENT

This alternative involves realignment of the existing road to the north, approximately 300 feet away from the eroding bluff, to increase the life expectancy of the road. The project would begin about 0.65 miles east of the Pickett's Lane intersection. At the beginning of the project, the road would be widened, and the grade would be raised along the current alignment for about 1,100 linear feet in order to transition with the new road alignment. The new alignment would leave the existing road and travel north to follow a natural bench for approximately 1,000 linear feet. From there, the new alignment would climb a moderately steep grade, reaching its high point approximately 300 feet north of the bluff erosion site. From there, the alignment would descend steeply to connect back to the existing road near where the NRCA trail meets the existing Cattle Point Road. The total length of new alignment would be approximately 4,950 feet. Realignment of the road upslope from the bluff erosion site would protect road access from the threat of erosion for over 100 years. The estimated construction cost is approximately \$5 to 8 million. Construction would take about 1 to 2 years.

4.5.1 Topography, Geology, and Soils

Alternative B would reroute approximately 1,000 feet of roadway onto the natural bench to the north of the bluff erosion site. Road design features and final location would be planned to minimize the number and height of road cuts and fills. Following natural contours, steepening the road grade (up to approximately 10.5 percent) and adding curves on the east end of the realignment would serve to reduce the size of cuts and fills and the associated impacts. Construction of this alternative would temporarily disturb approximately 17 acres. This disturbance would result from the new road alignment, new road cuts and fills, equipment staging areas, and removal of the existing roadway. Of the 17 acres of temporary soil disturbance, about 13 acres would be restored and revegetated. Cuts and fills along the new alignment could reach a maximum height of about 30 feet.

Under this alternative, about 4 acres of new area would be covered by impermeable road pavement. However, about 3 acres of road pavement would be removed from the abandoned road section, the road bed would be contoured to match the surrounding landscape, and the area would be revegetated with native vegetation. Therefore, the net increase in impermeable pavement surface in the project area would be about 1 acre.

The natural benches through which the new alignment would be routed were formed by glacial rebound and are an important geologic feature of the area. Construction of this alternative would involve cuts and fills along the highest bench on Mt. Finlayson, where it is most visible. Location of the road on these features would make it more difficult for viewers to observe the area's past geologic history. The cut sections at the east end of the project route would also disturb the natural topography of the ridgeline. The road would be rerouted through a

previously quarried area on the east end of Mt. Finlayson. The road fill would be designed to restore the quarry area to more closely follow natural contours.

Native soils in the project area consist primarily of gravelly sand, often with the rich organic horizon at the surface typical of prairie soils. These types of soil are highly erosive. Because of this, road cuts would need to be gently sloped to ensure slope stability and promote revegetation. Further geotechnical investigation would be necessary to finalize slope designs prior to construction.

A site may be needed for disposal of excess soil and rock from construction operations, as well as to provide the aggregate needed for the project. If an existing commercial pit would be used for soil disposal and aggregate supply, the impacts to soils and geology in the pit area would be addressed in the existing pit permits and approvals. If a new site is needed for material disposal, there could be impacts to topography and soils at the new site. No new disposal sites would be allowed in the park or NRCA. If a new disposal site (or aggregate source) is required for this alternative, the effects would be analyzed by the FHWA prior to approval of the site for use. For this project, the FHWA requires that new non-commercial disposal and aggregate sources would have no more than a “no adverse effect” on cultural resources, a “no effect” determination on threatened and endangered species, and no encroachment into waters of the U.S. or wetlands.

A NPDES permit would be required for this project. As part of the permit, a Storm Water Pollution Prevention Plan (SWPPP) would be prepared that outlines measures that would be actively taken at the construction site to reduce the amount of soil erosion and sediment leaving the site due to storm water runoff. As a permanent erosion and sediment control measure, all disturbed sites would be revegetated with native species.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.1.

Realignment of the road onto the natural glacial benches below Mt. Finlayson would add a new impact to an area that currently contains no structures. New road cuts and fills would add to cumulative impacts on the topography, geology, and soils. This alternative would add approximately 1 acre of impermeable road pavement to the cumulative impacts on soils in the project area. Because of federal and state land management protections, most of the Cattle Point peninsula is relatively undeveloped and future development is limited. Federal and state projects in the Cattle Point peninsula are planned to improve existing visitor and parking facilities. No new visitor facilities are planned on public land that would impact topography, geology and soils. There is the potential for limited residential construction on the small number of vacant lots on private property in east Cattle Point. This construction would have a minimal impact on soil in east Cattle Point and add a very small amount of impermeable surface in the project vicinity. Current road density in the Cattle Point peninsula is low. No new roads are planned in the future. Alternative B would not increase road density since the existing road alignment would be obliterated and restored to natural conditions. When added to other past, present, and future actions overall cumulative impacts to geology, topography, and soils would be minimal locally and county-wide.

Conclusion

With mitigation measures in place, construction of alternative B would have a minor adverse short-term effect on soils and a moderate adverse short-term effect on topography and geology in the project area. Over the long term, the realignment of the road through the high benches below Mt. Finlayson would have a negligible adverse effect on soils and a moderate adverse effect on the topography and geology of the project area and the Cattle Point peninsula.

Mitigation Measures:

TGS-1: Road Design. Same as CR-3. In addition, to the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings. Cut slopes would be designed to insure slope stability and promote revegetation.

TGS-2: Geology Wayside Exhibit. A wayside exhibit would be developed to interpret the area's geology.

TGS-3: SWPPP. Same as WQ-1. Prior to construction, the FHWA would develop a Storm Water Pollution Prevention Plan (SWPPP) for implementation during construction. The SWPPP would include measures (BMPs) for temporary erosion and sediment control devices during construction for control of concentrated storm water runoff. The SWPPP would also include BMPs for housekeeping measures to address the safe storage, handling, and spill prevention of hazardous construction materials.

TGS-4: Revegetation. Same as WQ-2. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. See appendix A.

TGS-5: New Waste Site or Aggregate Source. No disposal sites would be allowed in the park or NRCA. If a non-commercial disposal site or aggregate source is required, the proposal would be analyzed for environmental impacts before approval by FHWA for use. For this project, new non-commercial disposal and aggregate sources would have no more than a "no adverse effect" on cultural resources, a "no effect" determination on threatened and endangered species, no encroachment into waters of the U.S. or wetlands, and no adverse effect on remnant prairie habitats of San Juan Island.

4.5.2 Visual Quality

Depending on topography and locale, differing views of construction machinery and activities would be visible from adjacent areas of the Cattle Point residential area, the existing road, some beach locations, surrounding offshore areas, and adjacent areas of the park and NRCA, including the Mt. Finlayson Trail.

The new road alignment would be located on the upper bench on the south slope of Mt. Finlayson where it nears the ridgeline, before curving down the east end of the ridge. This location would be more visible than the present road alignment when viewed from offshore and adjacent islands. To the extent possible, the road design and final location would be planned to follow natural contours and minimize the number and height of road cuts and fills. Preliminary design does not anticipate the need for retaining walls in the road design; however, final plans

may use short sections of wall in order to reduce the extent of cuts and fills. Walls would present a solid visual disturbance to the natural topography. If needed, walls would be designed with a low profile, using materials with a natural appearance to minimize visual impacts.

For hikers using the Mt. Finlayson Trail, the new road alignment would be closer and more visible than the existing road. This would be most pronounced at the east end of the road alignment. Viewed from the Cattle Point residential area, from offshore to the east, and from Lopez Island, the new through-cut and fill sections would be more visible than the existing road alignment. Viewed from the beach and offshore to the south, the alternative B alignment would be less visible than the existing road because of its higher location. From other points in the park and NRCA, the new road alignment would appear similar to the existing road.

Newly disturbed soils would make the new road alignment more visible over the short term. Following construction, all disturbed areas including cut and fill slopes would be revegetated using native species. Over 2 to 5 years, the growth of planted native vegetation would serve to blend the road into the natural surroundings.

Restoration of the abandoned road segment would include removal of the road pavement, contouring the road cut to blend with the adjacent topography, and revegetating the road footprint with native prairie species. The growth of planted vegetation would serve to blend the restored roadway into the surrounding landscape. Over the long term, there may be some evidence that a road was once present on the site, but the visual intrusion to the natural landscape would be slight when viewed in the distance from viewpoints throughout Cattle Point and from offshore.

For users of the realigned roadway, the new alignment would provide similar views of the surrounding land and sea-scapes as the present road location. Where possible, turnouts would be developed for road users to pull off the road to view the natural features of the area. The higher location of the new alignment would provide vistas to the south along most of the road alignment. Vistas to the north would be blocked by the slope of Mt. Finlayson, which is also the case with the existing road location. A through-cut along a short section of road at the east end of the ridge would block views on both sides of the road, though Lopez Island would still be visible to the east. East of the through-cut, a short fill section would provide views on both sides of the road before connecting with the existing road alignment. Existing pullouts would remain to provide stopping points to enjoy views. New pullouts may be included in the design of the new alignment as location permits.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.5.

Alternative B would realign the road onto the natural glacial benches below Mt. Finlayson, which currently contains no structures. This location would be more visible when viewed from offshore. The abandoned road alignment would be obliterated and restored to natural conditions, which would negate its cumulative visual impact. The new road alignment would not increase the road density in the area. No future projects are planned on public land that would impact visual resources. There is the potential for limited residential construction on the small number of vacant lots on private property in east Cattle Point. This construction would have a minimal visual impact east of the project area. Visual impacts associated with alternative B would contribute moderately to the impacts of other current and reasonably foreseeable

projects. Overall, when added to past, present, and future activities cumulative impacts to visual quality would be minimal locally and region-wide.

Conclusion

Overall, ground disturbing activities and construction would have a moderate adverse short-term effect on the visual quality of the project area. Over the long term, the adverse visual impacts of the new road alignment when viewed from the Cattle Point peninsula, offshore, and from neighboring islands would be moderate.

Mitigation Measures:

VQ-1: Road Design. Same as CR-3, and TGS-1. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings. Cut slopes would be designed to insure slope stability and promote revegetation. If needed, walls would be designed with a low profile, using materials with a natural appearance. Final wall design would be coordinated with an NPS landscape architect.

VQ-2: Scenic Turnouts. Same as VU-2. Where possible, scenic turnouts would be constructed along the road alignment for the road user to pull off the road to view the natural features of the area.

VQ-3: Revegetation. Same as WQ-2 and TGS-4. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. See appendix A.

4.5.3 Vegetation

Alternative B would shift the road location upslope, away from the eroding coastal bluff and closer to the forested ridgeline, which would cut through a section of previously undisturbed prairie vegetation (figure 4.3). The fringe of the forest at the east end of the ridgeline would also be affected. It is expected that some small trees would need to be removed for construction of cut slopes and at the old quarry site. There would likely be no removal of large mature trees.

Construction of the new alignment would affect about 4,950 linear feet of grassland at widths varying from 60 to 120 feet (for cuts and fills) for a total of approximately 17 acres of disturbance. Of the 17 acres, about 13 acres would be restored and revegetated. Revegetated areas would include roadside cut and fill slopes, staging areas, and the abandoned road segment. The remaining 4 acres of disturbance would be new pavement area, which would involve permanent impacts to vegetation along the existing and new alignment. Restoration of the abandoned road segment would involve removal of approximately 3 acres of existing pavement and road base material, contouring the road footprint to blend with the surrounding landscape, and planting with native vegetation. The net permanent loss of vegetation in the project area would total approximately 1 acre.

The preliminary alignment shows that seven areas (polygons) of native prairie are located in close proximity to the road alignment and may be impacted by road cuts and fills adjacent to the road realignment (figure 4.3). The road alignment is preliminary, and to the extent possible,



Figure 4.3 – Alternative B alignment relative to native prairie polygon locations

final road alignment and design would be adjusted to avoid or minimize impacts to these rare native prairie sites. Existing native vegetation would be retained whenever feasible.

Prior to construction, a detailed restoration and revegetation plan would be developed that would outline methods and standards for revegetation of areas temporarily disturbed during the construction as well as restoration of the abandoned road segment. Revegetation would begin as soon as possible after completion of construction, during the optimum time of year to ensure greatest plant survival. Topsoil removed during construction would be conserved and reapplied to revegetation sites to insure optimum plant establishment. If sufficient conserved topsoil is not available, native topsoil may be imported from elsewhere on the island. Erosion control measures would be applied in order to protect soil and seed prior to establishment of vegetation, following guidelines in the project SWPPP.

All revegetation would use native species. Restoration of the abandoned road segment would provide the opportunity to restore native species and benefit the prairie grassland. All revegetated sites would be monitored for success and failed sites would be replanted as needed. Road construction activities, soil disturbance, and imported topsoil provide conditions favorable for spread of weeds from adjacent lands as well as from outside of the project area.

BMPs for control of weeds would be implemented during construction. Construction equipment would be cleaned of all mud, dirt, and plant material prior to entering the project area for the first time to minimize the spread of weeds from outside the project area. Aggregate and fill sources as well as imported topsoil would be inspected and certified as weed-free before being approved for use on the project site. If weed-free aggregate and fill sources are not available, the material would be heat-treated to kill weeds and weed seeds prior to transport to the project site. Even with BMPs in place, some weeds may be spread to the project from other areas within or immediately adjacent to the project area. The revegetation plan would include a plan for treatment of weeds on restored sites. Weed treatment would follow NPS and DNR guidelines.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.6.

Alternative B would realign the road into the prairie vegetation below Mt. Finlayson, which would add a new impact to the area that is currently undeveloped. The affected area includes seven polygons of remnant native prairie vegetation that is rare on San Juan Island. Restoration of the abandoned road segment and revegetation of roadside cut and fill slopes would provide the opportunity to benefit the restoration of native prairie vegetation. The project would permanently impact about 1 acre of prairie grassland vegetation. No future projects are planned on public land in the project area that would impact vegetation. Federal and state projects in the Cattle Point peninsula would improve existing visitor and parking facilities. There is the potential for limited residential construction on a small number of vacant lots on private property in east Cattle Point. This construction would impact a small amount of prairie and forest vegetation in the Cattle Point peninsula and add to cumulative effects. When combined with other past, present, and future activities the effects of alternative B would result in a minor cumulative impact on vegetation locally and region-wide.

Conclusion

Because of these factors, construction and other ground disturbing activities would have a minor adverse short-term effect on vegetation in the project area. With mitigation measures in place, the long-term adverse effects on vegetation in the project area would be minor.

Mitigation Measures:

V-1: Road Design. Same as CR-3, TGS-1, and VQ-1. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings. Cut slopes would be designed to insure slope stability and promote revegetation. If needed, walls would be designed with a low profile, using materials with a natural appearance. Final wall design would be coordinated with an NPS landscape architect.

In addition, final road alignment and design would be adjusted to avoid or minimize impacts to rare native prairie sites.

V-2: Revegetation. Same as WQ-2, TGS-4 and VQ-3. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. See appendix A.

In addition, revegetation would begin as soon as possible after completion of construction, during the optimum time of year to ensure greatest plant survival. Topsoil removed during construction would be conserved and reapplied to revegetation sites. If sufficient conserved topsoil is not available, native topsoil may be imported soil from elsewhere on the island.

V-3: Weed Inspection of Aggregate and Fill Sources. Aggregate and fill material sources would be inspected and certified as weed-free by a qualified person prior to approval for use. If weed-free sources are not available, material would be heat-treated to kill weeds and weed seeds.

V-4: BMPs for Weed Control. Construction equipment would be steam-cleaned prior to entering the project area for the first time. All roadsides and disturbed areas would be restored using native conserved topsoil and would be revegetated. Any imported topsoil needed would be certified as weed free. The revegetation plan would include a detailed weed control plan. See appendix A.

V-5: SWPPP. Same as H-1, WQ-1, and TGS-3. Prior to construction, the FHWA would develop a Storm Water Pollution Prevention Plan (SWPPP) for implementation during construction. The SWPPP would include measures (BMPs) for temporary erosion and sediment control devices during construction for control of concentrated storm water runoff. The SWPPP would also include BMPs for housekeeping measures to address the safe storage, handling, and spill prevention of hazardous construction materials.

4.5.4 Wildlife

Construction activities along the new road alignment as well as continued traffic on the existing road would result in an increase in human presence and noise intermittently during the 1 to 2 year construction period.

In this alternative, the road alignment would be moved upslope and closer to the important fringe habitat along the ridgeline where wildlife species transition between forest and grassland. Over the long term, the road alignment would impact wildlife and wildlife habitat by direct loss of habitat area covered by pavement and reduction in the habitat value of revegetated road cut and fill slopes.

Project activities would directly impact prairie habitat with ground disturbing activities on approximately 17 acres in the project area. Wildlife and bird species using this area would be displaced. Some smaller, less mobile ground-dwelling and nesting species may incur direct mortality. Construction activity and noise would deter animals from using the habitat in the project area for foraging and breeding. Noise and construction activity could also disrupt wildlife use of habitat adjacent to the construction site, possibly causing animals to move to other habitats. There is similar habitat surrounding the project area, including moderately large areas of grassland to the east and west as well as forested areas to the north.

Of the 17 acres of habitat disturbance, approximately 13 acres would be temporarily impacted during construction and 4 acres would be permanently impacted by new road pavement. Of the 13 acres of temporary impact, about 9 acres would consist of roadside cut and fill slopes, about 1 acre would consist of equipment staging areas, and about 3 acres would consist of abandoned roadway restoration. Following construction, these disturbed sites would be revegetated with native species. Road cuts and fills would provide marginal wildlife habitat; however, the restored abandoned road segment would provide higher quality wildlife habitat in a relatively undisturbed setting.

This alternative would not change the capacity, function, or service of the road and would not result in an increase in traffic or visitor use; therefore, long-term effects of the new road alignment on wildlife are not expected to be substantially different than present. Fragmentation of continuous habitat patches into smaller sizes, wildlife road avoidance due to human activity and noise, and road mortality would be similar to the existing road impacts. Due to the narrow width of the road and low traffic speeds and volumes, these impacts would be relatively small.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.7.

Alternative B would move the road alignment closer to the fringe habitat near the ridge of Mt. Finlayson, which is currently undeveloped. This would add cumulatively to habitat fragmentation in the project area. However, restoration of the abandoned road segment would replace habitat lost by the new road alignment. No future projects are planned on public land in the project area. The new road alignment would not increase the road density in the area. There is the potential for limited residential construction on the small number of vacant lots on private property in east Cattle Point. This construction would have a minimal impact on wildlife on the Cattle Point peninsula. When combined with other past, present, and future activities overall wildlife impacts associated with alternative B would be minimal locally and county-wide.

Conclusion

Because of these factors, construction activities associated with this alternative would have a moderate adverse short-term effect on wildlife use patterns and habitat in the project area. Over the long term, the effects of the alternative B road alignment would be minor.

Mitigation Measures:

W-1: Revegetation. Same as WQ-2, TGS-4, VQ-3, and V-2. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment.

Revegetation would begin as soon as possible after completion of construction, during the optimum time of year to ensure greatest plant survival. Topsoil removed during construction would be conserved and reapplied to revegetation sites to insure optimum plant establishment. If sufficient conserved topsoil is not available, native topsoil may be imported from elsewhere on the island. The revegetation plan would include stipulations for use of conserved and imported topsoil and control of weeds.

4.5.5 Federally-Listed Threatened, Endangered, and Protected Species

There are no federally-listed threatened or endangered species known to be present or having habitat in the project area or vicinity, however, the federally-protected bald eagle is known to be present and have habitat within the project vicinity (table 4.2). WDFW data show that the project area is located within two historic bald eagle territories. Six historic nest sites containing nine nests are located within 0.5 miles of the project area. Bald eagle territories and nest sites are also located within 1 mile of the project area on Lopez Island and near the American Camp historic areas. Bald eagle nesting activities occur from January 1 to August 15 (USFWS 2004). The project area is also located within the 800-foot shoreline foraging buffer identified by the WDFW priority habitat and species data (wdfw.wa.gov/hab/phslist.htm, accessed March 26, 2007). Eagle wintering takes place in the county from October 31 to March 31. There are no known wintering roosts in the project area.

The highest point on the alternative B road realignment would be located within the 800-foot buffer of one historic bald eagle nest near the peak of Mt. Finlayson. All nest sites shown in the WDFW database in the Mt. Finlayson area were monitored by NPS in 2009. Of the seven nest locations, only one nest was found, and it was in disrepair and unoccupied (NPS 2009). The nest located closest to the proposed road realignments could not be found by the NPS in 2009.

Construction noise impacts would affect an area within a 0.5-mile radius of the construction site depending on topographic barriers. Noise producing activities would take place during project construction, which is expected to last 1 to 2 years. Construction activities would take place along the new road alignment, abandoned road segment, haul routes, and staging areas. Regular traffic from residents and visitors would continue along the existing roadway during the construction period. These activities would result in an increase in human presence and noise intermittently during the 1 to 2 year construction period. Site preparation would include activities such as land clearing and grubbing, including disposal of cleared material.

Construction activities would include site preparation, earthmoving, general construction, and road surfacing. Earthmoving would include cut and fill operations, trenching, soil compaction, grading, and transport of excess soil and rock material offsite, likely west of the project area. It would involve hauling within the 800-foot buffer of the bald eagle nests in the American Camp

historic area. Construction of alternative B would not likely produce loud noises such as blasting or pile-driving; however, if these uses become necessary, a separate assessment would be conducted by the FHWA, and would include an evaluation of the effects to the bald eagle.

The entire road realignment is located on the south slopes of Mt. Finlayson in the prairie grassland habitat. Bald eagle nesting and roosting habitat consists of large trees and elevated sites located in the forested habitat near the peak and on the north side of the Mt. Finlayson ridge. Road realignment is not expected to involve removal of large mature trees suitable for eagle habitat. Cutting of eagle habitat trees would be prohibited. The project area is located within the 800-foot shoreline foraging buffer on the Strait of Juan de Fuca.

Construction activities are expected to take place during part of the bald eagle nesting season and may also take place during part of the winter-foraging season. While construction activities may cause foraging eagles to avoid flying over the construction areas on the south slopes of Mt. Finlayson, foraging areas to the north and east would remain undisturbed. During breeding season, bald eagles are sensitive to a variety of human activities, including noise from construction activities. Not all bald eagle pairs react to human activities in the same way. Some nest successfully within close proximity to human activity while others abandon nest sites in response to activities much farther away (USFWS 2007b). Prior to construction, the bald eagle nest within the 800-foot buffer of the project area would be investigated to determine if it was in active use. If the nest was being used by bald eagle, noise-producing construction activities within the 800-foot buffer would be restricted during the nesting period. If the nest was not in use, no construction restrictions would be necessary. The bald eagles in the American Camp historic area have successfully raised chicks in close proximity to human activities (NPS 2009). Although these individuals have habituated to the routine uses in the area, increased construction traffic may disturb them during nesting. The American Camp nests would be monitored during the nesting period and noise producing construction activities would be avoided to the extent possible.

The new road alignment would permanently relocate road noise and activities closer to the historic bald eagle nesting sites located near the ridge of Mt. Finlayson. The proximity of the new road alignment to the closest nest locations and the associated traffic as well as bicycle and pedestrian use may disturb bald eagles using the area for nesting and foraging. However, traffic levels are relatively light, and eagles have habituated to similar human activity near the American Camp visitor center.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.8.

Alternative B would move the road alignment closer to the historic bald eagle nests located near the ridge of Mt. Finlayson. Along with the pedestrian use on the Mt. Finlayson Trail, the closer road proximity would add cumulatively to potential human disturbance to historic bald eagle nesting in the area. Future projects to improve the American Camp visitor center could also have a small impact on the eagle nest in the vicinity. Visitation to the park and use of the visitor's center and trails in close proximity to eagle's nests is expected to increase into the foreseeable future. Bald eagles nesting in the area near the visitor's center have become acclimated to human presence and vehicle traffic seems to have little effect on bald eagle use patterns (USFWS, personal communication, 2009); however, it is unknown whether there is a limit to the amount of human presence that would be tolerated. When combined with other past,

present, and future activities overall impacts to bald eagles associated with alternative B would be minimal locally and region-wide.

Conclusion

Overall, with mitigation measures in place, it is expected that construction activities associated with alternative B would have a minor adverse short-term effect on bald eagle use patterns in the project area. With implementation of the described mitigation measures, the project would be in compliance with USFWS *National Bald Eagle Management Guidelines* (May 2007), and impacts would be below the level of “take” (see glossary). No permits would be required. Over the long term, alternative B would have a negligible adverse effect on bald eagles in the project area and the Cattle Point peninsula.

Mitigation Measures:

FTES-1: Construction Timing Restrictions. Noise-producing construction activities within the 800-foot buffer of active bald eagle nests would be restricted during the nesting period (January 1 to August 15).

FTES-2: Prohibit Removal of Bald Eagle Habitat. Removal of bald eagle habitat trees would be prohibited.

FTES-3: Equipment Noise Control. Same as N-1. Construction equipment would be equipped with functioning mufflers to limit exhaust noise. Equipment would be switched off when not in use.

4.5.6 State-Listed Threatened and Endangered Species

The state-listed California buttercup is known to be present and have habitat within the area of potential impact for alternative B (table 4.3).

Occurrence of this species in the project area roughly coincides with native prairie polygons (figure 4.3). The new road alignment and road cuts and fills could potentially impact three small California buttercup polygons. There are a total of 33 California buttercup polygons in the project area; therefore, the proposed realignment location would impact about 9 percent of the population. To the extent possible, final road alignment and design would be adjusted to avoid or minimize impacts to this species. Priority would be given to avoiding large concentrations of the plant.

Restoration of the abandoned road segment as well as roadway cuts and fills would provide an opportunity for potential planting of California buttercup into new areas of the native prairie grassland. The revegetation plan would outline methods and standards for revegetation of the species in these areas. Road construction activities and soil disturbance provide conditions favorable for spread of weeds from adjacent lands as well as from outside of the project area, which could affect California buttercup. BMPs for control of weeds would be implemented during construction.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.9.

The alternative B realignment would impact about 9 percent of the population of California buttercup in American Camp. Restoration of the abandoned road segment and revegetation of

roadside cut and fill slopes would provide the opportunity to benefit the restoration of this species. No future projects are planned on public land in the project area that would impact California buttercup. There is the potential for limited residential construction on a small number of vacant lots on private property in east Cattle Point. This construction could potentially impact a small amount of California buttercup habitat in the Cattle Point peninsula and add to cumulative effects. When combined with other past, present, and future activities the effects of alternative B would result in a minor cumulative impact on California buttercup locally and region-wide.

Conclusion

Overall, construction activities associated with alternative B are likely to result in minor adverse short-term effect on California buttercup. Over the long term, planting of California buttercup during restoration of the abandoned roadway may provide the opportunity to increase the population in the project area, provided that establishment is successful. As a result, the project could have a minor beneficial long-term effect on this species in the project area and in the Cattle Point peninsula.

Mitigation Measures:

STES-1: Road Design. Same as CR-3, TGS-1 and V-1. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings. Cut slopes would be designed to insure slope stability and promote revegetation. Final road alignment and design would be adjusted to avoid or minimize impacts to rare native prairie sites and California buttercup.

STES-2: Revegetation. Same as WQ-2, TGS-4, VQ-3, V-2, and W-1. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment.

Revegetation would begin as soon as possible after completion of construction, during the optimum time of year to ensure greatest plant survival. Topsoil removed during construction would be conserved and reapplied to revegetation sites to insure optimum plant establishment. If sufficient conserved topsoil is not available, native topsoil may be imported soil from elsewhere on the island. The revegetation plan would include stipulations for use of conserved and imported topsoil and control of weeds.

In addition, the revegetation plan would outline methods and standards for revegetation of the California buttercup in the abandoned roadway restoration and in roadway cuts and fills.

STES-3: BMPs for Weed Control. Same as V-4. Construction equipment would be steam-cleaned prior to entering the project area for the first time. All roadsides and disturbed areas would be restored using native conserved topsoil and would be revegetated. Any imported topsoil needed would be certified as weed free. The revegetation plan would include a detailed weed control plan. See appendix A.

4.5.7 Trail System

The alternative B realignment moves the road closer to the existing trail on the ridge of Mt. Finlayson than the existing road location. Along the western portion of the project area, the new road alignment would be located about 400 to 600 feet to the south of the Mt. Finlayson Trail. Along the eastern portion of the project area, the new road alignment would be located 200 to 400 feet south of the trail. At the east end of the project, approximately 200 to 300 feet of trail would be directly impacted by the cut and fill slopes and would need to be relocated. This section of trail would be relocated directly adjacent to the new road fill on the east side of the roadway. To the extent possible, final road design would be adjusted to minimize impacts to the trail. The Mt. Finlayson Trail is the only trail directly impacted by the alternative B realignment (figure 4.4).

Construction noise and views of construction activity would be noticeable to Mt. Finlayson Trail users along the eastern 5,000 feet of the trail route. The east end of the trail on park and DNR properties could be closed occasionally during the 1 to 2-year construction period. Closures would not affect the loop trail from the Mt. Finlayson Trail north to the Lagoon Trails. However, hikers would not be able to travel the entire length of the Mt. Finlayson Trail to link back with Cattle Point Road on the east side of the project area. Construction would not affect the other NPS trails in American Camp. Access to the DNR and BLM trails located to the east of the project area may be impacted due to traffic delays.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.15.

Alternative B would move the road alignment closer to the Mt. Finlayson Trail, increasing vehicle noise perceptible to trail users and reducing the sense of solitude. As traffic along the road increases in the future with normal increases in park visitation, this impact would become more noticeable to trail users. The realignment would also directly impact 200 to 300 feet at the east end of the Mt. Finlayson Trail. This area represents about 0.6 percent of the 9 miles of trail within the Cattle Point peninsula. The trail would be relocated to the toe of the fill adjacent to the new roadway and would not be completely lost to the trail system. No future projects are planned in the project areas that would adversely impact the trail system. When added to other past, present, and future actions the overall trail system would not change in a measurable way.

Conclusion

Because of these factors, construction of alternative B would have a moderate adverse short-term effect on the Mt. Finlayson Trail. However, the effect of construction on the trail system in the Cattle Point peninsula as a whole would be minor. Over the long term, the alternative B realignment would have a minor adverse effect on the Mt. Finlayson Trail; however, it would have a negligible adverse effect on the trail system on the Cattle Point peninsula as a whole.

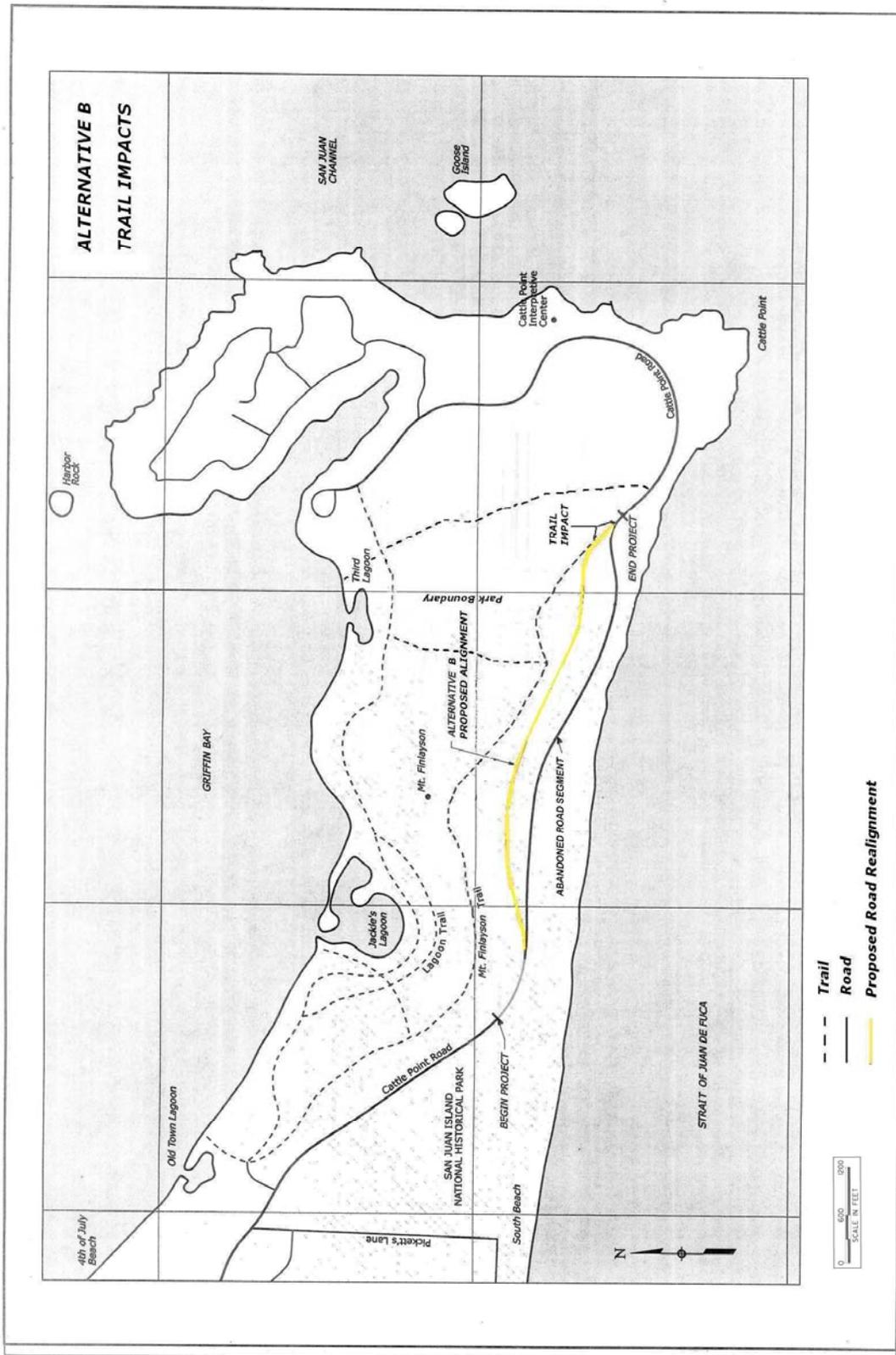


Figure 4.4 – Alternative B trail impacts

Mitigation Measures:

T-1: Road Design. Same as CR-3, TGS-1, V-1, and STES-3. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings. Cut slopes would be designed to insure slope stability and promote revegetation. Final road alignment and design would be adjusted to avoid or minimize impacts to rare native prairie sites and California buttercup.

In addition, final road design would be adjusted to minimize impacts to the Mt. Finlayson Trail to the extent possible. Where impacts are unavoidable, the trail would be relocated adjacent to the new road alignment.

4.5.8 Transportation and Road System

Construction activities associated with alternative B are expected to last 1 to 2 years. During construction, the existing Cattle Point Road alignment would be left open to maintain access to the east end of the Cattle Point peninsula. Most construction operations for road realignment would take place outside of the existing Cattle Point Road alignment; however, traffic delays would still be expected on Cattle Point Road adjacent to the construction site. Delays would likely be limited to 30 minutes or less except during construction of the connection between the realigned road section with the existing roadway. Construction of these short road segments may require full road closure for up to 4 hours at a time intermittently for approximately 1 to 2 weeks during construction of both ends of the connection. Road closure and delay schedules would be publicized ahead of time by public announcements through the NPS and local media.

Offsite transport of excess soil and rock from the construction site is expected to be minimal; however, transportation of equipment and construction materials would result in construction traffic and increased congestion on surrounding local roads. There would be some heavy loads related to construction traffic; however, all construction traffic would follow the legal load limits. Therefore no deterioration of the surrounding road system is anticipated above normal wear levels.

Over the long term, alternative B would not change the capacity, function, or service of the Cattle Point Road. The alternative would preserve the existing access to the Cattle Point area and would not result in a change (either increase or reduction) in traffic in the area beyond that expected with normal growth. The abandoned roadway segment would be obliterated and restored to natural conditions following construction of the new alignment. The realigned segment would be approximately equal in the length to the restored abandoned segment; therefore, this alternative would not add to the amount of road in the project area or on the island. Initially, maintenance costs for the new road alignment would be lower than for the existing road; however, over time costs would average approximately the same as for the existing road at about \$10,000 annually.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.16.

Alternative B would not change the capacity, function, or service of the Cattle Point Road. The alternative would preserve the existing access to the east Cattle Point area and would not result in a change (either increase or reduction) in traffic in the area beyond that expected with normal growth. There is the potential for limited residential construction on the small number of vacant lots on private property in east Cattle Point. This construction would increase the residential population of the area by a small amount, which in turn would increase use on area roads. No future projects are planned on public land that would affect the transportation and road system. The impacts to the transportation and road system in the project area associated with alternative B would not contribute to the impacts of other current and reasonably foreseeable projects locally or county-wide.

Conclusion

Because of these factors, the construction activities could have a moderate adverse short-term effect on transportation and access in the project area. Over the long term, alternative B would have no effect on the transportation and road system in the project area or on San Juan Island.

Mitigation Measures:

TR-1: Traffic Management. Same as VU-1. A traffic control plan would be developed specifying road closure times and a public information program. Delays would be limited to 30 minutes or less. Construction of the short connectors between the existing roadway and the new alignment may require full road closure for up to 4 hours intermittently during a period of approximately 1 to 2 weeks.

TR-2: Road Damage. Construction traffic would follow legal load limits to minimize damage to area roads from heavy equipment.

4.5.9 Special Vehicles, Bicycles, and Pedestrians

Construction traffic along local routes leading to the construction site would create a safety concern for special vehicles, bicycles, and pedestrians using the road shoulders. Operation of heavy equipment in the immediate project area would cause a safety issue for use of these modes of transportation through the construction area. Due to safety considerations, these uses could be restricted through the construction area during part or all of the construction period. The FHWA would include requirements in the construction contract to warn equipment operators to use extra caution when operating on area roadways due to high use by special vehicles, bicycles, and pedestrians.

Design of the realigned road segment would include improved shoulders for bicycle and pedestrian traffic. Preliminary design calls for 4-foot paved shoulders along the length of the realignment. While this would improve road function and safety for special vehicles, bicycles, and pedestrians in the realigned segment, the existing roadway leading to the new realignment would continue to have narrow shoulders. The section of Cattle Point Road between the west park boundary and Pickett's Lane has 1.5-foot gravel/native material shoulders and from Pickett's Lane to the east park boundary, the road has 1-foot gravel/native material shoulders.

Since the new road alignment would be located higher on the slope of Mt. Finlayson, road grades along portions of the roadway would be steep. At the east end of the new alignment, grades would likely approach 10.5 percent in order to descend the ridge and link back with the existing roadway. These relatively steep grades would slow bicycles and special-use vehicles

through the area. However, the wide road shoulders would provide an area for these vehicles to move off the roadway and allow faster vehicle traffic to pass.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.14.

Alternative B would not change the capacity, function, or service of the road that would lead to a change in special vehicle, bicycle, or pedestrian use. The alternative would preserve the existing access to the east end of the Cattle Point peninsula. There is the potential for limited residential construction on the small number of vacant lots on private property in east Cattle Point. This construction would increase the residential population of the area by a small amount, which in turn could result in increased use by special vehicles, bicycles, and pedestrians on area roads. Visitation to the park is expected to increase into the future along with increases in use by special vehicles, bicycles, and pedestrians. No future projects are planned on public land that would affect these uses. When combined with other past, present, and future activities the effects of alternative B would have no measurable cumulative effect locally or region-wide.

Conclusion

Because of these factors, construction activities would have a moderate adverse short-term effect on special vehicle, bicycle, and pedestrian use in the project area and Cattle Point peninsula. Over the long term, the wider road shoulders but steeper road grade along the new road alignment would have a minor beneficial effect on special vehicles, bicycles, and pedestrians in the project area. However, over the Cattle Point peninsula as a whole, beneficial effects would be negligible.

Mitigation Measures:

SVBP-1: Construction Traffic Safety. Construction equipment and vehicle operators would be required to use extra caution when approaching and passing special vehicles, bicycles, and pedestrians.

4.5.10 Unavoidable Adverse Impacts

Alternative B would involve a number of unavoidable short-term adverse impacts. Construction activities would temporarily impact the visual quality of the area with the presence of construction equipment and soil disturbing activities. Construction would impact visitor uses such as hiking at the east end of the Mt. Finlayson trail; special vehicle, bicycle, and pedestrian safety in the project vicinity; and cause disturbances for residents and visitors to the east end of the Cattle Point peninsula from construction noise and sporadic traffic disruptions. Wildlife use patterns and habitat, as well as vegetation and rare prairie plants, would also be adversely impacted by construction activities. All construction-related impacts would be temporary and would end following completion of project construction. Disturbed sites would be revegetated using native species.

Over the long term, this alternative would adversely impact the topography of the area by realigning the roadway onto the previously undeveloped natural glacial bench, high on the slopes of Mt. Finlayson. The roadway and roadside cuts and fills would permanently impact the integrity of the natural glacial bench. The Mt. Finlayson trail would also be adversely impacted by the alternative B alignment. The new road would be 200 to 400 feet closer to the trail along the Mt. Finlayson ridge. The eastern 200 to 300 feet of trail would be directly impacted by road

cuts and would need to be relocated. A net loss of about 1 acre of vegetation would be permanently replaced by impermeable road pavement in the project area.

4.6 IMPACTS OF ALTERNATIVE C - LONG TUNNEL ON MINOR REALIGNMENT

Alternative C involves a short realignment of the existing road to the north through a tunnel approximately 320 feet upslope from the eroding bluff. The project would begin about 1 mile east of the Pickett's Lane intersection. At the beginning of the project, the road would be widened, and the grade would be raised along the current alignment for about 320 linear feet in order to transition with the new road alignment. The new alignment would leave the existing road and travel north, entering the tunnel about 675 feet from the beginning of the realignment. The tunnel would be approximately 1,600 feet in length. From its highest point, the tunnel would be approximately 320 feet to the north of the bluff erosion site. The road would exit the tunnel and curve down the ridge, rejoining the existing road alignment near where the NRCA trail meets the existing Cattle Point Road. The cost for construction of this alternative would be approximately \$55 to 65 million. Construction would take 1.5 to 3 years.

4.6.1 Topography, Geology, and Soils

Alternative C would reroute the road onto the slope below the eastern ridge of Mt. Finlayson; however, most of the new road alignment would be the tunnel. The cuts at the tunnel portals would be large (up to 90 feet in height) and would require retaining walls in order to construct the road into the hillside. Road design features and final location would be planned to follow natural topographic contours as much as possible in order to minimize the number and height of road cuts and fills.

Because of gravelly soils, the tunnel would likely be constructed by using conventional earth moving equipment, and soil stabilization methods would be necessary. If rock or large boulders were encountered, blasting could be necessary; however, preliminary geological investigations show this would be unlikely. Since soils and geology would be a key component of the tunnel, portal, and road cuts, an extensive geotechnical investigation would be undertaken to develop final designs.

Tunnel excavation would generate approximately 4,000 to 5,000 truckloads of excess soil and rock material. A site would be needed for disposal of the excess material. A source of aggregate material would also be required for the project. If an existing commercial pit would be used for excess material disposal and aggregate source, the impacts to soils and geology in the pit area would be addressed in the existing pit permits and approvals. If a new site was needed for these activities, there could be impacts to topography and soils at the new site. No new material disposal sites would be allowed in the park and NRCA. There are no aggregate sources in the park or NRCA. If a new disposal site or aggregate source was required for this alternative, the effects would be analyzed by the FHWA prior to approval of the site for use. For this project, the FHWA requires that new non-commercial disposal and aggregate sources would have no more than a "no adverse effect" on cultural resources, a "no effect" determination on threatened and endangered species, and no encroachment into waters of the U.S. or wetlands.

Construction of alternative C would temporarily disturb approximately 10 acres. The disturbance would be from the new road alignment, new road cuts, fills, walls, equipment staging and stockpiles, and removal of the abandoned road alignment. Of the 10 acres of

temporary soil disturbance, a total of about 9 acres would be restored and revegetated in road cut and fill slopes, staging areas, and on the abandoned road alignment.

About 1 acre of new ground surface area (outside of the tunnel) would be covered by impermeable road pavement under this alternative. However, approximately 2 acres of road pavement would be removed from the abandoned road segment, the abandoned road cut would be contoured to match the surrounding landscape, and the area would be revegetated using native vegetation. Therefore, the amount of impermeable pavement surface in the project area would be reduced by approximately 1 acre.

The alternative C alignment and tunnel would be routed through the natural bench along the ridge of Mt. Finlayson. The cut at the east tunnel portal would disturb the natural topography of the ridgeline. The road cut would be approximately 90 feet in height in this area. However, most of the road alignment on the ridgeline would be below ground in the tunnel. Only about 800 to 1,000 feet of roadway would be above ground in the natural bench area. As part of the project, the road cuts and fills on the east end would be designed to restore the existing quarry area to more closely follow natural contours.

Native soils in the project area consist primarily of highly-erosive gravelly sand. Because of this, road cuts would need to be gently sloped to ensure slope stability and promote revegetation. Further geotechnical investigation would be necessary to finalize slope designs prior to construction.

A NPDES permit would be required for this alternative. As part of the permit, a SWPPP would be prepared that outlines measures to be used at the construction site to reduce the amount of soil erosion and sediment leaving the site due to storm water runoff. As a permanent erosion and sediment control measure, all disturbed sites would be revegetated with native species.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.1.

Alternative C would realign the road onto the natural glacial benches below Mt. Finlayson, which would add a new impact to an area that currently contains no structures. Most of the realignment in the bench area would be below ground in the tunnel. New road cuts and fills and tunnel portals would add to cumulative impacts on topography, geology, and soils. This alternative would reduce the amount of (above ground) impermeable road pavement in the project area by about 1 acre, which would have a beneficial cumulative impact on soils. Because of federal and state land management protections, most of the Cattle Point peninsula is relatively undeveloped and future development is limited. Federal and state projects in the Cattle Point peninsula are planned to improve existing visitor and parking facilities. No new visitor facilities are planned on public land that would impact topography, geology and soils. There is the potential for limited residential construction on the small number of vacant lots on private property in east Cattle Point. This construction would have a minimal impact on soil in east Cattle Point and reduce the amount of impermeable surface in the project vicinity by a small amount. Current road density in the Cattle Point peninsula is low. No new roads are planned in the future. Alternative C would not increase road density since the existing road alignment would be obliterated and restored to natural conditions. When added to other past, present, and future activities overall impacts to topography, geology, and soils associated with alternative C would be minimal locally and region-wide.

Conclusion

With mitigation measures in place, construction of alternative C would have a minor adverse short-term effect on topography, geology, and soils in the project area. Over the long term, the realignment and tunnel through the natural bench below Mt. Finlayson along with the restoration of the abandoned road section would have a minor beneficial effect on soils and a minor adverse effect on the topography and geology of the project area and the Cattle Point peninsula.

Mitigation Measures:

TGS-1: Road Design. Same as CR-3, V-1, and STES-3. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings. Cut slopes would be designed to insure slope stability and promote revegetation. Final road alignment and design would be adjusted to avoid or minimize impacts to rare native prairie sites and California buttercup. Final road design would also be adjusted to minimize impacts to the Mt. Finlayson Trail to the extent possible. Where impacts are unavoidable, the trail would be relocated adjacent to the new road alignment.

TGS-2: Geology Wayside Exhibit. A wayside exhibit would be developed to interpret the area's geology.

TGS-3: SWPPP. Same as WQ-1. Prior to construction, the FHWA would develop a Storm Water Pollution Prevention Plan (SWPPP) for implementation during construction. The SWPPP would include measures (BMPs) for temporary erosion and sediment control devices during construction for control of concentrated storm water runoff. The SWPPP would also include BMPs for housekeeping measures to address the safe storage, handling, and spill prevention of hazardous construction materials.

TGS-4: Revegetation. Same as WQ-2. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment.

TGS-5: New Waste Site or Aggregate Source. No disposal sites would be allowed in the park or NRCA. If a non-commercial disposal site or aggregate source is required, the proposal would be analyzed for environmental impacts before approval for use by FHWA. For this project, new non-commercial disposal and aggregate sources would have no more than a "no adverse effect" on cultural resources, a "no effect" determination on threatened and endangered species, no encroachment into waters of the U.S. or wetlands, and no adverse effect on remnant prairie habitats of San Juan Island.

4.6.2 Visual Quality

Alternative C would realign a short segment of the Cattle Point Road higher on the slope at the east end of Mt. Finlayson. Most of the new alignment would be within a 1,600-foot-long tunnel. The cuts at the tunnel portals would be large (up to 90 feet in height) and would require retaining walls in order to construct the road into the hillside.

Depending on topography and locale, differing views of construction activities and machinery would be visible from adjacent areas of the Cattle Point residential area, from the existing road, from some beach locations, from surrounding offshore areas, and from adjacent areas of the park and the NRCA during the 1.5 to 3-year construction period.

Following construction, the road alignment, road cuts and fills, and walls at the tunnel portals would be visible; however, most of the new alignment would be enclosed in the tunnel, especially close to the ridgeline. The east portal would be visible from the residential area, from offshore areas to the east, and from Lopez Island. From the beach and offshore areas to the south, the tunnel would reduce the visual impacts of the alternative, though walls near the portals would be visible. The road alignment located within the tunnel would appear to be part of the natural hillside landscape.

The final road and tunnel location would be planned to follow natural contours and minimize the number and height of road cuts, fills and walls to the extent possible. Wall profiles would be designed as low as possible and use materials with a natural appearance to minimize visual impacts. Following construction, all disturbed areas, including road cut and fill slopes and the abandoned road segment, would be revegetated using native species. The growth of planted native vegetation would serve to blend the road and tunnel portals into the natural surroundings in approximately 2 to 5 years following final construction. The view of the abandoned road segment would be restored to blend with the natural surroundings. Restoration would remove the asphalt, contour the road cut to match the surrounding landscape, and revegetate the area using native vegetation. Vegetation on the restored road segment would reach maturity in 2 to 5 years. Over the long term, there would be some evidence that a road was once present at the site, but the visual intrusion to the natural landscape would be small when viewed in the distance from viewpoints throughout Cattle Point and from offshore.

For users of the new road alignment, the views seen from the roadway outside of the tunnel would be similar to the existing conditions. The tunnel section would create a confined space, with no opportunity to view scenic vistas in this section of road. Scenic pullouts would be included at either end of the tunnel as space permits to mitigate for the loss of viewpoints within the tunnel.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.5.

Alternative C would realign the road onto the natural glacial benches below Mt. Finlayson, which currently contains no structures. However, most of the alignment would be underground in a tunnel. This location would be more visible than the existing road when viewed from offshore. The visible location and high cut, fill, and tunnel portal slopes would add moderately to the cumulative visual impacts of the undeveloped hillside. The abandoned road alignment would be obliterated and restored to natural conditions, which would negate its visual impact. The new road alignment would not increase the road density in the area. No future projects are planned on public land that would impact visual resources. There is the potential for limited residential construction on the small number of vacant lots on private property in east Cattle Point. This construction would have a minimal visual impact east of the project area. When added to other past, present, and future activities overall visual impacts associated with alternative C would be minimal locally and region-wide.

Conclusion

Because of these factors, ground disturbing activities and the presence of construction equipment would have a moderate adverse short-term effect on the visual quality of the project area. Over the long term, alternative C would have a minor beneficial effect on the visual quality of the project area when viewed from the Cattle Point peninsula, offshore, and from neighboring islands.

Mitigation Measures:

VQ-1: Road Design. Same as TGS-1 and STES-3. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings. Cut slopes would be designed to insure slope stability and promote revegetation. Final road alignment and design would be adjusted to avoid or minimize impacts to rare native prairie sites and California buttercup. Final road design would also be adjusted to minimize impacts to the Mt. Finlayson Trail to the extent possible. Where impacts are unavoidable, the trail would be relocated adjacent to the new road alignment.

In addition, to the extent possible, walls would be designed with a low-profile and use materials with a natural appearance. Final wall design would be coordinated with an NPS landscape architect.

VQ-2: Scenic Turnouts. Where possible, scenic turnouts would be constructed along the road alignment for the road user to pull off the road to view the natural features of the area.

In addition, as space permits, a scenic turnout would be constructed before entering the west tunnel portal.

VQ-3: Revegetation. Same as WQ-2 and TGS-4. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. See appendix A.

4.6.3 Vegetation

Alternative C would shift the road alignment upslope, away from the eroding coastal bluff and closer to the forested ridgeline, which would cut through a section of previously undisturbed prairie grassland vegetation. The fringe of the forest at the east end of the ridge line would also be impacted by the large road cut at the east tunnel portal. It is expected that some small trees may need to be removed for construction of cut slopes. Removal of large, mature trees would be avoided to the extent possible.

This alternative would construct about 2,830 feet of new road alignment. Of that area, 1,600 feet would be within a tunnel. Vegetation over the tunnel would not be impacted by road construction. Although there would be a substantial construction effort for tunnel construction, most of the work would take place underground. Construction of the 1,230 feet of road realignment outside of the tunnel would disturb the surrounding grassland at widths from 70 to 150 feet at cuts and fills and tunnel portals. Construction of the new alignment, equipment staging, and reclamation of the abandoned roadway segment would temporarily impact about 10

acres of grassland vegetation. Of the 10 acres of temporary vegetation disturbance, a total of about 9 acres would be restored and revegetated. Revegetated areas would include road cut and fill slopes, staging areas, and the abandoned road segment. The remaining 1 acre (outside of the tunnel) of disturbance would be covered by new pavement, which would involve permanent impacts to vegetation along the existing and new alignment. Restoration of the abandoned road segment would involve removal of about 2 acres of existing road pavement and road base material, contouring the road footprint to blend with the surrounding landscape, and planting the area with native vegetation. As a result, the net permanent gain in vegetation in the project area would total about 1 acre.

The preliminary alignment shows that one area (polygon) of native prairie is located in close proximity to the road alignment and may be impacted by road cuts and fills adjacent to the road realignment (figure 4.5). Native prairie polygons located above the tunnel alignment should not be impacted because tunnel construction activities would occur underground. To the extent possible, final road and tunnel portal design would be adjusted to avoid or minimize impacts to these rare native prairie sites. Prior to construction, a detailed restoration and revegetation plan would be developed that would outline methods and standards for revegetation of areas temporarily disturbed during the construction as well as restoration of the abandoned road segment. Revegetation would begin as soon as possible after completion of construction during the optimum time of year to ensure greatest plant survival. Topsoil removed during construction would be conserved and reapplied to revegetation sites to insure optimum plant establishment. If sufficient conserved topsoil is not available, native topsoil may be imported from elsewhere on the island. Erosion control measures would be applied in order to protect soil and seed prior to establishment of vegetation, following guidelines in the project SWPPP. All revegetation would use native species. Restoration of the abandoned road segment would provide the opportunity to restore native species and benefit the prairie grassland. All revegetated sites would be monitored for success and failed sites would be replanted as needed.

Road construction activities, soil disturbance, and imported topsoil provide conditions favorable for spread of weeds from adjacent lands as well as from outside of the project area. BMPs for control of weeds would be implemented during construction. Construction equipment would be cleaned of all mud, dirt, and plant material prior to entering the project area for the first time to minimize the spread of weeds. Aggregate and fill sources as well as imported topsoil would be inspected and certified as weed free before being approved for use on the project site. If weed-free aggregate and fill sources are not available, the material would be heat-treated to kill weed and weed seeds prior to transport to the project site. Even with BMPs in place, some weeds may be spread to the project from other areas within or immediately adjacent to the project area. The revegetation plan would include a plan for treatment of weeds on restored sites. Weed treatment would follow NPS and DNR guidelines.



Figure 4.5 – Alternative C alignment relative to native prairie polygon locations

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.6.

Alternative C would realign the road into the prairie vegetation below Mt. Finlayson, which would add a new impact to an area that currently contains no structures. The impacted area includes one polygon of remnant native prairie vegetation that is rare on San Juan Island. Restoration of the abandoned road segment and revegetation of roadside cut and fill slopes and tunnel portals would provide the opportunity to benefit the restoration of native prairie vegetation in the Cattle Point peninsula. No future projects are planned on public land in the project area that would impact vegetation. Federal and state projects in the Cattle Point peninsula would improve existing visitor and parking facilities. There is the potential for limited residential construction on a small number of vacant lots on private property in east Cattle Point. This construction would impact a small amount of prairie and forest vegetation in the Cattle Point peninsula and add to cumulative effects. When added to other past, present, and future activities overall vegetation impacts associated with alternative C would be minimal locally and region-wide.

Conclusion

Because of these factors, construction and other ground disturbing activities would have a minor adverse short-term effect on vegetation in the project area. With mitigation measures in place, over the long term, alternative C would have a minor beneficial effect on vegetation in the project area.

Mitigation Measures:

V-1: Road Design. Same as TGS-1. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings. Cut slopes would be designed to insure slope stability and promote revegetation.

In addition, final road alignment and design would be adjusted to avoid or minimize impacts to rare native prairie sites.

V-2: Revegetation. Same as WQ-2, TGS-4 and VQ-3. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. See appendix A.

In addition, revegetation would begin as soon as possible after completion of construction, during the optimum time of year to ensure greatest plant survival. Topsoil removed during construction would be conserved and reapplied to revegetation sites to insure optimum plant establishment. If sufficient conserved topsoil is not available, native topsoil may be imported from elsewhere on the island. The revegetation plan would include stipulations for use of conserved and imported topsoil and control of weeds.

V-3: Weed Inspection of Aggregate and Fill Sources. Aggregate and fill material sources would be inspected and certified as weed-free by a qualified person prior to

approval for use. If weed-free sources are not available, material would be heat-treated to kill weeds and weed seeds.

V-4: BMPs for Weed Control. Construction equipment would be steam-cleaned prior to entering the project area for the first time. All roadsides and disturbed areas would be restored using native conserved topsoil and would be revegetated. Any imported topsoil needed would be certified as weed free. The revegetation plan would include a detailed weed control plan. See appendix A.

V-5: SWPPP. Same as WQ-1 and TGS-3. Prior to construction, the FHWA would develop a Storm Water Pollution Prevention Plan (SWPPP) for implementation during construction. The SWPPP would include measures (BMPs) for temporary erosion and sediment control devices during construction for control of concentrated storm water runoff. The SWPPP would also include BMPs for housekeeping measures to address the safe storage, handling, and spill prevention of hazardous construction materials.

4.6.4 Wildlife

Construction activities along the new road and tunnel alignment and continued traffic use on the existing road would result in an increase in human presence and noise intermittently during the 1.5 to 3-year construction period.

This alternative would move the road alignment upslope and closer to the important fringe habitat along the ridgeline where wildlife species transition between forest and grassland. The fringe of the forest at the east end of the ridge line would also be affected by the large road cut at the east tunnel portal. It is expected that some trees may need to be removed for construction of cut slopes. Removal of large mature trees would be avoided to the extent possible. However, most of the road alignment in this area would be enclosed in the tunnel. Over the long term, the habitat above the tunnel would be available for use by wildlife. Wildlife could also use the area above the tunnel as a means to safely cross over the roadway. Noise from the tunnel ventilation system could cause wildlife to avoid the area in close proximity to the machinery.

Project activities would directly impact wildlife habitat with ground disturbing activities on approximately 10 acres in the project area. Wildlife and bird species using this area would be displaced. Some smaller, less mobile ground-dwelling and nesting species may incur direct mortality. Construction activity and noise would deter animals from using the habitat in the project area for foraging and breeding. Noise and construction activity could also disrupt wildlife use adjacent to the construction site, possibly causing animals to move to other habitats. There is similar habitat surrounding the project area, including moderately large areas of grassland to the east and west as well as forested areas to the north. Blasting could be necessary if rock or large boulders are encountered during tunnel excavation. However, based on limited geologic research, this is not likely to occur.

Of the 10 acres of habitat disturbance, about 9 acres would be temporarily impacted during construction and about 1 acre would be permanently impacted by new surface road pavement (outside of the tunnel). Of the 9 acres of temporary habitat disturbance, about 2 acres would consist of roadside cuts, fills, and tunnel portals, about 5 acres would consist of equipment staging and stockpiling, and about 2 acres would consist of abandoned roadway restoration. These disturbed sites would be revegetated with native species following construction. Road cut and fill slopes would provide marginal wildlife habitat; however, the restored abandoned road segment would provide higher quality wildlife habitat in a relatively undisturbed setting.

Habitat above the tunnel would also be available for use by wildlife. This would result in a net increase in wildlife habitat in the project area of approximately 1 acre over the existing condition.

This alternative would not change the capacity, function, or service of the road and would not result in an increase in traffic or visitor use; therefore, long-term effects of the new road alignment on wildlife are not expected to be substantially different than present. Fragmentation of continuous habitat patches into smaller sizes, wildlife road avoidance due to human activity and noise, and road mortality are expected to be less than existing road impacts due to the availability of wildlife habitat above the tunnel and use of the area above the tunnel for wildlife to safely cross over the roadway.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.7.

This alternative would move the road alignment closer to the fringe habitat near the ridge of Mt. Finlayson, which is currently undeveloped. Most of the realignment would be enclosed in a tunnel. The area above the tunnel would retain grassland habitat and allow wildlife to pass safely over the roadway. Restoration of the abandoned road segment would replace wildlife habitat lost by the new road alignment. The new road alignment would not increase the road density in the area. No future projects are planned on public land that would impact wildlife. The new road alignment would not increase the road density in the area. There is the potential for limited residential construction on the small number of vacant lots on private property in east Cattle Point. Residential construction would have a minimal impact on wildlife on the Cattle Point peninsula. When combined with other past, present, and future actions the effects of alternative C would result in a minor beneficial cumulative impact on wildlife locally and county-wide.

Conclusion

Because of these factors, construction activities associated with this alternative would have a moderate adverse short-term effect on wildlife use patterns and habitat in the project area. Over the long term, this alternative would have a minor beneficial effect on wildlife in the project area.

Mitigation Measures:

W-1: Revegetation. Same as WQ-2, TGS-4, VQ-3, and V-2. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment.

In addition, revegetation would begin as soon as possible after completion of construction, during the optimum time of year to ensure greatest plant survival. Topsoil removed during construction would be conserved and reapplied to revegetation sites to insure optimum plant establishment. If sufficient conserved topsoil is not available, native topsoil may be imported soil from elsewhere on the island. The revegetation plan would include stipulations for use of conserved and imported topsoil and control of weeds.

4.6.5 Federally-Listed Threatened, Endangered, and Protected Species

There are no federally-listed threatened or endangered species known to be present or having habitat in the project area or vicinity.

The federally-protected bald eagle is known to be present and have habitat within the project vicinity (table 4.2). WDFW data show that the project area is located within two historic bald eagle territories. Six historic nest sites containing nine nests are located within 0.5 miles of the project area. Bald eagle territories and nest sites are also located within 1 mile of the project area on Lopez Island and near the American Camp historic areas. Bald eagle nesting activities occur from January 1 to August 15 (USFWS 2004). The project area is also located within the 800-foot shoreline foraging buffer identified by the WDFW priority habitat and species data (wdfw.wa.gov/hab/phslist.htm, accessed March 26, 2007). Eagle wintering takes place in the county from October 31 to March 31. There are no known wintering roosts in the project area.

Construction noise impacts would affect an area within a 0.5-mile radius of the construction site depending on topographic barriers. Noise producing activities would take place during project construction, which is expected to last 1.5 to 3 years. Construction activities would take place along the new road alignment, abandoned road segment, haul routes, and staging areas. Regular traffic from residents and visitors would continue along the existing roadway during the construction period. These activities would result in an increase in human presence and noise intermittently during the 1.5 to 3-year construction period. Construction activities would include site preparation, earthmoving, general construction, and road surfacing. Site preparation would include activities such as land clearing and grubbing, including disposal of cleared material. Earthmoving would include cut and fill operations, trenching, soil compaction, grading, and transport of excess soil and rock material offsite, likely west of the project area and tunnel construction. It would involve hauling within the 800-foot buffer of the bald eagle nests in the American Camp historic area. Construction of alternative C would not likely produce loud noises such as blasting or pile-driving; however, if these uses become necessary, a separate assessment would be conducted by the FHWA, and would include an evaluation of the effects to the bald eagle.

The highest point on the alternative C road realignment would be located within the 800-foot buffer of one historic bald eagle nest near the peak of Mt. Finlayson. However, most of this portion of the alignment would be enclosed in the tunnel. The east tunnel portal would fall within the 800-foot nest buffer. All nest sites shown in the WDFW database in the Mt. Finlayson area were monitored by NPS in 2009. Of the seven nest locations, only one nest was found, and it was in disrepair and unoccupied (NPS 2009). The nest located closest to the proposed road realignments could not be found by the NPS in 2009.

The entire road realignment is located on the south slopes of Mt. Finlayson in the prairie grassland habitat. Bald eagle nesting and roosting habitat consists of large trees and elevated sites located in the forested habitat near the peak and on the north side of the Mt. Finlayson ridge. Road realignment is not expected to involve removal of large mature trees suitable for eagle habitat. Cutting of eagle habitat trees would be prohibited. The project area is located within the 800-foot shoreline foraging buffer on the Strait of Juan de Fuca.

Construction activities are expected to take place during part of the bald eagle nesting season and may also take place during part of the winter-foraging season. While construction activities may cause foraging eagles to avoid flying over the construction areas on the south slopes of Mt. Finlayson, foraging areas to the north and east would remain undisturbed. During breeding

season, bald eagles are sensitive to a variety of human activities, including noise from construction activities. Not all bald eagle pairs react to human activities in the same way. Some nest successfully within close proximity to human activity while others abandon nest sites in response to activities much farther away (USFWS 2007b). Prior to construction, the bald eagle nest within the 800-foot buffer of the project area would be investigated to determine if it was in active use. If the nest is being used by bald eagle, noise-producing construction activities within the 800-foot buffer would be restricted during the nesting period. If the nest is not in use, no construction restrictions would be necessary. The bald eagles in the American Camp historic area have successfully raised chicks in close proximity to human activities (NPS 2009). Although these individuals have habituated to the routine uses in the area, increased construction traffic may disturb them during nesting. The American Camp nests would be monitored during the nesting period and noise-producing construction activities would be avoided to the extent possible.

The new road alignment would permanently relocate road noise and activities closer to the historic bald eagle nesting sites located near the ridge of Mt. Finlayson; however, most of the road alignment in this area would be enclosed in the tunnel, which would greatly reduce traffic noise.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.8.

Alternative C would move the road alignment closer to the historic bald eagle nests located near the ridge of Mt. Finlayson; however, most of the alignment close to the historic bald eagle nests would be confined to a tunnel. Construction traffic would impact an active nest along the haul route. Future projects to improve the American Camp visitor center could have a small impact on the eagle nest in the vicinity. Visitation to the park and use of the visitor's center and trails in close proximity to eagle's nests is expected to increase into the foreseeable future. Bald eagles nesting in the area near the visitor's center have become acclimated to human presence and vehicle traffic seems to have little effect on bald eagle use patterns (USFWS, personal communication, 2009); however, it is unknown whether there is a limit to the amount of human presence that would be tolerated. When added to other past, present, and future activities overall impacts on bald eagles associated with alternative C would be minimal locally and region-wide.

Conclusion

Overall, with mitigation measures in place, it is expected that construction activities associated with alternative C would have a minor adverse short-term effect on bald eagle use patterns in the project area. With implementation of the described mitigation measures, the project would be in compliance with USFWS *National Bald Eagle Management Guidelines* (May 2007), and impacts would be below the level of "take". No permits would be required. Over the long term, alternative C would have no effect on bald eagles in the project area and the Cattle Point peninsula.

Mitigation Measures:

FTES-1: Construction Timing Restrictions. Noise-producing construction activities within the 800-foot buffer of active bald eagle nests would be restricted during the nesting period (January 1 to August 15).

FTES-2: Prohibit Removal of Bald Eagle Habitat. Removal of large mature eagle habitat trees would be prohibited.

FTES-3: Equipment Noise Control. Same as N-1. Construction equipment would be equipped with functioning mufflers to limit exhaust noise. Equipment would be switched off when not in use.

4.6.6 State-Listed Threatened and Endangered Species

The state-listed California buttercup is known to be present and have habitat within the area of potential impact for alternative C (table 4.3).

Occurrence of this species in the project area roughly coincides with the native prairie polygons (figure 4.5). The preliminary road alignment, road cuts and fills, and tunnel portals could potentially impact two small California buttercup polygons. Polygons along the tunnel alignment should not be affected because construction activities would take place underground. There are a total of 33 California buttercup polygons in the project area; therefore, the proposed realignment would impact about 6 percent of the population in the project area. To the extent possible, final road alignment and design would be adjusted to avoid or minimize impacts to this species. Priority would be given to avoiding large concentrations.

Restoration of the abandoned road segment as well as roadway cuts and fills would provide an opportunity for potential planting of California buttercup into new areas of the native prairie grassland. The revegetation plan would outline methods and standards for revegetation of the species in these areas. Road construction activities and soil disturbance provide the opportunity for spread of weeds from adjacent lands as well as from outside of the project area, which could impact California buttercup. BMPs for control of weeds would be implemented during construction.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.9.

The alternative C realignment would impact about 6 percent of the population of California buttercup in American Camp. Restoration of the abandoned road segment and revegetation of roadside cut and fill slopes would provide the opportunity to benefit the restoration of the species. No future projects are planned in the project area that would impact California buttercup. When added to other past, present, and future activities overall impacts to California buttercup associated with alternative C would be minimal locally and region-wide.

Conclusion

Because of these factors, construction activities associated with this alternative are likely to have a minor adverse short-term effect on the California buttercup in the project area. Over the long term, planting of California buttercup during restoration of the abandoned roadway may provide the opportunity to increase the population in the project area, provided that establishment is successful. As a result, the project could have a minor beneficial long-term effect on this species in the project area and in the Cattle Point peninsula.

Mitigation Measures:

STES-1: Road Design. Same as TGS-1 and V-1. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize

the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings. Cut slopes would be designed to insure slope stability and promote revegetation. Final road alignment and design would be adjusted to avoid or minimize impacts to rare native prairie sites and California buttercup.

STES-2: Revegetation. Same as WQ-2, TGS-4, VQ-3, V-2, and W-1. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. See appendix A.

Revegetation would begin as soon as possible after completion of construction, during the optimum time of year to ensure greatest plant survival. Topsoil removed during construction would be conserved and reapplied to revegetation sites to insure optimum plant establishment. If sufficient conserved topsoil is not available, native topsoil may be imported soil from elsewhere on the island. The revegetation plan would include stipulations for use of conserved and imported topsoil and control of weeds.

In addition, the revegetation plan would outline methods and standards for revegetation of the California buttercup in the abandoned roadway restoration and in roadway cuts and fills.

STES-3: BMPs for Weed Control. Same as V-4. Construction equipment would be steam-cleaned prior to entering the project area for the first time. All roadsides and disturbed areas would be restored using native conserved topsoil and would be revegetated. Any imported topsoil needed would be certified as weed free. The revegetation plan would include a detailed weed control plan. See appendix A.

4.6.7 Trail System

The alternative C realignment moves the road closer to the existing trail on the ridge of Mt. Finlayson. However, most of the new road alignment would be enclosed in the tunnel, which would reduce the visible traffic and noise noticeable to trail users. At the east tunnel portal, the new road alignment would be located 200 to 400 feet south of the trail. At the east end of the project, approximately 100 to 150 feet of trail would be directly impacted by the cut slopes of the new alignment and would need to be relocated. This section of trail would be relocated directly adjacent to the new road fill on the east side of the roadway. To the extent possible, final road design would be adjusted to minimize impacts to the trail. The Mt. Finlayson Trail is the only trail directly impacted by this alternative (figure 4.6).

Construction noise and machinery would be noticeable to Mt. Finlayson Trail users along the eastern 4,000 feet of the trail route. The east end of the trail would probably be closed occasionally during the 1.5 to 3- year construction period. Closures should not affect the loop trail from the Mt. Finlayson Trail north to the Lagoon trails. However, hikers could not travel the entire length of the Mt Finlayson Trail to link with Cattle Point Road on the east side of the project area. Construction would not affect the other NPS trails in American Camp.

Access to the DNR and BLM trails located to the east of the project area may be affected by traffic delays.

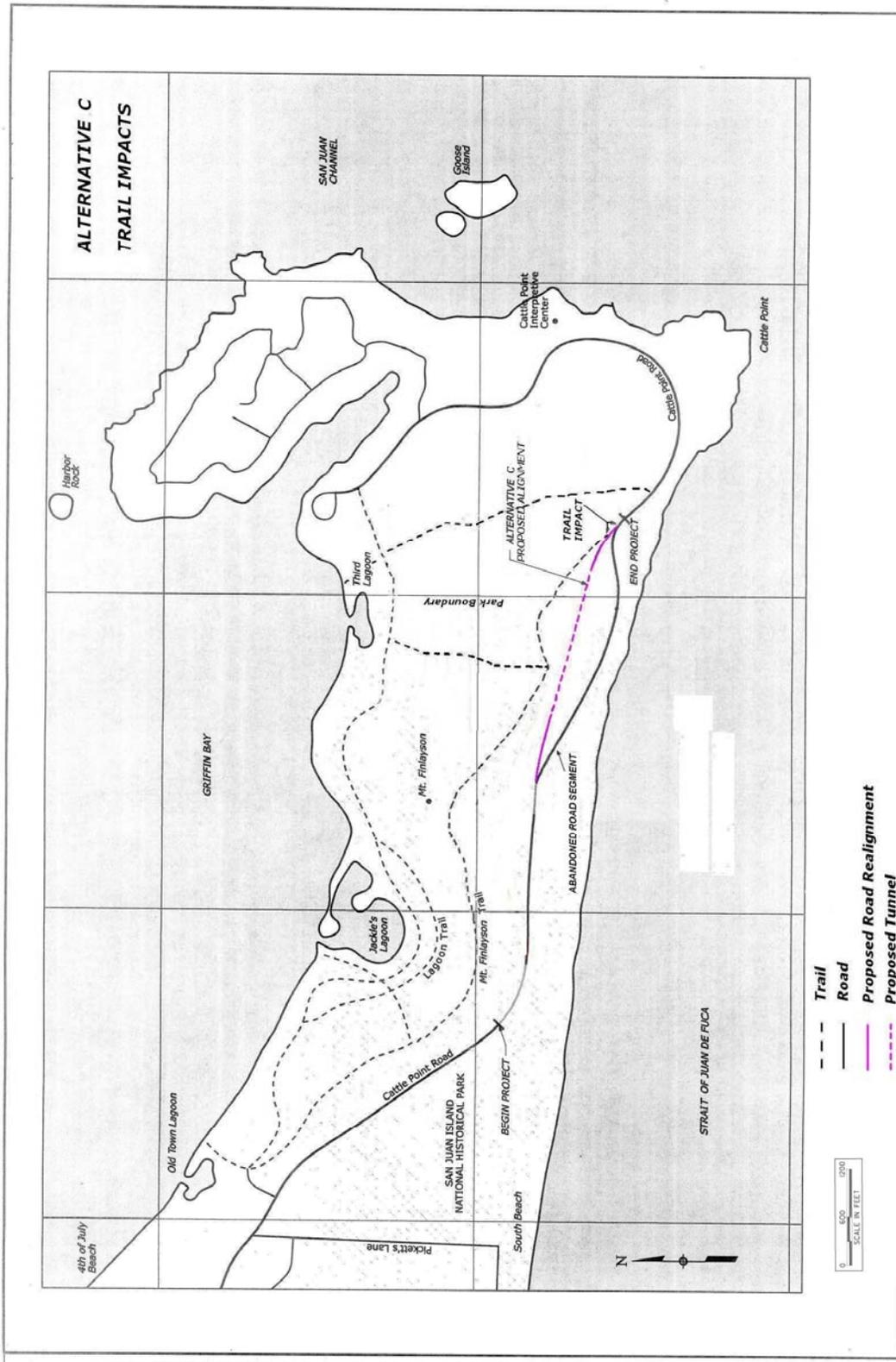


Figure 4.6- Alternative C trail impacts

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.15.

Alternative C would move the road alignment closer to the Mt. Finlayson Trail; however most of the road would be enclosed in the tunnel. The closer road proximity could increase the vehicle noise perceptible to trail users and reduce the sense of solitude. As traffic along the road increases in the future with normal increases in park visitation, this impact would become more noticeable to trail users. The realignment would also directly impact 100 to 150 feet at the east end of the Mt. Finlayson Trail. This area represents about 0.3 percent of the 9 miles of trail within the Cattle Point peninsula. The trail would be relocated to the toe of the fill adjacent to the new roadway and would not be completely lost to the trail system. No future projects are planned in the project areas that would adversely impact the trail system. When added to other past, present, and future actions the overall trail system would not change in a measurable way.

Conclusion

Because of these factors, construction of alternative C would have a moderate adverse short-term effect on the Mt. Finlayson Trail. However, the effect of construction on the trail system in the Cattle Point peninsula as a whole would be minor. Over the long term, this alternative would have a negligible adverse effect on the Mt. Finlayson Trail and the trail system on the Cattle Point peninsula as a whole.

Mitigation Measures:

T-1: Road Design. Same as TGS-1, V-1, STES-3, and VQ-1. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings. Cut slopes would be designed to insure slope stability and promote revegetation. Final road alignment and design would be adjusted to avoid or minimize impacts to rare native prairie sites and California buttercup. To the extent possible, walls would be designed with a low profile and use of materials with a natural appearance. Final wall design would be coordinated with an NPS landscape architect.

In addition, final road design would be adjusted to minimize impacts to the Mt. Finlayson Trail to the extent possible. Where impacts are unavoidable, the trail would be relocated adjacent to the new road alignment.

4.6.8 Transportation and Road System

Construction activities are expected to last 1.5 to 3 years. During construction, the existing Cattle Point Road alignment would be left open to maintain access to the east end of the Cattle Point peninsula. Most construction operations for road realignment would take place outside of the existing Cattle Point Road alignment; however, traffic delays would still be expected on Cattle Point Road adjacent to the construction site. Delays would likely be limited to 30 minutes or less except during construction of the connection between the realigned road section with the existing roadway. Construction of these short road sections may require full road closure for up to 4 hours at a time for approximately 1 to 2 weeks during construction of both

ends of the connection. Road closure and delay schedules would be publicized ahead of time with public announcements through the NPS and local media.

Tunnel excavation would generate approximately 4,000 to 5,000 truckloads of excess soil and rock material. Disposal of excess material, as well as transport of aggregate material required to build the project, would result in heavy construction traffic and increased congestion and possible delays on surrounding local roads. There would be heavy loads related to construction traffic; however, all construction traffic would follow the legal load limits. Therefore little deterioration of the surrounding road system is anticipated above normal wear levels.

Over the long term, this alternative would not change the capacity, function, or service of the Cattle Point Road. The existing access to the Cattle Point area would be preserved and there would be no change (either increase or reduction) in traffic in the area beyond that expected with normal growth. The abandoned road segment would be obliterated and restored to natural conditions following construction of the new alignment.

The realigned segment would be shorter than the existing alignment; however, the tunnel would greatly add to the cost and effort of maintenance of the new road. Since there are no tunnels currently located in San Juan County, the road department does not have the equipment or expertise needed to perform tunnel inspection and maintenance. Start-up costs would be associated with training personnel and obtaining proper equipment. Some project funds could be used to offset initial start-up costs for training and equipment necessary for tunnel maintenance. It is estimated that maintenance costs for the new road alignment and tunnel would average about \$65,000 annually.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.16.

Alternative C would not change the capacity, function, or service of the Cattle Point Road. The alternative would preserve the existing access to the east Cattle Point area and would not result in a change (either increase or reduction) in traffic in the area beyond that expected with normal growth. There is the potential for limited residential construction on the small number of vacant lots on private property in east Cattle Point. This construction would increase the residential population of the area by a small amount, which in turn would increase use on area roads. No future projects are planned on public land that would affect the transportation and road system.

The impacts to the transportation and road system associated with alternative C would not alter current trends and would not contribute to cumulative impacts locally and county-wide.

Conclusion

Because of these factors, construction activities would have a moderate adverse short-term effect on transportation and access in the project area and the Cattle Point peninsula. Over the long term, this alternative would have no effect on the transportation system in the project area or on San Juan Island; however, it would have a moderate adverse effect on county maintenance costs.

Mitigation Measures:

TR-1: Traffic Management. Same as VU-1. A traffic control plan would be developed specifying road closure times and a public information program. Delays would be limited to 30 minutes or less. Construction of the short connectors between the

existing roadway and the new alignment may require full road closure for up to 4 hours intermittently during approximately 1 to 2 weeks.

TR-2: Road Damage. Construction traffic would follow legal load limits to minimize damage to area roads from heavy equipment.

TR-3: County Maintenance Costs. Project funds may be provided to the county to offset initial start-up costs for training and equipment necessary for tunnel maintenance.

4.6.9 Special Vehicles, Bicycles, and Pedestrians

Construction traffic and hauling of large amounts of excavated tunnel material along local routes leading to the construction site would create a safety concern for small vehicles, bicycles, and pedestrians using the road shoulders. Operation of heavy equipment in the immediate project area would cause a safety issue for use of these modes of transportation through the construction area. Due to safety considerations, these uses could be restricted through the construction site during part or all of the construction period. The FHWA would include requirements in the construction contract warning construction equipment operators to use extra caution due to heavy use of area roads by special vehicles, bicycles, and pedestrians.

Design of the realigned road segment would include improved shoulders for bicycle and pedestrian traffic. Preliminary design calls for 4-foot paved shoulders along the length of the realignment. While this would improve road function and safety for special vehicles, bicycles, and pedestrians in the realigned segment, the existing roadway leading to the new realignment would continue to have narrow shoulders. The section of Cattle Point Road between the west park boundary and Pickett's Lane has 1.5-foot gravel/native material shoulders and from Pickett's Lane to the east park boundary, the road has 1-foot gravel/native material shoulders.

Preliminary tunnel design includes a 4-foot bike lane adjacent to both travel ways and a 2-foot-wide raised sidewalk for pedestrians. The bike lane would provide special vehicles and bicycles sufficient room to travel safely through the tunnel. The long enclosed tunnel would give the perception of an increased safety risk for special vehicles or bicycles using the tunnel. A 2001 California study concluded that bicycle collisions were no more frequent in tunnels than on the approaches to the tunnels (Statewide Safety Study of Bicycles and Pedestrians on Freeways, Expressways, Toll Bridges, and Tunnels MTI Report 01-01, 2001). Slow moving vehicles such as mopeds and scoot-cars that cannot use the confined shoulder area may pose a hazard. Signs with flashing beacons activated by the special vehicle operator, bicyclist, or pedestrian would be installed at tunnel portals warning motorists of "Bicyclist or Slow-moving Vehicle in Tunnel When Flashing."

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.14.

Alternative C would not change the capacity, function, or service of the road that would lead to a change in special vehicle, bicycle, or pedestrian use. The alternative would preserve the existing access to the east end of the Cattle Point peninsula. There is the potential for limited residential construction on the small number of vacant lots on private property in east Cattle Point. This construction would increase the residential population of the area by a small amount, which in turn could result in increased use by special vehicles, bicycles, and pedestrians on area roads. Visitation to the park is expected to increase into the future along with increases

in use by special vehicles, bicycles, and pedestrians. No future projects are planned on public land that would affect these uses. Impacts to special vehicle, bicycle, and pedestrian use associated with alternative B would not alter current trends and would not contribute to cumulative impacts locally and county-wide.

Conclusion

Because of these factors, construction activities would have a moderate adverse short-term effect on special vehicle, bicycle, and pedestrian use in the project area and Cattle Point peninsula. Over the long term, the new road alignment and tunnel would have a minor adverse effect on special vehicle, bicycle, and pedestrian use in the Cattle Point peninsula.

Mitigation Measures:

SVBP-1: Construction Traffic Safety. Construction equipment and vehicle operators would be required to use extra caution when approaching and passing special vehicles, bicycles, and pedestrians.

SVBP-2: Warning Signs. Signs with flashing beacons activated by the special vehicle operator, bicyclist, or pedestrian would be installed at tunnel portals warning motorists of “Bicyclist or Slow-moving Vehicle in Tunnel When Flashing”

4.6.10 Unavoidable Adverse Impacts

Alternative C would involve a number of unavoidable short-term adverse affects. Construction activities would temporarily impact the visual quality of the area with the presence of construction equipment and soil disturbing activities. Construction would impact visitor uses such as hiking at the east end of the Mt. Finlayson trail; special vehicle, bicycle, and pedestrian safety in the project vicinity; and cause disturbances for residents and visitors to the east end of the Cattle Point peninsula from construction noise and sporadic traffic disruptions. Wildlife use patterns and habitat, as well as vegetation and rare prairie plants would also be adversely affected by construction activities. All construction-related impacts would be temporary and would end following completion of project construction. Disturbed sites would be revegetated using native species.

Over the long term, this alternative would adversely impact the topography of the area by realigning the roadway onto the previously undeveloped natural glacial bench on the slopes of Mt. Finlayson. The roadway and roadside cuts and fills would permanently impact the integrity of the glacial bench; however, most of the alignment would be enclosed in a tunnel, which would have a minor beneficial effect on the visual quality of the project area when viewed from the Cattle Point peninsula, offshore, and from neighboring islands. The tunnel would also reduce wildlife habitat fragmentation and improve wildlife passage over the roadway. The Mt. Finlayson trail would be adversely impacted by the alternative C alignment. The eastern 100 to 150 feet of trail would be directly impacted by road cuts and would need to be relocated.

4.7 IMPACTS OF ALTERNATIVE D - MID-SLOPE ALIGNMENT WITH SHORT TUNNEL

This alternative involves realignment of the road to the north of the existing road, approximately 470 feet away from the eroding bluff area through a short tunnel. The project would begin about 0.65 miles east of the Pickett's Lane intersection. At the beginning of the project, the road would be widened, and the grade would be raised along the current alignment for about 1,100 linear feet in order to transition with the new road alignment. The new alignment would then leave the existing roadway and travel north, following a natural bench for approximately 1,000 linear feet. From there, the roadway would climb a moderately steep grade for about 1,500 feet where it would enter a tunnel along the ridgeline of Mt. Finlayson. The tunnel would be approximately 775 feet in length. On exiting the tunnel, the road would curve down the ridge to the southeast where it would connect back to the existing road near where the NRCA trail meets the existing Cattle Point Road. At its maximum, the tunnel would be located about 470 feet to the north of the bluff erosion site. It is estimated that this alignment would protect the road from the threat of bluff erosion for over 150 years. The estimated cost for construction of this alternative is approximately \$30 to 40 million. Construction would take 1.5 to 3 years.

4.7.1 Topography, Geology, and Soils

Alternative D would reroute the roadway onto the natural bench to the north of the bluff erosion site. The realignment would climb a moderately steep grade, where it would enter a short tunnel along the ridgeline of Mt. Finlayson. Cuts and fills along the road alignment and at the tunnel portals would be large, up to 50 feet in height, and would require large retaining walls to stabilize the earth around the tunnel portals. Road design features and final location would be planned to follow natural topographic contours as much as possible in order to minimize the number and height of road cuts and fills.

The tunnel would be built by excavating a large cut, constructing the tunnel structure, and filling in material on top of the structure to restore the natural ground surface. If rock or large boulders were encountered, blasting could be necessary; although, preliminary geological investigations show this to be unlikely. The tunnel would be designed to generate a minimal amount of excess earth.

Construction of this alternative would temporarily disturb approximately 20 acres, consisting of new road alignment, road cuts and fills, tunnel construction, equipment staging and stockpiling, and reclamation of the abandoned road segment. Of the 20 acres of temporary soil disturbance, about 17 acres would be restored and revegetated using native vegetation. The restored areas would include about 2 acres of ground surface covering the tunnel. This alternative involves a wider and slightly longer road alignment than currently exists; however, part of the road would be located in a covered tunnel. About 3 acres of new ground surface area (outside of the tunnel) would be covered by impermeable road pavement. However, about 3 acres of road pavement would be removed from the abandoned road segment, the road cut would be contoured to match the surrounding landscape, and the area would be revegetated using native vegetation. Therefore, there would be no net increase or reduction in impermeable pavement surface under this alternative.

The natural benches through which the new alignment would be routed were formed by glacial rebound and are an important geologic feature of the area. This alternative would require cuts and fills along the highest bench of Mt. Finlayson where it is most visible. However, the

and fills along the highest bench of Mt. Finlayson where it is most visible. However, the original surface contour of the most visible part of the bench would be restored as the tunnel section is filled. Near the east end of the project route, the road would enter a short tunnel that would serve to lower the road profile through the top of the ridgeline area and avoid the steep grade at its east end. About 2,000 feet of new road alignment would be above ground in the natural bench area. Another 775 feet of the road below the east ridge of Mt. Finlayson would be within the tunnel. As part of the project, the road cuts and fills on the east end would be designed to restore the quarry area to more closely follow natural contours.

Native soils in the project area consist primarily of highly erosive gravelly sand. Because of this, road cuts would need to be gently sloped to ensure slope stability and promote revegetation. Further geotechnical investigation would be necessary to finalize slope designs prior to construction.

An NPDES permit would be required for this alternative. As part of the permit, a SWPPP would be prepared that outlines measures used at the construction site to reduce the amount of soil erosion and sediment leaving the site due to storm water runoff. As a permanent erosion and sediment control measure, all disturbed sites would be revegetated using native species.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.1.

Alternative D would realign the road onto the natural glacial benches below Mt. Finlayson, which would add a new impact to an area that currently contains no structures. Part of the realignment in the bench area would be below ground in the tunnel. New road cuts and fills and tunnel portals would add to cumulative impacts on topography, geology, and soils. Under this alternative there would be no increase in impermeable road pavement to the cumulative impact on soils in the project area. Because of federal and state land management protections, most of the Cattle Point peninsula is relatively undeveloped and future development is limited. Federal and state projects in the Cattle Point peninsula are planned to improve existing visitor and parking facilities. No new visitor facilities are planned on public land that would impact topography, geology and soils. There is the potential for limited residential construction on the small number of vacant lots on private property in east Cattle Point. This construction would have a minimal impact on soil in east Cattle Point and reduce the amount of impermeable surface in the project vicinity by a small amount. Current road density in the Cattle Point peninsula is low. No new roads are planned in the future. Alternative D would not increase road density since the existing road alignment would be obliterated and restored to natural conditions. Overall, impacts from alternative D when added to past, present, and future actions would result in minimal impacts to topography, geology, and soils locally and county-wide.

Conclusion

With mitigation measures in place, construction of alternative D would have a minor adverse short-term effect on topography, geology, and soils in the project area. Over the long term, the realignment and tunnel through the natural bench below Mt. Finlayson along with the restoration of the abandoned road section would have a minor beneficial effect on soils and a moderate adverse effect on the topography and geology of the project area and the Cattle Point peninsula.

Mitigation Measures: All are the same as alternative B, section 4.5.1

TGS-1: Road Design. Same as V-1, and STES-3. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings. Cut slopes would be designed to insure slope stability and promote revegetation. Final road alignment and design would be adjusted to avoid or minimize impacts to rare native prairie sites and California buttercup. Final road design would also be adjusted to minimize impacts to the Mt. Finlayson Trail to the extent possible. Where impacts are unavoidable, the trail would be relocated adjacent to the new road alignment.

TGS-2: Geology Wayside Exhibit. A wayside exhibit would be developed to interpret the area's geology.

TGS-3: SWPPP. Same as WQ-1. Prior to construction, the FHWA would develop a Storm Water Pollution Prevention Plan (SWPPP) for implementation during construction. The SWPPP would include measures (BMPs) for temporary erosion and sediment control devices during construction for control of concentrated storm water runoff. The SWPPP would also include BMPs for housekeeping measures to address the safe storage, handling, and spill prevention of hazardous construction materials.

TGS-4: Revegetation. Same as WQ-2. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. See appendix A.

TGS-5: New Waste Site or Aggregate Source. No disposal sites would be allowed in the park or NRCA. If a non-commercial disposal site or aggregate source is required, the proposal would be analyzed for environmental impacts before approval for use by FHWA. For this project, new non-commercial disposal and aggregate sources would have no more than a "no adverse effect" on cultural resources, a "no effect" determination on threatened and endangered species, no encroachment into waters of the U.S. or wetlands, and no adverse effect on remnant prairie habitats of San Juan Island.

4.7.2 Visual Quality

This alternative would realign the road higher on the south slopes of Mt. Finlayson. Approximately 775 feet of the new alignment would be within a tunnel, near the east ridgeline of Mt. Finlayson. The cuts at the tunnel portals would be large (up to 50 feet in height) and may require retaining walls in order to construct the road into the hillside. Walls would present a solid visual disturbance to the natural topography. The final road design and location would follow natural contours and minimize the number and height of road cuts, fills, and walls to the extent possible. Wall profiles would be designed as low as possible and use materials with a natural appearance to minimize visual impacts.

Depending on topography and locale, differing views of construction activities and machinery would be visible from adjacent areas of the Cattle Point residential area, the existing road, some beach locations, surrounding offshore areas, and adjacent areas of the park and the NRCA during the 1.5 to 3 year construction period.

The “cut and cover” method of tunnel construction would involve excavating a trench from the surface, building the tunnel structure in the trench, and then backfilling and restoring the ground above the tunnel. Large amounts of soil from the trench would be temporarily stockpiled during the construction period. Stockpiles would likely be wind-rowed adjacent to the new and existing road alignments. The excavated trench and stockpiled soil would create a short term visual impact. Following construction, the road alignment, road cuts and fills, and walls at the tunnel portals would be visible; however 775 feet of the new alignment near the east end of Mt. Finlayson would be enclosed in the tunnel. The east tunnel portal would be visible from the residential area, from offshore areas to the east, and from Lopez Island. From the beach and offshore areas to the south, the tunnel would somewhat reduce the visual impacts of the alternative, though walls near the tunnel portals would be visible. The road alignment located within the tunnel would appear to be part of the natural hillside landscape.

The final road and tunnel location would be planned to follow natural landscape contours and minimize the number and height of road cuts, fills, and walls to the extent possible. Wall profiles would be designed as low as possible and use materials with a natural appearance to minimize visual impacts. Following construction, all disturbed areas including cut and fill slopes, the area above the tunnel, and the abandoned road segment would be revegetated using native species. Over 2 to 5 years, the growth of planted native vegetation would serve to blend the roadside, the area above the tunnel, and the tunnel portals into the natural surroundings. Reclamation of the abandoned road segment would remove the asphalt pavement, contour the road cut to match the surrounding landscape, and revegetate the area using native species. Over the long term, there would be some evidence that a road was once present at the site, but the visual intrusion to the natural landscape would be small when viewed in the distance from viewpoints throughout Cattle Point and from offshore.

For road users, the views seen from the roadway outside of the tunnel would be similar to the existing conditions. The tunnel section would create a confined space and there would be no opportunity to view scenic vistas in this section of road. Scenic pullouts would be included at either end of the tunnel as space permits to mitigate for the loss of viewpoints within the tunnel.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.5.

Alternative D would realign the road onto the natural benches below Mt. Finlayson, which currently contains no structures. However, some of the alignment would be underground in a tunnel. This location would be more visible than the existing road when viewed from offshore. The visible location and high cut, fill, and tunnel portal slopes would add moderately to the cumulative visual impacts of the natural hillside. The abandoned road alignment would be obliterated and restored to natural conditions, which would negate its visual impact. The new road alignment would not increase the road density in the area. No future projects are planned on public land that would impact visual resources. There is the potential for limited residential construction on the small number of vacant lots on private property in east Cattle Point. This construction would have a minimal visual impact east of the project area. Overall, impacts from alternative D when added to past, present, and future actions would result in minimal impacts to visual quality locally and region-wide.

Conclusion

Overall, ground disturbing activities and construction would have a moderate adverse short-term impact on the visual quality of the project area. Over the long term, the adverse visual impacts of the new road alignment when viewed from the Cattle Point peninsula, offshore, and from neighboring islands would be minor.

Mitigation Measures:

VQ-1: Road Design. Same as TGS-1 and STES-3. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings. Cut slopes would be designed to insure slope stability and promote revegetation. Final road alignment and design would be adjusted to avoid or minimize impacts to rare native prairie sites and California buttercup. Final road design would also be adjusted to minimize impacts to the Mt. Finlayson Trail to the extent possible. Where impacts are unavoidable, the trail would be relocated adjacent to the new road alignment.

In addition, to the extent possible, walls would be designed with a low-profile and use materials with a natural appearance. Final wall design would be coordinated with an NPS landscape architect.

VQ-2: Scenic Turnouts. Where possible, scenic turnouts would be constructed along the road alignment for the road user to pull off the road to view the natural features of the area.

In addition, as space permits, a scenic turnout would be constructed before entering the west tunnel portal

VQ-3: Revegetation. Same as WQ-2 and TGS-4. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. See appendix A.

4.7.3 Vegetation

This alternative would shift the road location upslope, away from the eroding coastal bluff and closer to the forested ridgeline, which would cut through a section of previously undisturbed prairie vegetation. The fringe of the forest at the east end of the ridgeline would also be affected. It is expected that some trees may need to be removed for construction of cut slopes. Removal of mature trees would be avoided to the extent possible.

Construction of alternative D would affect about 4,700 linear feet of grassland at widths varying from 60 to 120 feet for cuts, fills, and tunnel construction. Construction of the new alignment, tunnel construction, equipment staging, soil stockpiling, and restoration of the abandoned road segment would impact about 20 acres of vegetation. The tunnel would be built by excavating a large cut, constructing the tunnel structure, and filling in material on top of the structure to restore the natural ground surface. Of the 20 acres of disturbance, about 17 acres would be restored and revegetated. Revegetated areas include roadside cut and fill slopes, the area above the tunnel, and restoration of the abandoned road segment. This alternative involves a wider and slightly longer road than currently exists; however, a portion would be located in the

covered tunnel section. About 3 acres of disturbed area (outside of the tunnel) would be covered by new pavement, which would involve permanent impacts to vegetation along the existing and new road alignment. Restoration of the abandoned road segment would involve removal of approximately 3 acres of existing pavement and road base, contouring the road footprint to blend with the surrounding landscape, and planting the area with native vegetation. There would be no permanent net loss of vegetation in the project area as the result of this alternative.

The preliminary road alignment shows that eight areas (polygons) of native prairie could be impacted by road construction (figure 4.7). To the extent possible, final road alignment and design would be adjusted to avoid or minimize impacts to these rare native prairie sites. The cut and cover method of tunnel construction would impact two areas of native prairie. The area above the tunnel would be revegetated using native species, providing an opportunity to increase the amount of native prairie in the project area. Existing native vegetation would be retained whenever feasible.

Prior to construction, a detailed restoration and revegetation plan would be developed that would outline methods and standards for revegetation of areas temporarily disturbed during the construction as well as restoration of the abandoned road segment. Revegetation would begin as soon as possible after completion of construction, during the optimum time of year to ensure greatest plant survival. Topsoil removed during construction would be conserved and reapplied to revegetation sites to insure optimum plant establishment. If sufficient conserved topsoil is not available, native topsoil may be imported from elsewhere on the island. Erosion control measures would be applied in order to protect soil and seed prior to establishment of vegetation, following guidelines in the project SWPPP. All revegetation would use native species. Restoration of the abandoned road segment would provide the opportunity to restore native species and benefit the prairie grassland. All revegetated sites would be monitored for success and failed sites would be replanted as needed.

Road construction activities, soil disturbance, and imported topsoil provide conditions favorable for spread of weeds from adjacent lands as well as from outside of the project area. BMPs for control of weeds would be implemented during construction. Construction equipment would be cleaned of all mud, dirt, and plant material prior to entering the project area for the first time to minimize the spread of weeds from outside the project area. Aggregate and fill sources as well as imported topsoil would be inspected and certified as weed-free before being approved for use on the project site. If weed-free aggregate and fill sources are not available, the material would be heat-treated to kill weed and weed seeds prior to transport to the project site. Even with BMPs in place, some weeds may be spread to the project from other areas within or immediately adjacent to the project area. The revegetation plan would include a plan for treatment of weeds on restored sites. Weed treatment would follow NPS and DNR guidelines.



Figure 4.7 – Alternative D alignment relative to native prairie polygon locations

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.6.

Alternative D would realign the road into the prairie vegetation below Mt. Finlayson, which would add a new impact to an area that currently contains no structures. The impacted area includes eight polygons of remnant native prairie vegetation that is rare on San Juan Island. Restoration of the abandoned road segment and revegetation of roadside cut and fill slopes and tunnel portals would provide the opportunity to benefit the restoration of native prairie vegetation in the Cattle Point peninsula. No future projects are planned on public land in the project area that would impact vegetation. Federal and state projects in the Cattle Point peninsula would improve existing visitor and parking facilities. There is the potential for limited residential construction on a small number of vacant lots on private property in east Cattle Point. This construction would impact a small amount of prairie and forest vegetation in the Cattle Point peninsula and add to cumulative effects. Overall, impacts from alternative D when added to past, present, and future actions would result in minimal impacts to vegetation locally and region-wide.

Conclusion

Because of these factors, construction and other ground disturbing activities would have a minor adverse short-term effect on vegetation in the project area. With mitigation measures in place, the long-term effects to vegetation in the project area would be negligible.

Mitigation Measures:

V-1: Road Design. Same as TGS-1. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings. Cut slopes would be designed to insure slope stability and promote revegetation.

In addition, final road alignment and design would be adjusted to avoid or minimize impacts to rare native prairie sites.

V-2: Revegetation. Same as WQ-2, TGS-4 and VQ-3. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. See appendix A.

In addition, revegetation would begin as soon as possible after completion of construction, during the optimum time of year to ensure greatest plant survival. Topsoil removed during construction would be conserved and reapplied to revegetation sites to insure optimum plant establishment. If sufficient conserved topsoil is not available, native topsoil may be imported from elsewhere on the island. The revegetation plan would include stipulations for use of conserved and imported topsoil and control of weeds.

V-3: Weed Inspection of Aggregate and Fill Sources. Aggregate and fill material sources would be inspected and certified as weed-free by a qualified person prior to

approval for use. If weed-free sources are not available, material would be heat-treated to kill weeds and weed seeds.

V-4: BMPs for Weed Control. Construction equipment would be steam-cleaned prior to entering the project area for the first time. All roadsides and disturbed areas would be restored using native conserved topsoil and would be revegetated. Any imported topsoil needed would be certified as weed free. The revegetation plan would include a detailed weed control plan. See appendix A.

V-5: SWPPP. Same as WQ-1, and TGS-3. Prior to construction, the FHWA would develop a Storm Water Pollution Prevention Plan (SWPPP) for implementation during construction. The SWPPP would include measures (BMPs) for temporary erosion and sediment control devices during construction for control of concentrated storm water runoff. The SWPPP would also include BMPs for housekeeping measures to address the safe storage, handling, and spill prevention of hazardous construction materials.

4.7.4 Wildlife

Construction activities along the new road and tunnel alignment and continued traffic use on the existing road would result in an increase in human presence and noise intermittently during the 1.5 to 3-year construction period.

The new road alignment would move upslope and closer to the important fringe habitat along the ridgeline where wildlife species transition between forest and grassland. However, about 775 feet of the road closest to the ridgeline would be enclosed in a tunnel. The fringe of the forest at the east end of the ridge line would also be affected by the large road cut at the east tunnel portal. It is expected that some trees may need to be removed for construction of cut slopes. Removal of mature trees would be avoided to the extent possible. Over the long term, the habitat above the tunnel would be restored and available for use by wildlife. Wildlife would also use the area above the tunnel as a means to safely cross over the roadway.

Project activities would directly impact wildlife habitat with ground disturbing activities on approximately 20 acres in the project area. Wildlife and bird species using the area would be displaced. Some smaller, less mobile ground-dwelling and nesting species may incur direct mortality. Construction activity and noise would deter animals from using the habitat for foraging, migration, and breeding. Noise and construction activity could also disrupt wildlife use adjacent to the construction site, possibly causing animals to move to other habitats. There is similar habitat surrounding the project area, including moderately large areas of grassland to the east and west as well as forested areas to the north. Blasting could be necessary if rock or large boulders are encountered during tunnel excavation. However, based on limited geologic research, this is not likely to occur.

Of the 20 acres of habitat disturbance, approximately 17 acres would be temporarily impacted during construction and 3 acres would be permanently impacted by new road pavement (above ground). Of the 17 acres of temporary habitat disturbance, about 9 acres would consist of roadside cuts, fills, and tunnel construction, about 5 acres would consist of equipment staging and soil stockpiling, and about 3 acres would consist of abandoned roadway restoration. These disturbed sites would be revegetated with native plants following construction. Road cut and fill slopes would provide marginal wildlife habitat; however, the restored abandoned road segment would provide higher quality prairie habitat in a relatively undisturbed setting. Habitat above the tunnel would also be available for use by wildlife.

About 3 acres of new surface area (outside of the tunnel) would be covered by pavement under this alternative; however, about 3 acres of pavement would be removed from the abandoned road segment. The abandoned roadway would be contoured to match the surrounding landscape and the area would be revegetated using native prairie vegetation. Therefore, there would be no net loss in prairie habitat as a result of this alternative.

This alternative would not change the capacity, function, or service of the road and would not result in an increase in traffic or visitor use; therefore, long-term effects of the new road alignment on wildlife are not expected to be substantially different than present. Fragmentation of continuous habitat patches into smaller sizes, wildlife road avoidance due to human activity and noise, and road mortality are expected to be somewhat less than existing road impacts due to the availability of wildlife habitat above the tunnel and use of the area above the tunnel for wildlife to safely cross over the roadway.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.7.

This alternative would move the road alignment closer to the fringe habitat near the ridge of Mt. Finlayson, which is currently undeveloped. Some of the realignment would be enclosed in a tunnel. Following revegetation, the area above the tunnel would retain grassland habitat and allow wildlife to pass safely over the roadway. Restoration of the abandoned road segment would replace wildlife habitat lost by the new road alignment. The new road alignment would not increase the road density in the area. No future projects are planned on public land that would affect wildlife. There is the potential for limited residential construction on the small number of vacant lots on private property in east Cattle Point. Residential construction would have a minimal impact on wildlife on the Cattle Point peninsula. When combined with other past, present, and future actions the effects of alternative D would result in a negligible beneficial cumulative impact on wildlife locally and county-wide.

Conclusion

Because of these factors, construction activities associated with this alternative would have a moderate adverse short-term effect on wildlife use patterns and habitat in the project area. Over the long term, this alternative would have a negligible beneficial effect on wildlife in the project area.

Mitigation Measures:

W-1: Revegetation. Same as WQ-2, TGS-4, VQ-3, and V-2. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. See appendix A.

In addition, revegetation would begin as soon as possible after completion of construction, during the optimum time of year to ensure greatest plant survival. Topsoil removed during construction would be conserved and reapplied to revegetation sites to insure optimum plant establishment. If sufficient conserved topsoil is not available, native topsoil may be imported from elsewhere on the island. The revegetation plan would include stipulations for use of conserved and imported topsoil and control of weeds.

4.7.5 Federally-Listed Threatened, Endangered, and Protected Species

There are no federally-listed threatened or endangered species known to be present or having habitat in the project area or vicinity.

The federally-protected bald eagle is known to be present and have habitat within the area of potential impact for alternative D (table 4.2). WDFW data show that the project area is located within two historic bald eagle territories. Six historic nest sites containing nine nests are located within 0.5 miles of the project area. Bald eagle territories and nest sites are also located within 1 mile of the project area on Lopez Island and near the American Camp historic areas. Bald eagle nesting activities occur from January 1 to August 15 (USFWS 2004). The project area is also located within the 800-foot shoreline foraging buffer identified by the WDFW priority habitat and species data (wdfw.wa.gov/hab/phslist.htm, accessed March 26, 2007). Eagle wintering takes place in the county from October 31 to March 31. There are no known wintering roosts in the project area.

Construction noise impacts would affect an area within a 0.5-mile radius of the construction site depending on topographic barriers. Noise producing activities would take place during project construction, which is expected to last 1.5 to 3 years. Construction activities would take place along the new road alignment, abandoned road segment, haul routes, and staging areas. Regular traffic from residents and visitors would continue along the existing roadway during the construction period. These activities would result in an increase in human presence and noise intermittently during the 1.5 to 3-year construction period. Construction activities would include site preparation, earthmoving, tunnel construction, general construction, and road surfacing. Site preparation would include activities such as land clearing and grubbing, including disposal of cleared material. Earthmoving would include cut and fill operations, tunnel trenching, soil stockpiling, soil compaction, grading, and transport of excess soil and rock material offsite, likely west of the project area. It would involve hauling within the 800-foot buffer of the bald eagle nests in the American Camp historic area. Construction of alternative C would not likely produce loud noises such as blasting or pile-driving; however, if these uses become necessary, a separate assessment would be conducted by the FHWA, and would include an evaluation of the effects to the bald eagle.

The highest point on the alternative C road realignment would be located within the 800-foot buffer of one historic bald eagle nest near the peak of Mt. Finlayson. About 775 feet of the alignment would be enclosed in the tunnel. The east tunnel portal would fall within the 800-foot nest buffer. All nest sites shown in the WDFW database in the Mt. Finlayson area were monitored by NPS in 2009. Of the seven nest locations, only one nest was found, and it was in disrepair and unoccupied (NPS 2009). The nest located closest to the proposed road realignments could not be found by the NPS in 2009.

The entire road realignment is located on the south slopes of Mt. Finlayson, in the prairie grassland habitat. Bald eagle nesting and roosting habitat consists of large trees and elevated sites located in the forested habitat near the peak and on the north side of the Mt. Finlayson ridge. Road realignment is not expected to involve removal of large mature trees suitable for eagle habitat. Cutting of eagle habitat trees would be prohibited. The project area is located within the 800-foot shoreline foraging buffer on the Strait of Juan de Fuca.

Construction activities are expected to take place during part of the bald eagle nesting season and may also take place during part of the winter-foraging season. While construction activities may cause foraging eagles to avoid flying over the construction areas on the south slopes of Mt.

Finlayson, foraging areas to the north and east would remain undisturbed. During breeding season, bald eagles are sensitive to a variety of human activities, including noise from construction activities. Not all bald eagle pairs react to human activities in the same way. Some nest successfully within close proximity to human activity while others abandon nest sites in response to activities much farther away (USFWS 2007b). Prior to construction, the bald eagle nest within the 800-foot buffer of the project area would be investigated to determine if it was in active use. If the nest is being used by bald eagle, noise-producing construction activities within the 800-foot buffer would be restricted during the nesting period. If the nest is not in use, no construction restrictions would be necessary. The bald eagles in the American Camp historic area have successfully raised chicks in close proximity to human activities (NPS 2009). Although these individuals have habituated to the routine uses in the area, increased construction traffic may disturb them during nesting. The American Camp nests would be monitored during the nesting period and noise producing construction activities would be avoided to the extent possible.

The new road alignment would permanently relocate road noise and activities closer to the historic bald eagle nesting sites located near the ridge of Mt. Finlayson; however, some of the road alignment in this area would be enclosed in the tunnel, which would reduce traffic noise.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.8.

Alternative D would move the road alignment closer to the historic bald eagle nests located near the ridge of Mt. Finlayson; however, some of the alignment would be confined to a tunnel. Construction traffic would impact an active nest along the haul route. Future projects to improve the American Camp visitor center could have a small impact on the eagle nest in the vicinity. Visitation to the park and use of the visitor's center and trails in close proximity to eagle's nests is expected to increase into the foreseeable future. Bald eagles nesting in the area near the visitor's center have become acclimated to human presence and vehicle traffic seems to have little effect on bald eagle use patterns (USFWS, personal communication, 2009); however, it is unknown whether there is a limit to the amount of human presence that would be tolerated. When added to other past, present, and future activities cumulative impacts to bald eagle associated with alternative D would be minimal locally and region-wide.

Conclusion

Because of these factors, with mitigation measures in place, it is expected that construction activities would have a minor adverse short-term effect on bald eagle use patterns in the project area. With implementation of the described mitigation measures, the project would be in compliance with USFWS *National Bald Eagle Management Guidelines* (May 2007), and impacts would be below the level of "take". No permits would be required. Over the long term, this alternative would have a negligible adverse effect on bald eagles in the project area and the Cattle Point peninsula.

Mitigation Measures:

FTES-1: Construction Timing Restrictions. Noise-producing construction activities within the 800-foot buffer of active bald eagle nests would be restricted during the nesting period (January 1 to August 15).

FTES-2: Prohibit Removal of Bald Eagle Habitat. Removal of large mature eagle habitat trees would be prohibited.

FTES-3: Equipment Noise Control. Same as N-1. Construction equipment would be equipped with functioning mufflers to limit exhaust noise. Equipment would be switched off when not in use.

4.7.6 State-Listed Threatened and Endangered Species

The state-listed California buttercup is known to be present and have habitat within the area of potential impact for alternative D (table 4.3).

Occurrence of this species in the project area roughly coincides with the native prairie polygons (figure 4.7). The preliminary alignment shows that four known California buttercup polygons could potentially be impacted by road and tunnel construction activities. There are a total of 33 California buttercup polygons in the project area; therefore, the project alternative would impact about 12 percent of the population in the project area. To the extent possible, final road and tunnel alignment and design would be adjusted to avoid or minimize impacts to this species. Priority would be given to avoiding large concentrations.

Restoration of the abandoned road segment as well as roadway cuts and fills and the area above the tunnel would provide an opportunity for potential reintroduction of California buttercup into new areas of the native prairie grassland. The revegetation plan would outline methods and standards for revegetation of the species in these areas. Road construction activities and soil disturbance provide the opportunity for spread of weeds from adjacent lands as well as from outside of the project area, which could impact California buttercup. BMPs for control of weeds would be implemented during construction.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.9.

The alternative D realignment would impact about 12 percent of the population of California buttercup in American Camp. Restoration of the abandoned road segment and revegetation of the roadside cut and fill slopes would provide the opportunity to benefit the restoration of this species. No future projects are planned in the project area that would impact California buttercup. When added to other past, present, and future activities cumulative impacts to California buttercup associated with alternative D would be minimal locally and region-wide.

Conclusion

Because of these factors, construction activities associated with this alternative are likely to have a minor adverse short-term impact on California buttercup in the project area. Over the long term, planting of California buttercup during restoration of the abandoned roadway may provide the opportunity to increase the population in the project area, provided that establishment was successful. As a result, the project could have a minor beneficial long-term effect on this species in the project area and in the Cattle Point peninsula.

Mitigation Measures:

STES-1: Road Design. Same as TGS-1 and V-1. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of

Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings. Cut slopes would be designed to insure slope stability and promote revegetation. Final road alignment and design would be adjusted to avoid or minimize impacts to rare native prairie sites and California buttercup.

STES-2: Revegetation. Same as WQ-2, TGS-4, VQ-3, V-2, and W-1. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. See appendix A.

Revegetation would begin as soon as possible after completion of construction, during the optimum time of year to ensure greatest plant survival. Topsoil removed during construction would be conserved and reapplied to revegetation sites to insure optimum plant establishment. If sufficient conserved topsoil is not available, native topsoil may be imported from elsewhere on the island. The revegetation plan would include stipulations for use of conserved and imported topsoil and control of weeds.

In addition, the revegetation plan would outline methods and standards for revegetation of the California buttercup in the abandoned roadway restoration and in roadway cuts and fills.

STES-3: BMPs for Weed Control. Same as V-4. Construction equipment would be steam-cleaned prior to entering the project area for the first time. All roadsides and disturbed areas would be restored using native conserved topsoil and would be revegetated. Any imported topsoil needed would be certified as weed free. The revegetation plan would include a detailed weed control plan. See appendix A.

4.7.7 Trail System

This alternative realignment moves the road closer to the existing trail on the ridge of Mt. Finlayson. About 775 feet of the road alignment in this area would be enclosed in the tunnel, which would reduce the visible traffic and noise noticeable to trail users. On the west end of the project area, the new road alignment would be located about 400 to 600 feet to the south of the Mt. Finlayson Trail. On the east end of the project area, the new road alignment would be located 200 feet south of the trail. At the east end of the project, approximately 500 to 600 feet of trail would be directly impacted by the cut slopes of the new alignment and would need to be relocated. This section of trail would be relocated directly adjacent to the new road fill on the east side of the roadway. To the extent possible, final road design would be adjusted to minimize impacts to the trail. The Mt. Finlayson Trail is the only trail directly impacted by this alternative (figure 4.8).

Construction noise and machinery would be noticeable to Mt. Finlayson Trail users along the eastern 4,000 feet of the trail route. The east end of the trail would probably be closed occasionally during the estimated 1.5 to 3-year construction period. Closures should not affect the loop trail from the Mt. Finlayson Trail north to the Lagoon trails. However, hikers would not be able to travel the entire length of the Mt. Finlayson Trail to link back with Cattle Point Road on the east side of the project area. Construction would not affect the other NPS trails in American Camp. Access to the DNR and BLM trails located to the east of the project area may be impacted by traffic delays.

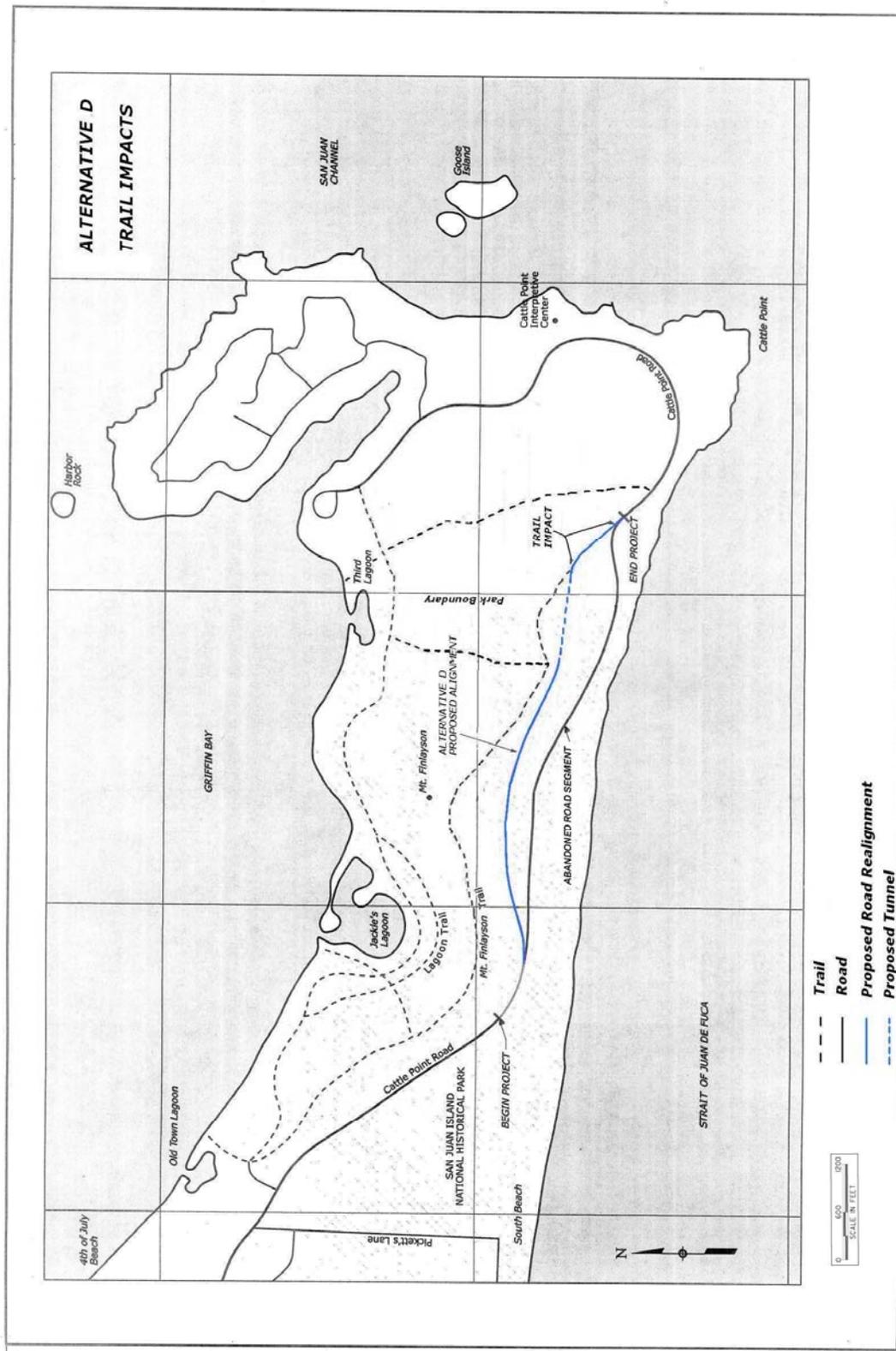


Figure 4.8 – Alternative D trail impacts

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.15.

Alternative D would move the road alignment closer to the Mt. Finlayson Trail; however, some of the road would be enclosed in the tunnel. The closer road proximity would increase the vehicle noise perceptible to trail users and reduce the sense of solitude. As traffic along the road increases in the future with normal increases in park visitation, this impact would become more noticeable to trail users. The realignment would also directly impact about 500 to 600 feet at the east end of the Mt. Finlayson Trail. This area represents about 1 percent of the 9 miles of trail within the Cattle Point peninsula. The trail would be relocated to the toe of the fill adjacent to the new roadway and would not be completely lost to the trail system. No future projects are planned in the project areas that would impact the trail system. When added to other past, present, and future actions the overall trail system would not change in a measurable way.

Conclusion

Because of these factors, construction of alternative D would have a moderate adverse short-term effect on the Mt. Finlayson Trail. However, the effect of construction on the trail system in the Cattle Point peninsula as a whole would be minor. Over the long term, the alternative D realignment would have a minor adverse effect on the Mt. Finlayson Trail; however, it would have a negligible adverse effect on the trail system on the Cattle Point peninsula as a whole.

Mitigation Measures:

T-1: Road Design. Same as TGS-1, V-1, STES-3, and VQ-1. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings. Cut slopes would be designed to insure slope stability and promote revegetation. Final road alignment and design would be adjusted to avoid or minimize impacts to rare native prairie sites and California buttercup. To the extent possible, walls would be designed with a low-profile and use materials with a natural appearance. Final wall design would be coordinated with an NPS landscape architect.

In addition, final road design would be adjusted to minimize impacts to the Mt. Finlayson Trail to the extent possible. Where impacts are unavoidable, the trail would be relocated adjacent to the new road alignment.

4.7.8 Transportation and Road System

Construction activities are expected to last 1.5 to 3 years. During construction, the existing Cattle Point Road would be left open to maintain access to the east end of Cattle Point. Most activities for road realignment and tunnel construction would take place outside of the existing Cattle Point Road alignment; however, traffic delays would still be expected on Cattle Point Road adjacent to the construction site. Delays would likely be limited to 30 minutes or less except during construction of the connection between the realigned road section with the existing roadway. Construction of these short road sections may require full road closure for up to 4 hours at a time for approximately 1 to 2 weeks during construction of both ends of the

connection. Road closure and delay schedules would be publicized ahead of time with public announcements through the NPS and local media.

There would be some heavy loads related to construction traffic; however, all construction traffic would follow the legal load limits. Therefore no deterioration of the surrounding road system is anticipated above normal levels.

Over the long term, this alternative would not change the capacity, function, or service of the Cattle Point Road. The existing access to the Cattle Point area would be preserved, and there would be no change (either increase or decrease) in traffic in the area beyond that expected with normal growth. The abandoned road segment would be obliterated and restored to natural conditions following construction of the new alignment.

The realigned road would be approximately equal in length to the existing alignment; however the tunnel would greatly add to the cost and effort of maintenance along the new road. Since there are no tunnels currently located in the county, it does not have the equipment or expertise needed to perform tunnel inspection and maintenance. Start-up costs would be associated with training personnel and obtaining proper equipment. Some project funds could be used to offset initial start-up costs for training and equipment necessary for tunnel maintenance. It is estimated that maintenance costs for the new road alignment and tunnel would average about \$35,000 annually.

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.16.

Alternative D would not change the capacity, function, or service of the Cattle Point Road. The alternative would preserve the existing access to the east Cattle Point area and would not result in a change, either increase or decrease, in traffic in the area beyond that expected with normal growth. There is the potential for limited residential construction on the small number of vacant lots on private property in east Cattle Point. This construction would increase the residential population of the area by a small amount, which in turn would increase use on area roads. No future projects are planned on public land that would affect the transportation and road system. The impacts to the transportation and road system associated with alternative D would not alter current trends and would not contribute to cumulative impacts locally or county-wide.

Conclusion

Because of these factors, construction activities would have a moderate adverse short-term effect on transportation and access in the project area and the Cattle Point peninsula. Over the long term, this alternative would have no effect on the transportation system in the project area or on San Juan Island; however, it would have a moderate adverse effect on county maintenance costs.

Mitigation Measures: Both are the same as alternative B, section 4.5.7

TR-1: Traffic Management. Same as VU-1. A traffic control plan would be developed specifying road closure times and a public information program. Delays would be limited to 30 minutes or less. Construction of the short connectors between the existing roadway and the new alignment may require full road closure for up to 4 hours intermittently during approximately 1 to 2 weeks.

TR-2: Road Damage. Construction traffic would follow legal load limits to minimize damage to area roads from heavy equipment.

TR-3: County Maintenance Costs. Project funds may be provided to the county to offset initial start-up costs for training and equipment necessary for tunnel maintenance

4.7.9 Special Vehicles, Bicycles, and Pedestrians

Construction traffic along local routes leading to the construction site would create a safety concern for small vehicles and bicycles using the road shoulders. Operation of heavy equipment in the immediate project area would cause a major safety issue for use of these modes of transportation through the construction area. Due to safety considerations, these uses could be restricted through the construction site during part or all of the construction period. The FHWA would include requirements in the construction contract warning construction equipment operators to use extra caution due to heavy use of area roads by special vehicles, bicycles, and pedestrians.

Design of the realigned road would include improved shoulders for bicycle and pedestrian use. Preliminary design calls for 4-foot paved shoulders along the length of the realignment. While this would improve road function and safety for special vehicles, bicycles, and pedestrians in the realigned section, the existing roadway leading to the new alignment would continue to have narrow shoulders. The section of Cattle Point Road between the west park boundary and Pickett's Land has 1.5-foot gravel/native material shoulders and from Pickett's Land to the east park boundary, the road has 1-foot gravel/native material shoulders.

Preliminary tunnel design includes a 4-foot bike lane adjacent to both travel ways and a 2-foot wide raised sidewalk for pedestrians. The bike lane would provide special vehicles and bicycles sufficient room to travel safely through the tunnel. The enclosed tunnel would give the perception of an increased safety risk for special vehicles or bicycles using the tunnel. A 2001 California study concluded that bicycle collisions were no more frequent in tunnels than on the approaches to the tunnels (Statewide Safety Study of Bicycles and Pedestrians on Freeways, Expressways, Toll Bridges, and Tunnels MTI Report 01-01, 2001). Slow moving vehicles such as mopeds and scoot-cars that cannot use the confined shoulder area may pose a hazard. Signs with flashing beacons activated by the special vehicle operator, bicyclist, or pedestrian would be installed at tunnel portals warning motorists of "Bicyclist or Slow-moving Vehicle in Tunnel When Flashing."

Cumulative Impacts

The past, present, and reasonable foreseeable future activities considered in this analysis are described under cumulative impacts in section 4.3.14.

Alternative D would not change the capacity, function, or service of the road that would lead to a change in special vehicle, bicycle, or pedestrian use. The alternative would preserve the existing access to the east end of the Cattle Point peninsula. There is the potential for limited residential construction on the small number of vacant lots on private property in east Cattle Point. This construction would increase the residential population of the area by a small amount, which in turn could result in increased use by special vehicles, bicycles, and pedestrians on area roads. Visitation to the park is expected to increase into the future along with increases in use by special vehicles, bicycles, and pedestrians. No future projects are planned on public land that would affect these uses. Impacts to special vehicle, bicycle, and pedestrian use

associated with alternative B would not alter current trends and would not contribute to cumulative impacts locally or county-wide.

Conclusion

Because of these factors, construction activities would have a moderate adverse short-term effect on special vehicle, bicycle, and pedestrian use in the project area and Cattle Point peninsula. Over the long term, the new road alignment and tunnel would have a minor adverse effect on special vehicle, bicycle, and pedestrian use in the Cattle Point peninsula.

Mitigation Measures:

SVBP-1: Construction Traffic Safety. Construction equipment and vehicle operators would be required to use extra caution when approaching and passing special vehicles, bicycles, and pedestrians.

SVBP-2: Warning Signs. Signs with flashing beacons activated by the special vehicle operator, bicyclist, or pedestrian would be installed at tunnel portals warning motorists of “Bicyclist or Slow-moving Vehicle in Tunnel When Flashing”

4.7.10 Unavoidable Adverse Impacts

Alternative D would involve a number of unavoidable short-term adverse impacts. Construction activities would temporarily impact the visual quality of the area with the presence of construction equipment and soil disturbing activities. Construction would also impact visitor uses such as hiking at the east end of the Mt. Finlayson trail; special vehicle, bicycle, and pedestrian safety in the project vicinity; and cause disturbances for residents and visitors to the east end of the Cattle Point peninsula from construction noise and sporadic traffic delays. Wildlife use patterns and habitat, as well as vegetation and rare prairie plants would be adversely impacted by construction activities. All construction-related impacts would be temporary and would end following completion of project construction. Disturbed sites would be revegetated using native species.

Over the long term, this alternative would adversely impact the topography of the area by realigning the roadway onto the previously undeveloped natural glacial bench on the slopes of Mt. Finlayson. The roadway and roadside cuts and fills would permanently impact the integrity of the natural feature; however some of the alignment near the ridge top would be enclosed in a tunnel. The tunnel would also reduce wildlife habitat fragmentation and improve wildlife passage over the roadway. The Mt. Finlayson trail would also be adversely impacted by the alternative D alignment. The eastern 500 to 600 feet of trail would be directly impacted by road cuts and would need to be relocated. A net loss of about 0.1 acre of vegetation would be permanently replaced by impermeable road pavement in the project area.

4.8 MITIGATION

The Council on Environmental Quality (CEQ) NEPA implementation regulations define mitigation as:

- Avoiding the impact altogether by not taking a certain action or parts of an action
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
- Compensating for the impact by replacing or providing substitute resources or environments

Many elements of mitigation have been incorporated in the development of the alternatives. This includes designing the roadway to balance a safe, efficient, long-term transportation solution with minimal impacts to the natural environment. Specific mitigation for each alternative is also discussed under the impacts for each alternative.

The following mitigation measures would be implemented with each alternative if chosen:

Table 4.4 – Mitigation measures by alternative

MITIGATION MEASURES BY ALTERNATIVE
ALTERNATIVE A – No Action
No Mitigation Measures
ALTERNATIVE B – Hybrid Mid-Slope Realignment
BMPs for Weed Control: V-4, STES-3. Construction equipment would be steam-cleaned prior to entering the project area for the first time. All roadsides and disturbed areas would be restored using native conserved topsoil and would be revegetated. Any imported topsoil needed would be certified as weed free. The revegetation plan would include a detailed weed control plan.
Burning Restrictions: AQ-1. Burning would not be allowed at the construction site or in the park or NCRA.
Conservation Measures for Island Marble Butterfly: OSSS-2. Project activities would comply with the 2006 NPS/USFWS conservation agreement. Prior to construction, affected areas would be surveyed for host plants and larva. Steps would be taken to avoid impacts to these resources prior to and during construction, including removal or relocation of larval host plants and planting of host plants within the restored abandoned road segment.
Construction Equipment Controls: AQ-2: Construction equipment would be in good operating condition and be used efficiently to minimize emissions. All construction-related engines would be tuned to the engine manufacturer's specifications and not adjusted in order to increase engine horsepower. Equipment would include particulate traps, oxidation catalysts, and other suitable air pollution control devices. Equipment would not idle for more than five minutes, unless it is necessary for the particular operation.

MITIGATION MEASURES BY ALTERNATIVE

Construction Timing Restrictions: FTES-1. Noise producing construction activities within the 800-foot buffer of active bald eagle nests would be restricted during the nesting period (January 1 to August 15).

N-2. Construction activities (having noise levels greater than normal traffic) to the east of the NPS-DNR boundary would not be permitted from 6:00 p.m. to 7:00 a.m.

Construction Traffic Safety: SVBP-1. Construction equipment and vehicle operators would be required to use extra caution when approaching and passing special vehicles, bicycles, and pedestrians.

Dust Control Measures: AQ-3. A dust palliative or water would be applied to traffic areas and unpaved haul routes to minimize airborne dust from construction operations. A tarp or other load covering would be required for trucks hauling soil or other dust-producing loads. Haul trucks would employ slow speeds on unpaved roads.

Equipment Noise Control: N-1, FTES-3. Construction equipment would be equipped with functioning mufflers to limit exhaust noise. Equipment would be switched off when not in use.

Geology Wayside Exhibit: TGS-1. A wayside exhibit would be developed to interpret the area's geology.

New Waste Site or Aggregate Source: TGS-5. No disposal sites would be allowed in the park or NRCA. If a non-commercial disposal site or aggregate source is required, the proposal would be analyzed for environmental impacts before approval for use by FHWA. For this project, new non-commercial disposal and aggregate sources would have no more than a "no adverse effect" on cultural resources, a "no effect" determination on threatened and endangered species, no encroachment into waters of the U.S. or wetlands, and no adverse effect on remnant prairie habitats of San Juan Island.

Previously Undetected Cultural Sites: CR-1. The project footprint APE would be monitored during construction. If previously undetected cultural or archaeological resources are encountered during construction, work would stop in that location until the site could be evaluated by a qualified archaeologist.

Previously Undetected Hazardous Material: HM-1. If hazardous materials are encountered during construction, removal would be handled in accordance with WDOE and EPA guidelines.

Prohibit Removal of Bald Eagle Habitat Trees: FTES-2. Removal of bald eagle habitat trees would be prohibited.

Restore Abandoned Road Segment: LU-1. The abandoned road segment would be restored by removing the road pavement, road base, and buried utility lines and conduits, contouring the road cut to blend with natural surroundings, and planting with native vegetation. A detailed reclamation plan would be developed prior to the beginning of construction.

Revegetation: WQ-2, TGS-4, VQ-3, V-2, W-1, STES-2, OSSS-1, CR-2. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. See appendix A.

Revegetation would begin as soon as possible after completion of construction, during the optimum planting time to ensure plant survival. Topsoil removed during construction would be conserved and reapplied to revegetation sites. If sufficient conserved topsoil is not available, native topsoil may be imported from elsewhere on the island.

Revegetation plans would outline methods and standards for revegetation of California buttercup, rare native prairie species, and island marble butterfly host plants.

Road Damage: TR-2. Construction traffic would follow legal load limits to minimize damage to area road from heavy equipment.

MITIGATION MEASURES BY ALTERNATIVE

Road Design: CR-3, TGS-1, VQ-1, V-1, STES-1, T-1. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings.

Cut slopes would be designed to use shallow cut and fills to the extent possible and would not use exposed gabions or geometric forms of embankment materials that are incompatible with the character of the landscape. Cut and fill slopes would be designed to insure slope stability and promote revegetation. If needed, walls would be designed with a low profile, using materials with a natural appearance. Wall design would be coordinated with an NPS landscape architect.

Road alignment and design would be adjusted to avoid or minimize impacts to rare native prairie sites, California buttercup, and to minimize impacts to the Mt. Finlayson Trail to the extent possible. Where trail impacts are unavoidable, the trail would be relocated adjacent to the new road alignment.

During final road design, the alignment of alternative B (the preferred alternative) would be moved to the south, outside of the wellhead protection area for CSJWD well number 3.

Road Design for Storm Water Runoff Management: WQ-3. Roadside ditches in closest proximity to CSJWD well 3 would be lined with either impermeable material or with filtration material and vegetation selected for its ability to filter roadside pollutants. Storm water runoff management features such as vegetated ditches would be incorporated to the extent possible.

Scenic Turnouts: VQ-2. Where possible, scenic turnouts would be constructed along the road alignment for the road user to pull off the road to view the natural features of the area.

Staging, Stockpiling, and Fueling: WQ-4. No staging or fueling of equipment or stockpiling of material would be allowed within the 395-foot wellhead protection zone for CSJWD well number 3.

SPCC or HSP: HM-2, WQ-5. The construction contractor would prepare and implement a SPCC or HSP (whichever is applicable) in accordance with EPA guidelines. Excess petroleum and other potentially hazardous waste generated by construction activities would be disposed of in accordance with EPA guidelines.

Plan would describe actions to be taken in case of a spill and incorporate preventative measures to be implemented. A supply of absorbent materials would be kept at the job site in the event of spills. Soil contaminated by petroleum spills would be removed to a hazardous waste site.

SWPPP: TGS-3, WQ-1, V-5. Prior to construction, the FHWA would develop a Storm Water Pollution Prevention Plan (SWPPP) for implementation during construction. The SWPPP would include measures (Best Management Practices-BMPs) for temporary erosion and sediment control devices during construction for control of concentrated storm water runoff. The SWPPP would also include BMPs for housekeeping measures to address the safe storage, handling, and spill prevention of hazardous construction materials.

Traffic Management: VU-1, TR-1. A traffic control plan would be developed specifying road closure times and a public information program. Delays would be limited to 30 minutes or less. Construction of the short connectors between the existing roadway and the new alignment may require full road closure for up to 4 hours intermittently during approximately 1 to 2 weeks.

Transfer Abandoned ROW to Land Management Agencies: LU-2. Following construction, the existing easement/ROW for the abandoned section would be transferred back to the appropriate land management agency.

Utility Coordination: U-1. The road contractor would coordinate with the utility companies to relocate utilities prior to construction. If road construction takes place in proximity to utilities, the location would be marked and care would be taken to avoid disturbance to utilities during construction.

Weed Inspection of Aggregate and Fill Sources: V-3. Aggregate and fill material sources would be inspected and certified as weed free by a qualified person prior to approval for use. If weed free sources are not available, material would be heat-treated to kill weed and weed seeds.

MITIGATION MEASURES BY ALTERNATIVE

ALTERNATIVE C – Long Tunnel on Minor Realignment

Alternative Electricity Sources: E-1. Alternative sources of electricity such as solar or wind generation would be considered for providing power requirements for tunnel operations. Care would be taken to choose a source and location that would not detract from scenic and cultural landscape values.

BMPs for Weed Control: V-4, STES-3. Construction equipment would be steam-cleaned prior to entering the project area for the first time. All roadsides and disturbed areas would be restored using native conserved topsoil and would be revegetated. Any imported topsoil needed would be certified as weed free. The revegetation plan would include a detailed weed control plan.

Burning Restrictions: AQ-1. Burning would not be allowed at the construction site or in the park or NCRA.

Conservation Measures for Island Marble Butterfly: OSSS-2. Project activities would comply with the 2006 NPS/USFWS conservation agreement. Prior to construction, affected areas would be surveyed for host plants and larva. Steps would be taken to avoid impacts to these resources prior to and during construction, including removal or relocation of larval host plants and planting of host plants within the restored abandoned road segment.

Construction Equipment Controls: AQ-2: Construction equipment would be in good operating condition and be used efficiently to minimize emissions. All construction-related engines would be tuned to the engine manufacturer's specifications and not adjusted in order to increase engine horsepower. Equipment would include particulate traps, oxidation catalysts, and other suitable air pollution control devices. Equipment would not idle for more than five minutes, unless it is necessary for the particular operation.

Construction Timing Restrictions: FTES-1. Noise producing construction activities within the 800-foot buffer of active bald eagle nests would be restricted during the nesting period (January 1 to August 15).

N-2. Construction activities (having noise levels greater than normal traffic) to the east of the NPS-DNR boundary would not be permitted from 6:00 p.m. to 7:00 a.m.

Construction Traffic Safety: SVBP-1. Construction equipment and vehicle operators would be required to use extra caution when approaching and passing special vehicles, bicycles, and pedestrians.

Dust Control Measures: AQ-3. A dust palliative or water would be applied to traffic areas and unpaved haul routes to minimize airborne dust from construction operations. A tarp or other load covering would be required for trucks hauling soil or other dust-producing loads. Haul trucks would employ slow speeds on unpaved roads.

Equipment Noise Control: N-1, FTES-3. Construction equipment would be equipped with functioning mufflers to limit exhaust noise. Equipment would be switched off when not in use.

Geology Wayside Exhibit: TGS-1. A wayside exhibit would be developed to interpret the area's geology.

New Waste Site or Aggregate Source: TGS-5. No disposal sites would be allowed in the park or NRCA. If a non-commercial disposal site or aggregate source is required, the proposal would be analyzed for environmental impacts before approval for use by FHWA. For this project, new non-commercial disposal and aggregate sources would have no more than a "no adverse effect" on cultural resources, a "no effect" determination on threatened and endangered species, no encroachment into waters of the U.S. or wetlands, and no adverse effect on remnant prairie habitats of San Juan Island.

Previously Undetected Cultural Sites: CR-1. The project footprint APE would be monitored during construction. If previously undetected cultural or archaeological resources are encountered during construction, work would stop in that location until the site could be evaluated by a qualified archaeologist.

Previously Undetected Hazardous Material: HM-1. If hazardous materials are encountered during construction, removal would be handled in accordance with WDOE and EPA guidelines.

MITIGATION MEASURES BY ALTERNATIVE

Prohibit Removal of Bald Eagle Nest Trees: FTES-2. Removal of bald eagle habitat trees would be prohibited.

Restore Abandoned Road Segment: The abandoned road segment would be restored by removing the road pavement, road base, and buried utility lines and conduits, contouring the road cut to blend with natural surroundings and planting with native vegetation. A detailed reclamation plan would be developed prior to the beginning of construction.

Revegetation: WQ-2, TGS-4, VQ-3, V-2, W-1, STES-2, OSSS-1, CR-2. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. See appendix A.

Revegetation would begin as soon as possible after completion of construction, during the optimum planting time to ensure plant survival. Topsoil removed during construction would be conserved and reapplied to revegetation sites. If sufficient conserved topsoil is not available, native topsoil may be imported from elsewhere on the island.

Revegetation plans would outline methods and standards for revegetation of California buttercup, rare native prairie species, and island marble butterfly host plants.

Road Damage: TR-2. Construction traffic would follow legal load limits to minimize damage to area road from heavy equipment.

Road Design: CR-3, TGS-1, VQ-1, V-1, STES-1, T-1. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings.

Cut slopes would be designed to use shallow cut and fills to the extent possible and would not use exposed gabions or geometric forms of embankment materials that are incompatible with the character of the landscape. Cut and fill slopes would be designed to insure slope stability and promote revegetation. If needed, walls would be designed with a low profile, using materials with a natural appearance. Wall design would be coordinated with an NPS landscape architect.

Road alignment and design would be adjusted to avoid or minimize impacts to rare native prairie sites, California buttercup, and to minimize impacts to the Mt. Finlayson Trail to the extent possible. Where trail impacts are unavoidable, the trail would be relocated adjacent to the new road alignment.

Road Design for Storm Water Runoff Management: WQ-3. Storm water runoff management features such as vegetated ditches would be incorporated to the extent possible.

Scenic Turnouts: VQ-2. Where possible, scenic turnouts would be constructed along the road alignment for the road user to pull off the road to view the natural features of the area.

In addition, as space permits, a scenic turnout would be constructed at the west end of the tunnel entrance.

SPCC: HM-2. The construction contractor would prepare and implement a Spill Prevention Control and Countermeasure Plan in accordance with EPA guidelines. Excess petroleum and other potentially hazardous waste generated by construction activities would be disposed of in accordance with EPA guidelines.

SWPPP: TGS-3, WQ-1, V-5. Prior to construction, the FHWA would develop a Storm Water Pollution Prevention Plan (SWPPP) for implementation during construction. The SWPPP would include measures (BMPs) for temporary erosion and sediment control devices during construction for control of concentrated storm water runoff. The SWPPP would also include BMPs for housekeeping measures to address the safe storage, handling, and spill prevention of hazardous construction materials.

Traffic Management: VU-1, TR-1. A traffic control plan would be developed specifying road closure times and a public information program. Delays would be limited to 30 minutes or less. Construction of the short connectors between the existing roadway and the new alignment may require full road closure for up to 4 hours intermittently during approximately 1 to 2 weeks.

MITIGATION MEASURES BY ALTERNATIVE

Transfer Abandoned ROW to Land Management Agencies: LU-2. Following construction, the existing easement/ROW for the abandoned section would be transferred back to the appropriate land management agency.

Tunnel Ventilation: AQ-4. In accordance with design standards, the tunnels would include appropriate ventilation to prevent the buildup of noxious fumes inside of the tunnel.

Utility Coordination: U-1. The road contractor would coordinate with the utility companies to relocate utilities prior to construction. If road construction takes place in proximity to utilities, the location would be marked and care would be taken to avoid disturbance to utilities during construction.

Weed Inspection of Aggregate and Fill Sources: V-3. Aggregate and fill material sources would be inspected and certified as weed-free by a qualified person prior to approval for use. If weed free sources are not available, material would be heat treated to kill weed and weed seeds.

Warning Signs: SVBP-2. Signs with flashing beacons activated by the user would be installed at tunnel portals warning motorists of "Bicyclist or Slow-moving Vehicle in Tunnel When Flashing."

ALTERNATIVE D – Mid-Slope Alignment with Short Tunnel

Alternative Electricity Sources: E-1. Alternative sources of electricity such as solar or wind generation would be considered for providing power requirements for tunnel operations. Care would be taken to choose a source and location that would not detract from scenic and cultural landscape values.

BMPs for Weed Control: V-4, STES-3. Construction equipment would be steam-cleaned prior to entering the project area for the first time. All roadsides and disturbed areas would be restored using native conserved topsoil and would be revegetated. Any imported topsoil needed would be certified as weed free. The revegetation plan would include a detailed weed control plan.

Burning restrictions: AQ-1. Burning would not be allowed at the construction site or in the park or NCRA.

Conservation Measures for Island Marble Butterfly: OSSS-2. Project activities would comply with the 2006 NPS/USFWS conservation agreement. Prior to construction, affected areas would be surveyed for host plants and larva. Steps would be taken to avoid impacts to these resources prior to and during construction, including removal or relocation of larval host plants and planting of host plants within the restored abandoned road segment.

Construction Equipment Controls: AQ-2: Construction equipment would be in good operating condition and be used efficiently to minimize emissions. All construction-related engines would be tuned to the engine manufacturer's specifications and not adjusted in order to increase engine horsepower. Equipment would include particulate traps, oxidation catalysts, and other suitable air pollution control devices. Equipment would not idle for more than five minutes, unless it is necessary for the particular operation.

Construction Timing Restrictions: FTES-1. Noise producing construction activities within the 800-foot buffer of active bald eagle nests would be restricted during the nesting period (January 1 to August 15).

N-4. Construction activities (having noise levels greater than normal traffic) to the east of the NPS-DNR boundary would not be permitted from 6:00 p.m. to 7:00 a.m.

Construction Traffic Safety: SVBP-1. Construction equipment and vehicle operators would be required to use extra caution when approaching and passing special vehicles, bicycles, and pedestrians.

Dust Control Measures: AQ-3. A dust palliative or water would be applied to traffic areas and unpaved haul routes to minimize airborne dust from construction operations. A tarp or other load covering would be required for trucks hauling soil or other dust-producing loads. Haul trucks would employ slow speeds on unpaved roads.

Equipment Noise Control: N-1, FTES-3. Construction equipment would be equipped with functioning mufflers to limit exhaust noise. Equipment would be switched off when not in use.

MITIGATION MEASURES BY ALTERNATIVE

Geology Wayside Exhibit: TGS-1. A wayside exhibit would be developed to interpret the area's geology.

New Waste Site or Aggregate Source: TGS-5. No disposal sites would be allowed in the park or NRCA. If a non-commercial disposal site or aggregate source is required, the proposal would be analyzed for environmental impacts before approval for use by FHWA. For this project, new non-commercial disposal and aggregate sources would have no more than a "no adverse effect" on cultural resources, a "no effect" determination on threatened and endangered species, no encroachment into waters of the U.S. or wetlands, and no adverse effect on remnant prairie habitats of San Juan Island.

Previously Undetected Cultural Sites: CR-1. The project footprint APE would be monitored during construction. If previously undetected cultural or archaeological resources were encountered during construction, work would stop in that location until the site could be evaluated by a qualified archaeologist.

Previously Undetected Hazardous Material: HM-1. If hazardous materials were encountered during construction, removal would be handled in accordance with WDOE and EPA guidelines.

Prohibit Removal of Bald Eagle Habitat Trees: FTES-2. Removal of bald eagle habitat trees would be prohibited.

Restore Abandoned Road Segment: LU-1. The abandoned road segment would be restored by removing the road pavement, road base, and buried utility lines and conduits, contouring the road cut to blend with natural surroundings, and planting with native vegetation. A detailed reclamation plan would be developed prior to the beginning of construction.

Revegetation: WQ-2, TGS-4, VQ-3, V-2, W-1, STES-2, OSSS-1, CR-2. Following construction, all disturbed sites would be revegetated using native plant species. A detailed revegetation plan would be developed and implemented on all sites disturbed by construction activities as well as reclamation of the abandoned road segment. See appendix A.

Revegetation would begin as soon as possible after completion of construction, during the optimum planting time to ensure plant survival. Topsoil removed during construction would be conserved and reapplied to revegetation sites. If sufficient conserved topsoil is not available, native topsoil may be imported from elsewhere on the island.

Revegetation plans would outline methods and standards for revegetation of California buttercup, rare native prairie species, and island marble butterfly host plants.

Road Damage: TR-2. Construction traffic would follow legal load limits to minimize damage to area road from heavy equipment.

Road Design: CR-3, TGS-1, VQ-1, V-1, STES-1, T-1. To the extent possible, road design features and final location would be planned to follow natural contours and to minimize the number and height of road cuts and fills. The abandoned quarry on the east end of Mt. Finlayson would be incorporated into the road profile and would be reclaimed to more closely follow natural surroundings.

Cut slopes would be designed to use shallow cut and fills to the extent possible and would not use exposed gabions or geometric forms of embankment materials that are incompatible with the character of the landscape. Cut and fill slopes would be designed to insure slope stability and promote revegetation. If needed, walls would be designed with a low profile, using materials with a natural appearance. Wall design would be coordinated with an NPS landscape architect.

Road alignment and design would be adjusted to avoid or minimize impacts to rare native prairie sites, California buttercup, and to minimize impacts to the Mt. Finlayson Trail to the extent possible. Where trail impacts are unavoidable, the trail would be relocated adjacent to the new road alignment.

Road Design for Storm Water Runoff Management: WQ-3. Storm water runoff management features such as vegetated ditches would be incorporated to the extent possible.

MITIGATION MEASURES BY ALTERNATIVE

Scenic Turnouts: VQ-2. Where possible, scenic turnouts would be constructed along the road alignment for the road user to pull off the road to view the natural features of the area.

In addition, as space permits, a scenic turnout would be constructed at the west end of the tunnel entrance.

SPCC: HM-2. The construction contractor would prepare and implement a Spill Prevention Control and Countermeasure Plan in accordance with EPA guidelines. Excess petroleum and other potentially hazardous waste generated by construction activities would be disposed of in accordance with EPA guidelines.

SWPPP: TGS-3, WQ-1, V-5. Prior to construction, the FHWA would develop a Storm Water Pollution Prevention Plan (SWPPP) for implementation during construction. The SWPPP would include measures (BMPs) for temporary erosion and sediment control devices during construction for control of concentrated storm water runoff. The SWPPP would also include BMPs for housekeeping measures to address the safe storage, handling, and spill prevention of hazardous construction materials.

Traffic Management: VU-1, TR-1. A traffic control plan would be developed specifying road closure times and a public information program. Delays would be limited to 30 minutes or less. Construction of the short connectors between the existing roadway and the new alignment may require full road closure for up to 4 hours intermittently during approximately 1 to 2 weeks.

Transfer Abandoned ROW to Land Management Agencies: LU-2. Following construction, the existing easement/ROW for the abandoned section would be transferred back to the appropriate land management agency.

Tunnel Ventilation: AQ-4. In accordance with design standards, the tunnels would include appropriate ventilation to prevent the buildup of noxious fumes inside the tunnel.

Utility Coordination: U-1. The road contractor would coordinate with the utility companies to relocate utilities prior to construction. If road construction took place in proximity to utilities, the location would be marked and care would be taken to avoid disturbance to utilities during construction.

Weed Inspection of Aggregate and Fill Sources: V-3. Aggregate and fill material sources would be inspected and certified as weed-free by a qualified person prior to approval for use. If weed-free sources are not available, material would be heat-treated to kill weed and weed seeds.

Warning Signs: SVBP-2. Signs with flashing beacons activated by the user would be installed at tunnel portals warning motorists of "Bicyclist or Slow-moving Vehicle in Tunnel When Flashing."