



**U.S. Department of the Interior  
Bureau of Land Management  
San Juan Islands National Monument Resource Management Plan  
and Environmental Impact Statement**

**Analysis of the Management Situation**

**May 2016**

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### **San Juan Islands National Monument Resource Management Plan and Environmental Impact Statement**

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## Frequently Used Acronyms

ACRONYM	COMPLETE PHRASE
ACEC	Area of Critical Environmental concern
AMS	Analysis of the Management Situation
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
DNR	Department of Natural Resources
DOI	U.S. Department of the Interior
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act
FWS	U.S. Fish and Wildlife Service
GIS	Geographic Information Systems
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
R&PP	Recreation and Public Purposes
RMP	Resource Management Plan
ROW	Right-of-Way
SRMA	Special Recreation Management Area
VRI	Visual Resources Inventory
VRM	Visual Resource Management
USC	U.S. Code of Laws
USCG	U.S. Coast Guard
WDFW	Washington Department of Fish and Wildlife
WDOE	Washington Department of Ecology
WNHP	Washington Natural Heritage Program

Dear Reader,

The Bureau of Land Management has prepared this Analysis of the Management Situation (AMS) in support of the development of the San Juan Islands National Monument Resource Management Plan (RMP). The information in the AMS, along with the comments received during the public scoping period (March 1, 2015-April 2, 2015), provides a foundation for subsequent steps in the planning process, including the development of management alternatives for the draft resource management plan and the analysis of the environmental effects of these alternatives. The AMS summarizes how the BLM is currently managing the San Juan Islands National Monument, provides an overview of existing conditions and trends in the planning area, and identifies potential management opportunities the BLM will explore through the planning process.

The BLM appreciates the participation of its partners and the public in this planning effort. In March 2015 we held public meetings and a comment period to kick off the planning effort (the results of which are summarized here: [www.blm.gov/or/plans/sanjuanislandsnm/scopingrep.php](http://www.blm.gov/or/plans/sanjuanislandsnm/scopingrep.php)). In January 2016 we held additional public workshops to gather geographically-specific input on human uses in the national monument. Stay tuned for more opportunities to participate in the process.

Sincerely,

Linda Clark  
District Manager

## **1. Introduction**

The Bureau of Land Management’s (BLM) Spokane District Office is currently developing a resource management plan (RMP) for the San Juan Islands National Monument. The BLM will work closely with its many partners and the public during the planning process. This RMP will provide the overarching objectives and direction for the BLM-administered lands in the San Juan Islands. The BLM will consider the impacts of the RMP on the greater San Juan Islands landscape, but the decisions made through the planning effort will only apply to lands and activities administered by the BLM.



### **1.1 What is an Analysis of the Management Situation?**

The analysis of the management situation (AMS) is a summary document that describes the condition and trends of resources and uses within the decision area, provides a snapshot of how the BLM is currently managing those resources, and identifies management opportunities the BLM will explore through the planning effort. Because it is only intended to provide a snapshot of resources and management opportunities, the AMS does not provide the level of detail, background information, references, or definitions that will be included in the draft RMP/environmental impact statement (EIS). The data included in this document is preliminary and may be updated or revised in future San Juan Islands National Monument (Monument) RMP planning documents.

The BLM will draw upon the AMS as it develops the introduction, affected environment chapter, and no action and action alternatives for the draft RMP/EIS.

### **1.2 Background on the San Juan Islands National Monument**

On March 25, 2013, President Obama signed Proclamation 8947 (see Appendix A) designating the Monument. The Monument consists of approximately 1,000 acres of land scattered across the San Juan Islands, which lie in the heart of the Salish Sea. This acreage includes nearly 700 acres currently under BLM jurisdiction and nearly 300 acres withdrawn to the U.S. Coast Guard (USCG) that are in the process of being relinquished to the Bureau and are currently co-managed with the BLM. The BLM is developing the plan with the expectation that the lands currently under USCG jurisdiction will eventually be relinquished to the BLM. In the event that the relinquishment process is still ongoing when the plan is completed, the decisions made through the plan will go into effect for these lands once they are under BLM jurisdiction.

The President established the Monument on these islands to “maintain their historical and cultural significance and enhance their unique and varied natural and scientific resources, for the benefit of all Americans.” The BLM manages these lands as a component of the Bureau’s National Landscape Conservation System in a manner that protects and restores its objects and values. The proclamation goes on to state that, “For purposes of protecting and restoring the objects identified above [...] the BLM, shall prepare and maintain a management plan for the national monument...”

### **1.3 Brief Description of the Decision Area and Planning Area**

The Monument is the “decision area” for this planning effort; in other words, it is the area about which decisions will be made through this planning effort. As noted above, the Monument, and thus the

decision area, includes only the BLM-administered lands, and lands that the BLM is currently co-managing with the USCG, within the San Juan Islands.

The term “planning area” refers to the broader San Juan Islands, which provide context for the BLM’s potential decisions and which the plan decisions may directly or indirectly effect. Map 1, below, shows both the decision area (the Monument) and the planning area (the broader map area) for this effort. The planning area is framed by the Strait of Juan de Fuca on the south, the Strait of Georgia on the north, the Washington State mainland on the east, and Canada’s Vancouver Island on the west. San Juan County contains the majority of the Monument; a small portion of the Monument occurs in Skagit and Whatcom counties (see Table 1). Because many sources of data are available by county, the BLM uses San Juan County as a stand in for the planning area in some of the AMS discussions below.

**Table 1. Acres of BLM-administered land within each county in the Planning Area**

County	BLM Acres	USCG Acres Co-managed with BLM
San Juan	~612	~290
Skagit	<1	0
Whatcom	58	0
<b>Total</b>	<b>~671</b>	<b>~290</b>

## **2. Overview of the BLM’s Current Management of the Monument**

There is currently no RMP guiding the BLM’s management of the Monument. The BLM manages these lands primarily through a custodial approach that focuses on meeting legal mandates and preventing unnecessary and undue degradation of the Monument. Until the RMP is complete, the BLM will avoid taking actions that would limit management options that could be explored through the RMP. The BLM, in collaboration with its partners, currently carries out projects such as removing hazard trees that pose a threat to safety or property, controlling invasive plant species, and restoring aspects of the historic structures associated with the Monument’s maritime heritage. There is no current mineral activity, grazing, commercial forestry, or energy production within the Monument.

The Iceberg Point and Point Colville Areas of Critical Environmental Concern Decision Record (BLM 1990) provides some management direction for the Monument lands on Lopez Island, though these ACECs were not created as part of an RMP as required under current BLM policy. The decisions in the decision record originally applied to the lands at Iceberg Point and Point Colville; the BLM extended them to Watmough Bay and Chadwick Hill after the Bureau’s acquisition of these areas. A volunteer monitoring program was established after the designation of the ACECs and has consistently provided the BLM with information about the condition of resources and visitation within the lands covered by the ACECs.

Management Direction from existing ACEC Decision
<p>The following is prohibited within the ACECs:</p> <ul style="list-style-type: none"> <li>• Fires</li> <li>• Trail construction</li> <li>• Overnight camping</li> <li>• Motorized vehicle travel except at Point Colville road crossing or in the case of</li> </ul>

emergencies or for administrative purposes

- Fuel wood cutting and commercial timber sales.
- Rights of way for additional roads, power lines, pipelines, or communication facilities
- Livestock grazing
- Mineral material sales

Visitor management within the ACECs:

- Place signs as necessary to control visitor use
- Require special recreation permits for groups of ten or more
- Close areas to any use or combination of uses that tend to degrade the natural values of the site

The current planning effort will address the lack of an RMP for the Monument and provide overarching direction for how the BLM will implement the protective mandate of Proclamation 8947.

## **2.1 The Importance of Partnerships for the Monument**

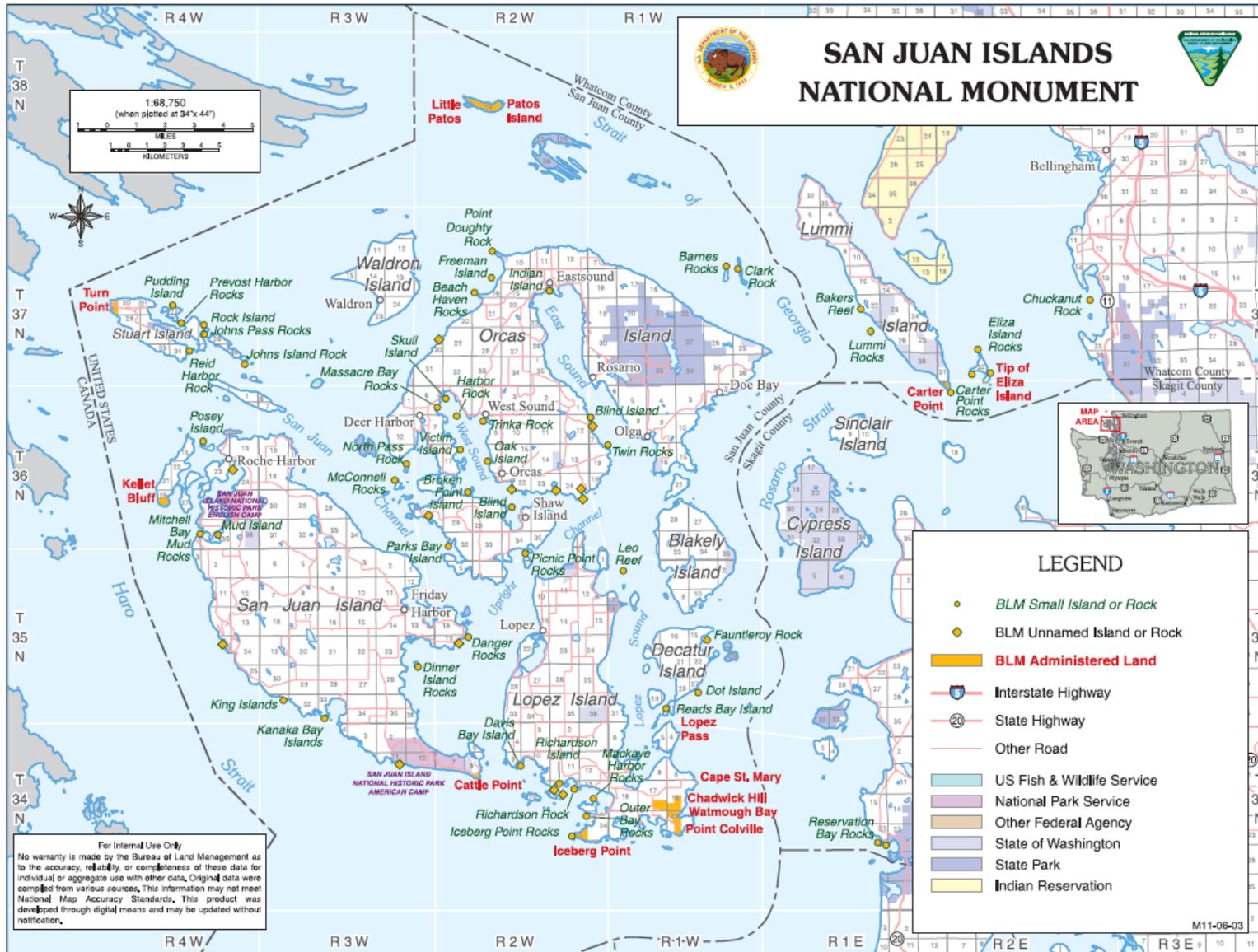
Much of the work carried out within the Monument is accomplished through partnerships with other agencies, non-profit organizations, and volunteers. These partners are invaluable to the management of visitation, the monitoring of the landscape, and the restoration of historic structures. Regardless of the decisions made through the planning effort these partnerships will remain essential to the effective management of the Monument.

## **3. Relationship to Other Agencies' Programs, Plans, or Policies**

This RMP process will recognize ongoing programs, plans, and policies that other land managers and interested governments are implementing within the planning area. When developing the proposed plan, the BLM will seek to be consistent with, or complementary to, the management approaches of its partners. As it moves forward with the planning process, the BLM will consider the following plans affecting the San Juan Islands:

- National Park Service, San Juan Island National Historic Park General Management Plan and Environmental Impact Statement (2008)
- San Juan Islands Scenic Byway Corridor Management Plan (2011)
- San Juan County, San Juan County Comprehensive Plan (as revised, 2010)
- San Juan County Parks & Recreation Commission, San Juan County Parks, Trail, and Natural Areas Plan 2011-2016 (2010)
- San Juan County Community Wildfire Protection Plan (2012)
- U.S. Fish and Wildlife Service, Protection Island and San Juan Islands National Wildlife Refuges Comprehensive Conservation Plan and San Juan Islands Wilderness Stewardship Plan (2010)
- U.S. Fish and Wildlife Service, Recovery Plan for the Golden Paintbrush (*Castilleja levisecta*) (2000)
- U.S. Fish and Wildlife Service, Recovery Plan for the Marbled Murrelet (Washington, Oregon, and California Populations) (1997)
- U.S. Fish and Wildlife Service and San Juan Island National Historic Park, National Park Service, Conservation Agreement and Strategy for the Island Marble Butterfly (2006)

Map 1: San Juan Islands National Monument Planning Area



## 4. Area Profile

This section is the focus of the AMS and provides an overview of the current conditions and, where applicable, trends and forecasts for the Monument lands and values. It also briefly describes some of the management opportunities that may be explored through the RMP or, later, during its implementation. Each resource section also describes indicators that the BLM may use in the draft RMP/EIS to describe the potential consequences of the draft management actions. These indicators will be fully explained and applied in the draft RMP/EIS. Appendix B of this document provides an overview of the laws and regulations pertinent to each resource and activity the BLM manages within the Monument.

Presidential Proclamation 8947 (see Appendix A) identifies objects and values within the Monument that the BLM must protect through the RMP. The first paragraph of each subsection below identifies the relationship of the particular resource or activity to proclamation's mandate.

### 4.1 Air Quality

#### Key Points

- Prescribed burning, which will be considered as a potential management tool through the planning process, can result in smoke intrusions into smoke sensitive areas.
- Opportunities to reduce emissions from BLM management actions are limited.

#### Context and Current Condition

The proclamation does not specifically mention air quality, but a decline in air quality could become a stressor to the ecological objects and values described by the proclamation. The draft RMP/EIS will analyze any potential impacts on air quality from the draft alternatives.

The U.S. Environmental Protection Agency (EPA) regulates air quality under the Clean Air Act, as amended (42 USC§7401). The Washington Department of Ecology (WDOE) has the primary responsibility to carry out the requirements of the Clean Air Act in Washington State. The EPA has established national ambient air quality standards (NAAQS)<sup>1</sup> for carbon monoxide, lead, nitrogen dioxide, ground-level ozone, sulfur dioxide, and particle matter. The EPA designates areas that do not meet these standards as non-attainment areas; the pertinent state and local governments must develop plans outlining how non-attainment areas will attain and maintain the standards. The San Juan Islands are not included in any NAAQS nonattainment area (WDOE 2016b).

The primary pollutants that might be associated with BLM management actions are ozone and particulate matter. Ozone is not emitted directly into the air but is created by chemical reactions between oxides of nitrogen and volatile organic compounds, which are generated by sources including motor vehicle exhaust, gasoline vapors, and chemical solvent (EPA 2015a). Emissions from motorized vehicles are the leading source for oxides of nitrogen and the leading anthropogenic source of volatile organic compounds in both Washington State and San Juan County (WDOE 2016a).

Particulate matter is divided into two categories: coarse particulate matter sized 2.5 to 10 microns (PM<sub>10</sub>) and fine particulate matter sized ≤2.5 microns (PM<sub>2.5</sub>) (EPA 2015b). Sources of both coarse and fine particulate matter include motor vehicle exhaust, wildland fire, and dust from

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<sup>1</sup> More information about these standards is at the EPA website: [www.epa.gov/air/criteria.html](http://www.epa.gov/air/criteria.html)

roads and construction (EPA 2015b). The leading sources of PM<sub>2.5</sub> in Washington State are home heating devices such as woodstoves and fireplaces (WDOE 2016a). In San Juan County, home heating devices contribute about 31 percent of the PM<sub>2.5</sub> emissions; residential outdoor burning (19 percent) and paved and unpaved road dust (13 percent) are also major contributors (WDOE 2016a). The leading sources of PM<sub>10</sub> in San Juan County are road dust and construction dust, which contribute 62 percent of the county's total emissions (WDOE 2016a).

Current activities within the Monument that could contribute to air pollution are limited. Motorized vehicle use within the Monument occurs on 0.87 miles of BLM-administered road. Monument staff and volunteers also use cars and motorized boats to reach monument lands for management purposes. The BLM is not currently implementing prescribed burning within the Monument.

### **Trends and Forecast**

Initiatives by the EPA, the State of Washington, the Puget Sound Clean Air Agency, the Greater Vancouver Regional District, and other regional air quality agencies have resulted in emission reductions in the Puget Sound region since the mid-1980s (Environment Canada and EPA 2005). This improvement has occurred despite the region's growing population, but substantial projected population growth may threaten the region's air quality improvements over time (Environment Canada and EPA 2005).

Wildfire on the San Juan Islands, the Olympic Peninsula, Vancouver Island, or the mainland can be a source of air pollution in the Monument and the broader San Juan Islands. The frequency of fires within the region could increase due to global climate change, changes in vegetation communities, and increases in visitation.

The BLM will explore the use of prescribed burning as a management tool through the planning process. Use of prescribed burning in the Monument could cause temporary increases in air pollution. However, in the long term, this treatment and other fuels treatment options could result in reductions in the acreage and intensity of wildfire, thereby producing less smoke over time.

### **Management Opportunities**

The BLM will consider how its management alternatives could affect air quality and how such potential effects could be mitigated. Management opportunities that could lead to impacts on air quality include the use of prescribed fire as a management tool.

### **Potential Indicators for Analysis**

The BLM is likely to use the potential contribution of ozone, PM<sub>2.5</sub>, and PM<sub>10</sub> from activities that would be allowed under each draft alternative as an indicator of the potential impact on air quality.

## **4.2 Climate and Climate Change**

### **Key Points**

- The amount of carbon stored in the above-ground biomass has increased substantially since the mid-1800s; actions taken to address the encroachment of conifer species on the grasslands identified in the proclamation would require reducing above-ground carbon storage.
- At present, BLM management activities within the Monument emit minimal greenhouse gasses; actions taken to restore vegetation communities identified in the proclamation would likely increase the BLM's greenhouse gas emissions.

- Predicted changes in ocean conditions, including sea level rise and ocean acidification, are likely to threaten partial or full submergence of low-lying parcels within Monument, increase erosion of vulnerable beaches and cliffs, and shift the species composition of near-shore ecosystems by mid-century.

### **Context and Current Condition**

While the proclamation does not specifically address climate change, climate change is a potential stressor and threat to the objects and values for which the Monument was designated. While there are no Federal laws or regulations specific to climate change and Federal land management, there are a number of policies in the form of executive orders, secretarial orders, and departmental manuals. Broadly, these policies direct Federal agencies to increase resilience to climate change and to strive to understand how changing climate may affect the resources each agency manages. No management specifically related to climate change presently occurs within the Monument.

#### *Climate*

San Juan County's climate is usually characterized as maritime due to its mild temperatures, although precipitation amounts and timing are more typical of a Mediterranean climate. The San Juan Islands lie in the rain shadow of the Olympic Peninsula and Vancouver Island. Average annual precipitation within the islands increases from south to north. According to data available through WestMap (available at <http://www.cefa.dri.edu/Westmap/>), San Juan County averages 29.25 inches of precipitation per year with only 22 percent falling in May through September. The annual average temperature is 49.6°F. Minimum temperatures drop below freezing only about 35-36 days per year and maximum temperatures only very rarely exceed 90°F. Snow is rare, but can occur from November through March, averaging 5-6 inches total per year based on data from Olga (on Orcas Island) and Anacortes, WA. The county averages 135 days with precipitation and 158 sunny days (Sperling 2015).

In Washington generally, and the Puget Sound specifically, average annual temperature increased by 1.3 °F between 1895 and 2014 (Dalton et al. 2013, Walsh et al. 2014, Mauger et al. 2015). Air temperature at night is rising faster than during the day and the frost free-period in the Puget Sound lowlands has increased by 30 days since 1920 (Mauger et al. 2015). According to Mauger et al. (2015), spring (March-May) precipitation in the Puget Sound lowlands has increased by about 27 percent since 1895; no other seasonal or the annual precipitation trend is statistically significant. However, analysis of the WestMap data for San Juan County indicates that annual precipitation has declined overall, with declines in fall and winter, a slight increase in spring, and no change in summer. Late winter and early spring streamflow have increased, while summer streamflow has decreased, although the changes are smaller in rain-dominated systems (Dalton et al. 2013).

#### *Changing Ocean Conditions*

The key changes in ocean conditions include sea level rise, increasing acidity, and changes in storm tracks, frequency, and wave heights. The San Juan Islands are still rising through a process known as isostatic rebound, which is a result of the melting of the Laurentide Ice Sheet (National Research Council 2012, Reeder et al. 2013). The San Juan Islands are located at the hinge point between the rising Olympic Peninsula and the subsiding southern Puget Sound such that the rate of sea-level rise for the islands is near global averages (MacLennan et al. 2013), indicating that the rate of sea level rise exceeds the rate of isostatic rebound.

Globally, the top layer of the ocean warmed by  $0.8\text{ }^{\circ}\text{F} \pm 0.014\text{ }^{\circ}\text{F}$  and sea level rose by  $3.2 \pm 0.5$  inches between 1971 and 2010 (IPCC 2013). Watson et al. (2015) found that sea level rose by 2.05 to 2.28 inches between 1993 and mid-2014 after correcting for biases in GPS data. Specifically in the San Juan Islands, sea level at Friday Harbor has risen approximately three inches between 1934 and 2008 (National Research Council 2012). A 2 to 3 inch rise can result in dramatic changes in high tides and storm surges. Winter storm tracks in the northern Pacific Ocean have shifted northward since 1959; overall storm frequency has decreased and strong storm frequency has increased during this time period. In addition, average wave heights in the eastern Pacific increased by 0.94 inches in winter and 0.54 inches in summer over the last 30 years (Reeder et al. 2013, Ruggiero 2013, Ruggiero et al. 2013). The changes in sea level and wave heights mean that feeder bluffs, south-facing barrier beaches with a fetch of greater than 5 miles, and many pocket beaches are eroding while some barrier beaches are growing (MacLennan et al. 2010).

Changing ocean chemistry and temperature can affect nearshore plant communities along the boundaries of and adjacent to the Monument. Of particular concern are the potential impacts on kelp and eelgrass beds due to their importance to ocean productivity and biodiversity. Although climate change is expected to create novel communities and combinations of stressors in the ocean, just as on land, very little is known about how most seaweed species might respond either to changing ocean conditions or to interactions between multiple stressors (Harley et al. 2012).

#### *Carbon Storage*

The draft RMP/EIS will include an estimate of the amount of carbon currently stored in live and dead vegetation and soils in the Monument. Most carbon estimates and estimating techniques address commercially important forests, thus there is little to no existing information about the carbon stored in vegetation on the San Juan Islands. Carbon storage is a function of biomass, with approximately half the biomass in vegetation consisting of carbon. As the amount of biomass increases, the amount of carbon stored on a site or landscape increases; a decrease in biomass has the opposite effect. Based on fire history studies and historical accounts, it appears that conifer encroachment into grasslands and savannas has significantly increased the above-ground biomass within the Monument, thereby increasing carbon storage, although at the expense of vegetation types such as Garry oak woodlands and camas gardens (Agee and Dunwiddie 1984, Avery 2004, Gray and Daniels 2006, Dunwiddie et al. 2011).

#### *Greenhouse Gas Emissions*

Greenhouse gas emissions from land management are typically linked to timber harvesting, prescribed burning, and livestock grazing. None of these activities currently occurs within the Monument. Wildfires originating within or burning onto the Monument can be a potential significant source of greenhouse gas emissions. However, within the San Juan Islands, wildfires are rare and typically very small, averaging only 2.3 acres in size (see the Fire and Fuels section for more detail). Greenhouse gas emissions occurring as a direct result of current BLM management actions are limited to those from infrastructure maintenance, travel by boat and car to the various parcels within the Monument, and the sporadic use of small engines in connection with management activities (such as hazard tree removal). The BLM has no reliable data for these sources and cannot accurately estimate its current greenhouse gas emissions. The draft RMP/EIS will estimate greenhouse gas emissions for the alternatives provided there are enough activities being considered for which the BLM has estimation techniques.

## **Trends and Forecasts**

### *Climate*

According to Mauger et al. (2015), average annual temperature in the Puget Sound lowlands is projected to increase by 4 to 6 °F relative to 1970-1999 by mid-century, and by as much as 6 to 10 °F by the end of the century. By mid-century, the Puget Sound would probably experience average annual temperatures higher than the average maximum temperatures that occurred in the 20<sup>th</sup> century. Warming will occur in all seasons with the greatest warming in summer. More extreme heat events are likely but changes in weather patterns could moderate the frequency and intensity of such events (Dalton et al. 2013, Snover et al. 2013, Mauger et al. 2015). Natural variability arising from the El Niño-Southern Oscillation (ENSO) and the Pacific Decadal Oscillation (PDO) is expected to continue, but climate scientists do not know how changing climate may alter these drivers. Average annual precipitation is expected to change little, with summer precipitation projected to decline; projections are mixed for the other seasons (Snover et al. 2013, Mauger et al. 2015). As a result, conditions will become effectively drier due to increasing evapo-transpiration demand due to increased temperature. Heavy rainfall events in winter are expected to increase (Dalton et al. 2013, Snover et al. 2013, Mauger et al. 2015).

### *Changing Ocean Conditions*

In the San Juan Islands, concerns related to climate change include sea level rise and intensified storm surges. The predictions for sea level rise vary between analyses. Snover et al. (2013) report that global sea levels are projected to increase 11 to 38 inches relative to 1986-2005 by the end of the century. Using a survey of expert opinion, Horton et al. (2014) estimated global sea level rise of 27 to 47 inches relative to 2000 by the end of the century under the business-as-usual scenario. The National Research Council (2012) estimated sea level rise for Washington State as ranging from 4 to 56 inches by the end of the century, with an average of 24 inches. Mauger et al. (2015) report that sea level is expected to rise by 14 to 54 inches in the Puget Sound by the end of the century relative to 2000. If the observed rate of sea level rise at Friday Harbor were to continue, sea level would rise another 4 inches by the end of the century.

As average sea level continues to rise, the Monument's nearshore rocks and small islands may become permanently submerged (potentially posing navigation hazards), partially submerged, or reduced in extent. This may reduce the overall acreage of the Monument, since the Monument designation only applies above mean high tide. Eroding feeder bluffs and pocket beaches in the San Juan Islands will continue to shrink due to the combination of rising sea level, higher waves, and stormier weather in winter; some may disappear completely over the long term. Rocky headlands should see little change. In the Puget Sound, rising sea levels are expected to increase the area of salt marsh, transitional marsh, and tidal flats and decrease the extent of estuarine beach, brackish marsh, tidal swamp, and tidal freshwater marsh. Eelgrass beds may expand provided the thermal threshold of 77 °F is not exceeded, migration barriers are absent, and water clarity does not decline (Mauger et al. 2015). Increasing ocean temperatures are also expected to increase the incidence and duration of harmful algal blooms (Mauger et al. 2015)

Increasing ocean temperatures and carbon dioxide will favor turf-forming algae over kelp and eelgrass (Connell and Russell 2010, Kroeker et al. 2013). Increasing ocean temperatures will favor warmer water kelp species such as giant kelp over colder water species such as bull kelp (Harley et al. 2012, Hoos 2015) but also tend to reduce giant kelp reproductive success (Harley et al. 2012, Brown et al. 2014). Continued ocean acidification will favor non-calcareous macroalgae over calcareous macroalgae and disfavor certain kelp herbivores, such as sea urchins (Hepburn et al. 2011, Harley et al. 2012, Brown et al. 2014). Acidification also disfavors

macroalgae without a carbon concentration mechanism that allows the plant to extract carbon dioxide from bicarbonate, which is much more common than dissolved carbon dioxide (Hepburn et al. 2011, Harley et al. 2012). However, species with such mechanisms, which includes most kelp species, are not expected to benefit from increases in dissolved carbon dioxide either since they can also use dissolved carbon dioxide (Hepburn et al. 2011, Harley et al. 2012). In the intertidal region, increases in extreme warming events are likely to disfavor intertidal kelp species as are the combination of warmer temperatures, increased dissolved carbon dioxide, and increased ultraviolet exposure (Hoos 2015).

### **Management Opportunities and Questions**

The RMP will broadly assess how the continuing change in climate might affect the baseline conditions for the lands and resources. The BLM will consider whether there are adaptation or mitigation strategies that could decrease the vulnerability and/or enhance the resilience of these lands and resources. Such strategies could include management actions to mitigate potential threats to resources and infrastructure that may be threatened by rising sea levels and increased storm surges. It could also include strategies to enhance the resilience of culturally important plant communities such as camas gardens and Garry oak.

### **Potential Indicators for Analysis**

The BLM is likely to assess how each alternative might affect carbon storage and greenhouse gas emissions arising from certain management activities. Management approaches considered through the planning process, such as prescribed burning and vegetative treatments, would have some amount of direct effect on greenhouse gas emissions and carbon storage. As the BLM develops its analysis of the effects of its draft alternatives, it will consider how climate change could alter and create uncertainty around these potential impacts over time.

## **4.3 Cultural Resources**

### **Key Points**

- Historic and cultural resources including archaeological sites, buildings, and structures, and places with historical and/or cultural values are among the objects for which the Monument was established.
- Properties associated with traditional use for fishing, hunting, gathering, and other activities by Native American tribes are among the important values to be protected in the Monument.
- The Monument is located within the traditional use area of a number of Native American Tribes who continue to utilize and value the lands and resources in the Salish Sea region.

### **Context and Current Condition**

The proclamation identifies the Monument's historic and cultural values as among the objects for which the Monument was established. It specifically references sites that are evidence of the area's current and ancestral importance to the Coast Salish people, including the shell middens, reef net locations, and burial sites. It also addresses buildings and features associated with the Monument's rich maritime history, such as the Patos Island Lighthouse and the Turn Point Light Station.

Cultural resources include objects and locations associated with human activity, occupation, or use. Examples include archaeological, historic, and architectural sites, buildings, and structures, as well as places with historical or cultural values and uses, including locations of traditional cultural or religious importance to specific social or cultural groups. The BLM currently

manages cultural resources to meet the protective and restorative mandate of the proclamation while allowing compatible uses of the Monument.

The BLM assesses the relative importance of cultural resources by considering factors such as those that contribute to a property's eligibility to the National Register of Historic Places (NRHP). These include the integrity of setting, its feel and appearance, and the scientific, cultural, or historical values that contribute to its significance. Protection and conservation of those elements are vital to managing archaeological and historic sites, traditional cultural properties, and other properties of traditional importance to the tribes or other social and/or cultural group that values them.

The age of cultural resources documented within the San Juan Islands extends back more than 10,000 years before the present (BP). The BLM has inventoried about a third of the Monument for cultural resources and has documented 21 cultural sites within the Monument. Additional inventory is likely to identify and document more cultural properties associated with Native American habitation and use and activities associated with Euro-American settlement and development. Few sites in the San Juan Islands have been formally evaluated for listing in the NRHP. Archaeological sites with potential to yield important information about the past are considered eligible in most instances and are avoided during surface-disturbing activities. Patos Light Station is listed on the NRHP and Turn Point Light Station is eligible to be listed.

#### *Cultural Resources Associated with Pre-European Settlement*

Although the earliest human occupations in the region date to around 11,500 years ago, most documented sites within the Monument likely date to less than 3,000 years ago. By this time, Northwest Coast cultures, in general, began occupying year-round permanent villages and followed a specialized maritime subsistence strategy with elaborate and complex social and material culture. By approximately 1,500 years ago, the inhabitants of the San Juan Islands area were primarily members of the Central Coast Salish tribes who spoke the Northern Straits language and tribes who spoke the closely related Klallam (Clallam) language.

Although salmon production was an important element of the Coast Salish economy, a wide range of marine, riverine, and terrestrial resources and habitats were utilized. Specialized technologies, such as long-term food storage, increased use of bone and antler tools, and reef nets, were developed to better utilize the abundant natural resources available in many of the habitats and sustain the subsistence wealth of the societies. Subsistence strategies generally included seasonal movement from villages to resource collection camps to gather resources. The resource camps may be associated with activities such as reef netting for salmon, shell fish gathering and processing, and, in the interior landscapes of the islands and mainland, plant collecting and hunting. Trade and exchange were also important features of Northwest Coast economies, including interaction with interior groups through established trade routes.

With increasing non-native settlement by the 19<sup>th</sup> century and population loss following early epidemics of the late 18<sup>th</sup> century, along with early 19<sup>th</sup> century and attacks from northern raiding parties, residential occupation, resource procurement, and travel patterns began to change. Although many continued to fish, hunt, and collect plant resources, others turned to employment at canneries, logging, or as mill hands or dockworkers when they could no longer compete with the Hudson's Bay Company or other trading companies (Suttles 1990).

By the 1850s, government policies led to negotiation of treaties with indigenous populations in the region and relocation of many to reserves in Canada and reservations in the United States.

Those not moving to the reservations remained in the islands and their descendants continue to be part of the local communities.

Archaeological sites recorded in the Monument are predominantly associated with short term occupation and resource procurement, including shell middens, rock shelter and campsites, rock features, burials, and areas associated with resource use and processing. In consultation with its tribal partners, the BLM has worked to reduce risks of resource damage through shoreline erosion in certain vulnerable areas. In areas like Watmough Bay, increased erosion, which can be attributed to changing weather patterns threatens important scientific and cultural values. Employing treatments that protect the resources without significantly altering the historic and natural setting is a goal for protecting and preserving threatened historic properties.

The BLM also recognizes that the Monument's coastal grasslands and meadows were likely maintained by native peoples through the use of fire (Kittel 2010). These grasslands, and the culturally important plant species that grow within them, are often anthropogenic landscapes maintained for the culturally important plants such as camas (*Camassia sp.*) and various bulbs, roots, and berries that were available in these plant communities. These landscapes are part of the Monument's important cultural values and are still valued by the Coast Salish tribes that utilized and managed them.

#### *Historic Cultural Resources*

Exploration and trade began as early as the 1500s along the west coast of North America. By the late 1700s, Spanish, Russian, British, and American expeditions had extended across much of the West Coast trading metals, guns, beads, textiles, and other goods for pelts (Ames and Maschner 1999; Cole and Darling 1990; Schwantes 1996). In 1777, Captain Cook sailed along the Pacific Coast eventually landing on Vancouver Island in British Columbia. His logs became the basis for British claims along the West Coast (Schwantes 1996). Spanish expeditions into the San Juan Islands soon followed. Following the Nootka Convention of 1790, Captains George Vancouver and Juan Francisco de la Bodega, Lt. Charles Wilkes, and others began charting numerous islands from Vancouver Island to the mainland. Many of the current island names originate from these expeditions.

By the early 1800s, explorers, including the Lewis and Clark expedition and fur traders of the Hudson Bay Company, Pacific Fur Company, the North West Company, began exploring inland areas and building trade relationships with interior Native American groups. By the 1830s, missionaries and settlers were entering the Northwest.

As British and American interests in the area continued to grow, the Oregon Treaty of 1846 was negotiated to define boundaries between Oregon Territory to the south and British holdings to the north of the 49<sup>th</sup> Parallel. As American and British settlers competed for land claims in the San Juan Islands, it became apparent that the boundary between the American holdings and the British were not well defined. In 1859, an incident involving the shooting of a boar that had strayed across property boundaries led to a confrontation called the "Pig War" between British and American forces in the region. The incident led to a 12 year British and American occupation of San Juan Island until the boundary dispute was resolved through mediation by Kaiser Wilhelm I, Emperor of Germany. American Camp and British Camp were established on San Juan Island by 1860 to protect each nation's interests until the boundary dispute was resolved.

By the mid-19<sup>th</sup> century, fishing and timber operations were becoming established in the islands. A seasonal fishing station was established by the Hudson Bay Company on San Juan Island and

an agricultural station called Belle Vue Sheep Farm was established at Cattle Point on the southern end of San Juan Island. The developments were intended to bolster British interests in the San Juan Islands. The Hudson's Bay Company and other trading companies successfully exploited Coast Salish trading networks and established trading centers of their own on island outposts and on the mainland (Suttles 1990).

Extraction of limestone also became an important industry in the San Juan Islands; the islands became one of the largest producers of lime on the West Coast at that time (San Juan Islander 1975 [1901]: 7). Some of the first commercial lime shipped from the islands was attributed to English soldiers. This started an industry which in time supported a majority of the island's residents. Lime was initially hand quarried, burned in pot kilns, and shipped to Victoria in empty whiskey kegs (Richardson 1973:42) and on English gun boats (San Juan Islander 1975 [1901]: 6). In the 1870s, the Federal government began reserving locations for aids to navigation in the islands to aid growing transportation through Haro Strait.

Patos Light Station located on Patos Island and Turn Point Light Station on Stuart Island are two of the aids to navigation established in the 1890s and located within the Monument. The light stations were operated by light keepers until they were automated by the U.S. Coast Guard in the 1970s. The light stations are maintained to protect their historic appearance and setting and to provide opportunities for public education and interpretation. In collaboration with its partner organizations--including Turn Point Lighthouse Preservation Society, the Keepers of the Patos Light--the BLM has maintained Patos Lighthouse and the Turn Point Light Station and its associated structures to preserve and protect them in their historic setting. Although some structures were removed during the operational life of the facilities, the BLM has maintained the historic nature of the historic facilities since they were relinquished by the U.S. Coast Guard. Restoration and rehabilitation was completed at Patos Island Lighthouse and is ongoing at Turn Point Light Station and its associated structures. The objective of the on-going restoration and rehabilitation work is to approximate the 1950s appearance of the structures.

### **Trends and Forecasts**

Cultural resources are in large part nonrenewable resources affected by numerous natural and cultural processes. Natural processes including erosion, weathering, soil conditions, and animal activity can affect these resources. Human activities, whether intentional or inadvertent, can also influence the condition of cultural resources. The degree to which the condition of cultural sites is affected depends on a number of factors including the nature of the site, setting, and the process or activity. The following factors are commonly identified as affecting site condition within the Monument: shoreline erosion, recreational activities, animal burrowing, and natural weathering and decay.

As described further in the habitat and vegetative communities section below, the encroachment on the Monument's fire-dependent grasslands is causing a gradual decline in these culturally-important vegetation communities. Erosion and weathering resulting from natural processes and human activities have impacted current conditions at many of the sites in the Monument. About 67 percent of the sites are currently in good condition, indicating that conditions are relatively stable. Approximately 33 percent are in poor condition, indicating that erosion, weathering, and human disturbance continue to impact these sites.

The BLM conducts proactive cultural resource inventories to identify resources at risk from looting, vandalism, or natural processes before the resources are significantly impacted or lost. In addition, the BLM identifies cultural resources through inventories conducted in response to compliance with Section 106 of the National Historic Preservation Act. Current management

measures for Federal undertakings generally seek to avoid impacts to cultural resources and implement measures to protect or mitigate effects to threatened resources. As a result, regulatory compliance activities and proactive cultural resources management actions in general ensure site conditions in the project area are stable.

Projected increases in recreational use may increase risks to cultural resources from inadvertent damage associated with human use and, potentially, looting and vandalism. Natural processes, including weathering and erosion from wind, water, and temperature, will continue to influence site conditions. Although management measures seek to avoid adverse impacts to cultural resources through project design, avoidance, or mitigations, increased use may contribute to impacts and loss of traditional cultural landscapes and associated values.

### **Management Opportunities**

The BLM will explore opportunities to manage recreational uses to reduce potential impacts to cultural sites. It will consider where there may be opportunities to focus appropriate education and interpretation on cultural resources while also protecting these sites from potential degradation. The BLM will also consider how the Monument's historic structures should be managed to balance opportunities for visitor use and the restoration and protection of the historic structures.

As further described in the tribal interests section of this document, the BLM will work with its tribal partners to explore how the cultural resources and traditional cultural properties of the Monument will be protected and preserved. It will also work with tribal partners to identify management measures needed to ensure the continued traditional use of sacred sites or landscapes.

### **Indicators**

The BLM is likely to use the following to assess the impact of the draft alternatives on cultural resources:

- The extent to which an alternative would affect those values that contribute to or diminish the significance of cultural resources. This is likely to include assessing differences between alternatives in the potential for erosion, wildfire, or other natural or cultural processes that could affect the condition or integrity of cultural resources.
- The extent to which an alternative would affect the availability of cultural resources for appropriate uses such as access to Native American spiritual sites or areas of traditional religious or cultural importance or that it would restrict public access or surface development to protect resources from disturbance and from incompatible and unauthorized activities.
- The extent to which an alternative would alter the cultural resource setting (such as visual and audible factors) where it is relevant to the historic value or importance of cultural resources.

## **4.4 Education and Interpretation**

### **Key Points**

The BLM works with its partners to provide diverse educational and interpretive programming within, and associated with, the Monument.

### **Context and Current Condition**

The proclamation describes the Monument as “a refuge of scientific and historic treasures and a classroom for generations of Americans.” This description is borne out by the current use of the Monument as the site for numerous educational programs. In 2015, the Monument hosted 374 hours of education and interpretation programs that reached over 2,989 participants. This programming is carried out both by the BLM and by diverse partners throughout the San Juan Islands.

Examples of Monument-hosted education and interpretation programs include the San Juan Experiential Education Outdoor Classroom, which engages with local students on the San Juan Islands landscape, including on sites within the Monument. Utilizing a broad range of partners and volunteers, the San Juan Experiential Education Outdoor Classroom facilitates interpretation, education, and nature study in a variety of forms, methods, and delivery options. Other education and interpretation programs include Hands on the Land, Teachers on Public Lands, Lighthouses of the Salish Sea, Leave No Trace, and numerous outreach activities carried out during special events. Typical special events for the Monument include: Earth Day, Procession of the Species Parade, National Trails Day, Patos Island and Turn Point Work Parties, The Great Island Clean-up, National Public Lands Day, and others.

The BLM and its very active partner groups maintain interpretive materials and displays within and associated with the Turn Point Light Station and Patos Lighthouse. Volunteer docents provide interpretive information and materials to visitors. Beyond these two sites, interpretation in the Monument is limited to a few trailhead kiosks, interpretative panels located at Cattle Point, and interpretive programming provided by Monument staff and volunteers.

### **Management Opportunities**

The BLM will explore opportunities to emphasize education and interpretation within the Monument while protecting the objects and values for which the area was designated. This will include exploring opportunities that enhance the public’s appreciation, understanding, and stewardship of the Monument.

### **Indicators**

The BLM is likely to assess the extent to which the draft alternatives would affect the availability of Monument lands for educational and interpretive activities.

## **4.5 Fire and Fuels**

### **Key Points**

- Lack of burning has greatly altered the vegetation communities and resulting potential fire behavior and fire effects.
- Natural ignitions are rare; traditional practices by Native Americans contributed to the historical conditions and vegetation communities valued in the proclamation.

### **Context and Current Condition**

The proclamation references fire in relation to its use past use by Native Americans as a tool to maintain grasslands supporting culturally-important plants such as camas. While it does not otherwise discuss fire, wildfire is a potential threat to some of the objects and values for which the Monument was designated. Through the planning process, the BLM will also consider the use of fire as a management tool.

Numerous fire history studies and historical accounts indicate that grasslands and oak-Douglas-fir savannas, with only small patches of forest, dominated the San Juan Islands prior to the 20<sup>th</sup> century (Agee and Dunwiddie 1984, Avery 2004, Gray and Daniels 2006, Dunwiddie et al. 2011). Given the lack of lightning-caused fires in the 20<sup>th</sup> century within the San Juan Islands, human ignitions were likely the dominant ignition source, which is consistent with historical accounts (e.g., Avery 2004). Burning by Native Americans to maintain certain plants, such as camas, and plant communities, such as oak woodlands and savannas, is the likely reason for such conditions (Avery 2004, McDadi and Hebda 2008, Pellatt and Gedalof 2014). Further, pre-Euro-American settlement fire scarring occurred in late summer and fall (Sprenger and Dunwiddie 2011, Pellatt and Gedalof 2014), consistent with humans as the primary ignition source. However, extensive heart rot in most fire-scarred trees makes reconstructing historical fire frequencies difficult (e.g., Gray and Daniels 2006).

Fire return intervals apparently varied somewhat between islands. Dunwiddie et al. (2011) found that prior to Euro-American settlement, fire return intervals on Waldron Island averaged 7 to 18 years between fires on individual trees; Peterson and Hammer (2001) found similar results in a study on Mount Constitution on Orcas Island. Spurbeck and Keenam (2003) estimated a fire return interval of 11 to 15 years on Monument lands at Point Colville and Iceberg Point. In contrast, current mean fire return intervals exceed 100 years (Peterson and Hammer 2001, Dunwiddie et al. 2011). Based on the structure of old Douglas-fir and basal charcoal on the boles of many trees, most fires prior to Euro-American settlement were low to moderate intensity, serving to keep woodlands and savannas open and limiting tree and shrub encroachment (Agee and Dunwiddie 1984, Avery 2004, Gray and Daniels 2006, Dunwiddie et al. 2011).

Land use changes beginning during the Euro-American settlement period have caused changes to the San Juan Island landscape, including forests becoming denser, conifers encroaching into grasslands and oak savannas, and shrubs starting to dominate understories (Peterson and Hammer 2001, Avery 2004, McCune et al. 2013, Pellatt and Gedalof 2014). For example, Dunwiddie et al. (2011) estimated the historical tree density on Waldron Island was about 1/10 of the current density. The rate of encroachment, infill, and shrub expansion varied from island to island (Agee and Dunwiddie 1984, Avery 2004, Gray and Daniels 2006, Dunwiddie et al. 2011). Early in the Euro-American settlement period, several invasive plant species, including annual grasses, established on the larger islands, likely as a result of introducing sheep, cattle, hogs, and horses to these islands (Avery 2004, McCune et al. 2013). In many parts of the San Juan Islands, the dominant fuelbed has shifted from a vertically separated, open-canopy woodland or savanna with a grass understory to relatively dense, multi-layered forest with abundant ladder fuels and an understory dominated by shrubs and downed wood (Agee and Dunwiddie 1984, Gray and Daniels 2006, Dunwiddie et al. 2011, Sprenger and Dunwiddie 2011). In areas that remain open with grassy understories, invasive grasses have often displaced native grasses (Avery 2004).

Current longer fire return intervals permitted these changes in fuelbed and vegetation composition and structure (Agee and Dunwiddie 1984, Peterson and Hammer 2001, MacDougall et al. 2004, Dunwiddie et al. 2011, McCune et al. 2013, Pellatt and Gedalof 2014), which affect potential fire behavior. Low to moderate fire intensity remains likely on the drier, more open windward side of the San Juan Islands. However, where a conifer-shrub community has replaced woodland, savanna, and grasslands and where multiple forest layers have developed, moderate and high intensity fire is more likely.

Since the Monument does not have an approved resource management plan (RMP) or fire management plan (FMP), the default response to all wildfires, regardless of origin, is suppression, consistent with Federal wildland fire policy (U.S. Department of the Interior et al. 2001). This

response applies to all fires that ignite within the Monument and that threaten to burn into the Monument. Once an RMP is completed for the Monument, the subsequent FMP must describe allowable wildfire responses that support the management goals and objectives of the RMP. In all wildfire responses, the protection of human life is the single overriding priority. After human life, response priorities are based on the values to be protected, such as, communities, infrastructure, property and improvements, and natural and cultural resources (BLM 2005).

Historical fire regimes describe the role fire would play in a landscape in the absence of modern human intervention, but take into account Native American traditional practices. Fire regimes are classified based on the average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on dominant overstory species. For example, areas with frequent, relatively low intensity fires are classified as fire regime I, while areas with infrequent, high intensity fires are classified as fire regime V (see Table 2).

According to San Juan County’s community wildfire protection plan (SJC CWPPSC 2012) most of the San Juan Islands consists of fire regimes III and V, although a substantial area was rated as having indeterminate fire regime characteristics (Table 2). However, the descriptions of the historical vegetation structure, communities, past estimated fire return intervals, and probable fire behavior suggest that the islands may have supported a considerable area in fire regimes I and II and less area in fire regimes III and V (Agee and Dunwiddie 1984, Avery 2004, Gray and Daniels 2006, Dunwiddie et al. 2011). The most recent LANDFIRE regime classification for the San Juan Islands also indicates a predominance of fire regimes III and V (LANDFIRE 2015). However, the difference between the descriptions of the historical vegetation and the current vegetation indicates that the San Juan County classification and the LANDFIRE classification are more representative of the current fire regimes than of the historical fire regimes.

**Table 2. Natural fire regime in the San Juan Islands**

Fire Regime				
I	0–35	Low and Mixed	0	0
II	0–35	Replacement	0	0
III	35–200	Mixed and Low	46,355	41%
IV	35–200	Replacement	13,440	12%
V	200+	Replacement and Mixed	30,242	27%
Water	N/A	Water	1,008	<1%
Barren	N/A	Barren	515	<1%
Indeterminate	N/A	Indeterminate fire regime characteristics <sup>1</sup>	20,873	19%
		Total	112,433	100%

<sup>1</sup> Urban areas, agricultural areas, and other developed areas

Source: San Juan County, Washington Community Wildfire Protection Plan/Wildfire Risk Assessment (SJC CWPPSC 2012)

The community wildfire protection plan rated 75 percent of the area as moderately departed from historical conditions, 10 percent with low departure, and less than one percent with high departure (SJC CWPPSC 2012). However, the current vegetation descriptions suggest that more than one percent of the area could be classified as highly departed from historical conditions with uncharacteristic vegetation structure and species compositions now widespread (Agee and Dunwiddie 1984, Avery 2004, Gray and Daniels 2006, Dunwiddie et al. 2011).

Because the BLM has no fire organization present on the San Juan Islands, Washington Department of Natural Resources (DNR) has provided fire protection within Monument boundaries. Therefore, determining how many, if any, wildfires have burned Monument lands since 1970 is difficult. Based on data collected by the BLM and DNR over 40+ years, 88 percent of wildfires on State-protected and Federal lands in the San Juan Islands are human caused, 10 percent have an unknown cause, and 2 percent are lightning-caused (SJC CWPPSC 2012) (Table 3). Between 1970 and 2011, San Juan County averaged 13 fires per year, although the number of ignitions declined between 1970 and 1990 and have since fluctuated around an average of six ignitions. Only 30 acres burn, on average, each year, although in 2003, 468 acres burned, primarily on National Park lands (SJC CWPPSC 2012). Drought conditions appear to play a significant role in the number of acres burned in any given year, particularly when coupled with high wind events (SJC CWPP 2012)

**Table 3. Fire ignitions and acres burned by source, 1970–2011**

Cause	Number of Ignitions	Percent	Acres Burned	Percent
Lightning	11	2%	27	5%
Human	435	88%	421	74%
Unknown	47	10%	122	21%
<b>Total</b>	<b>493</b>	<b>100%</b>	<b>570</b>	<b>100%</b>

*Source:* San Juan County, Washington Community Wildfire Protection Plan/Wildfire Risk Assessment (SJC CWPPSC 2012)

Land management agencies refer to wildlands in close proximity to homes and structures as wildland urban interface (WUI); these areas are a higher priority for both fire suppression and fuels management. The most recent mapping effort classified most of the privately-owned portions of San Juan County as wildland-urban intermix ( $\geq 6.18$  houses per  $\text{km}^2$  and  $\geq 50$  percent cover of wildland vegetation) with the southern portion of San Juan Island and the areas of Lopez and Orcas Island with denser housing as WUI ( $\geq 6.18$  houses per  $\text{km}^2$  and  $\leq 50$  percent cover of wildland vegetation) (Martinuzzi et al. 2015).

The BLM often uses various vegetative management tools, such as thinning and prescribed fire, to bring a landscape into closer conformance with its historical fire regime, as well as to reduce wildfire threats to homes and property from increased fuel loading. Currently, the BLM is not conducting fuels treatments of any sort in the Monument. Within the San Juan Islands, the National Park Service and The Nature Conservancy are using thinning and prescribed burning to restore or maintain Garry oak woodlands. Other landowners on the islands use prescribed burning to dispose of fuels created by land management activities.

### **Trends and Forecasts**

Under current trends, vegetative communities in the Monument will further depart from historical conditions. Douglas-fir and other conifers will continue to expand into the remaining oak woodlands and savannas and further reduce the remaining camas gardens. These changes in the vegetation communities and associated fuel beds increase the likelihood that when wildfires do occur, both fire behavior and fire effects are more likely to produce undesired effects, such as high levels of smoke, increased erosion risks, and loss of vegetation features discussed in the proclamation. In addition, such fires may pose an increased threat to structures downwind of Monument lands on the lower southeast section of Lopez Island. Fires on other Monument lands are unlikely to pose risk to privately owned structures. However, given the size and location of

most parcels in the Monument, the BLM has little opportunity to significantly influence fire risks to private lands.

### **Management Opportunities**

The proclamation references the historical use of fire as a tool to maintain culturally important plants, such as camas. Given the lack of natural ignitions and historical use of fire by Native Americans, the BLM will consider whether to use both natural ignitions and prescribed fire to restore the vegetation communities described in the proclamation. However, the BLM's experience in other locations adversely affected by fire exclusion has shown that application of prescribed fire alone is unlikely to restore the historical plant community structures and species compositions. Other types of treatment, such as forest thinning or invasive plant control are necessary in addition to prescribed fire or use of wildfire.

The BLM will explore altering basic fire management responses on Patos and Little Patos Island to use what natural ignitions may occur to restore vegetation communities referenced in the proclamation. Suppression responses could focus primarily on protecting the lighthouse and any infrastructure in the campground on Patos Island. Federal wildland fire policy states that suppression responses should be commensurate with the values at risk. In addition, the BLM can explore fire and fuels management actions to help achieve management objectives defined in the Monument resource management plan. For example, the BLM could use mechanical, biological, and chemical fuels treatments and prescribed fire, to maintain and enhance meadow and Garry oak communities on Monument lands. Because of the small size and scattered locations of the Monument lands, establishing objectives related to fire regime condition class, as required by BLM handbooks H-9211-1 (BLM 2012) and H-1601-1 (BLM 2005), is simply not feasible.

The BLM will continue to protect communities and surrounding values and work with rural fire departments. The full range of management strategies and actions will continue to be used to protect firefighter and public safety. The BLM will also continue to support community efforts to explore ways of reducing the risk posed by potential wildfires as identified in the community wildfire protection plan, while protecting and restoring the objects and values for which the Monument was designated.

### **Indicators**

The BLM is likely to use approximate acres of uncharacteristic vegetation conditions that would be restored, expected flame lengths, and probability of mortality for key species under each draft alternative to assess the impact of the draft alternatives on fire and fuels.

## **4.6 Geology and Mineral Resources**

### **Key Points**

- Proclamation 8947 withdrew the Monument from location, leasing, and sale under the mining laws.

### **Context and Current Condition**

The proclamation made all lands within the Monument unavailable for mineral location, leasing, and sale: "All Federal lands and interests in lands within the boundaries of the Monument administered by the Department of the Interior through the BLM are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, leasing, or other disposition under the public land laws, including withdrawal from location, entry, and patent under the mining laws,

and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of this proclamation.”

There is no current use of these lands for mineral development. A review of historic BLM records indicated that an oil and gas lease was issued by BLM for Federal lands encompassed by Patos and Little Patos Islands prior to February 20, 1983 (Courtright 1986). This lease was never developed and is now expired. Many of the lands within the Monument have been withdrawn from location and closed to leasable and saleable minerals since the early 1990s and so have not been available for recent mineral, leasing, exploration, or development.

The Monument is located in the northwest portion of the Puget Lowland geomorphic province of Washington State, which lies between the Olympic Mountains to the west and the Cascade Mountains to the east. The lowland is a broad, north-south trending structural trough lying less than 500 feet above sea level. It is partially covered by the waters of Puget Sound.

A large portion of the Puget Sound is covered by thick unconsolidated Pleistocene glacial deposits. Below the glacial cover, a sequence of Tertiary marine sedimentary and volcanic rock underlies the area (Groody 1991). In the northern part of the Puget Lowland, erosion has cut through Tertiary sediments and lavas to expose older (Paleozoic and Mesozoic) metamorphic rocks within the San Juan Islands (Groody 1993). For many years the predominant theory on the geologic development of the San Juan Islands was that over time a series of thrust faulted blocks had brought together unique rock assemblages or “terranes.” Orr and Orr (1996) list five separate terranes within the San Juan Islands (Turtleback, Garrison, Deadman Bay, Haro, and Decatur). Recent mapping work by Easterbrook (2015) has used LiDAR (Light Detection and Ranging—a highly accurate method of mapping surface features with laser) and newly available sonar/bathymetric data in the Puget Sound area to map faults within the San Juan Islands. LiDAR and sonar imagery has led Easterbrook (2015) to conclude that a majority of faulting in the San Juan Islands is recent (post glacial) and is predominately normal high-angle faults that bring varying rock types together rather than the long hypothesized theory of thrust faulting (terrane model) bringing distant rock assemblages together.

Continental glaciation during the Pleistocene (from approximately 1.2 million to 16,000 years ago) further altered the landscape by rounding the topography in the San Juan Islands and leaving foreign rocks, known as erratics. These erratics include the white granitic rocks on Lopez Island’s Iceberg Point that were first noted by early mariners and thought to be icebergs. Many of the areas within the Monument are characterized by rocky outcroppings, rugged shorelines, and, in a few cases, dramatic cliffs.

Cave and karst resources are associated with carbonate (limestone and dolomite) rock formations. Littoral or sea caves occur in many different rock types along the ocean coast wave zone. Currently the BLM does not manage any cave or karst resources within the San Juan Islands and has no inventory of these resources. The BLM reviewed the publication “Caves of Washington” (Halliday 1963) for any significant cave or karst resources located within the Monument; this publication does not document any caves within the Monument. The BLM-administered parcel on Henry Island is the only area within the Monument with the potential for karst development, but it does not contain caves developed in limestone/karst. Some small littoral caves may occur on or near Monument lands.

### **Management Opportunities**

Since the Monument is closed to mineral development, the BLM will not explore opportunities to manage the area for the use of any mineral resources. Where geologic features may be vulnerable

to impacts from recreation or the management of other resources, the BLM will explore opportunities to ensure the protection of these features.

**Indicators**

There is likely to be no effect from the potential management actions on geologic resources within the San Juan Islands.

**4.7 Habitat and Vegetation Communities**

**Key Points**

- Departure from historic disturbance patterns is changing the extent and condition of vegetation communities within the Monument.
- Shrublands and grasslands are a particular concern in the Monument due to the loss and degradation of this vegetation type.

**Context and Current Condition**

The proclamation identifies the Monument’s diverse habitats, and the varied wildlife species that depend on them, as values for which the area was designated. While this section addresses the Monument’s habitats and vegetation communities, the specific wildlife that depend on those communities are addressed in the Wildlife section below.

The BLM mapped vegetative communities within the Monument using the LANDFIRE vegetation classification (NatureServe 2009). The BLM is in the process of making localized corrections to these classifications, as well as correcting errors in the Monument ownership data. Because of this, the acreages presented in the table below are likely to differ slightly from those provided in the draft RMP/EIS.

The LANDFIRE classifications describe terrestrial ecological systems, which are defined as a group of plant community types (plant associations and/or alliances) that tend to co-occur within landscapes with similar ecological processes, substrates, and/or environmental gradients (NatureServe 2009). Instruction Memorandum 2013-111 directs the BLM to classify and present vegetation information using the National Vegetation Classification Standard (NVC). The RMP will identify acreages of vegetation communities within the Monument at this classification’s macrogroup scale. Table 4, below, includes the five macrogroups that occur within the Monument, along with the two broader vegetation classes into which they fall. A given macrogroup may include a broad range of vegetative conditions, from areas with a highly intact native plant community to areas that are dominated by introduced vegetation.

**Table 4. Vegetation community types occurring in the Monument**

<b>Class</b>	<b>Macrogroup</b>	<b>Monument Acres</b>	<b>San Juan Islands Acres</b>	<b>Percent of the total vegetation type in islands that occurs within Monument</b>
Forest & Woodland	Southern Vancouverian Dry Foothill Forest	275	32,325	0.85%
	Vancouverian Flooded & Swamp Forest	3	299	0.99%
	Tsuga heterophylla - Picea sitchensis - Sequoia sempervirens Forest	519	41,826	1.24%

Shrubland & Grassland	Vancouverian Lowland Grassland & Shrubland	142	10,474	1.36%
Shrubland & Grassland	Vancouverian Lowland Wet Shrubland, Wet Meadow, and Marsh	39	717	5.44%

The subsections below offer an overview of the current status of the Monument’s vegetation classes.

The approximately 42 acres of wetland in the Monument are represented above by the Vancouverian Flooded and Swamp Forest macrogroup and the Vancouverian Lowland Wet Shrubland, Wet Meadow, and Marsh macrogroup. While these macrogroups are under the forest and woodlands and shrubland and grassland classes, respectively, wetlands are addressed as a separate community below.

Nearshore habitat is also addressed as its own community type below. While BLM administration, and so inclusion in the Monument, only applies above mean high tide, the BLM will consider the potential effect of its actions on the coastal system surrounding the Monument.

#### *Forests and Woodlands*

This section first describes general context and conditions for Monument forests and woodlands and then addresses context and conditions specific to dry and moist forest communities and plant species within the Monument.

Forest and woodlands, which cover nearly 800 acres of the Monument, are the largest vegetation class in the Monument. The dry and moist forest types described in this section are composed of the Southern Vancouverian Dry Foothill Forest and *Tsuga heterophylla* - *Picea sitchensis* - *Sequoia sempervirens* forest macrogroups described in Table 4, above. The acres included in the Vancouverian Flooded and Swamp Forest macrogroup are described below under wetlands.

Forests and woodlands within the Monument are shaped by the area’s precipitation levels, which vary from a low of 17 inches on the southern end of Lopez Island to 29 inches on Patos Island. This change in precipitation is due to the rain shadow effect of the Olympic Mountains to the south. Most soils in the San Juan Islands are shallow and droughty conditions are common in the summer months.

Historically, the forest vegetation on the San Juan Islands was described as being injured by wildland fire, stunted, and having few large trees (U.S. Congress 1867). An 1855 Oregon Territory survey of the San Juan Islands indicted open canopies and widely spaced trees (Sherck 2013). A survey done in 1899 by the United States Geological Survey (USGS) indicated that the forest species composition of the San Juan Islands was composed of at least 75 percent Douglas fir (*Pseudotsuga menziesii*) (Walcott 1900). In general, forests within the San Juan Islands have been modified by both human and natural disturbances. Human disturbances include timber harvest, fire use, fire suppression, and settlement activities. Natural disturbances include fire, weather related events, insects, and diseases.

In the late 19<sup>th</sup> and early 20<sup>th</sup> century timber harvest played a prominent role in the San Juan Island’s economy (Oldham 2015). Logging was related to settlement and lighthouse establishment and upkeep, as well as to the use of wood for the production of lime, which occurred at several facilities in the San Juan Islands from approximately 1890-1956 (US

Congress 1867). Within the Monument, however, many forested areas were previously withdrawn for U.S. Coast Guard use and were generally protected from logging. The last remaining relatively undisturbed stands of Douglas-fir-white fir forest on Lopez Island, for example, are located on Monument lands at Iceberg Point and Point Colville. The age of some of these trees is estimated at well over 300 years.

Because of the Coast Guard withdrawals described above, large, old trees occur within the Monument on Patos Island, Iceberg Point, and Point Colville. Beyond these areas, large, old trees are relatively scarce in the Monument. More common are individual trees and small stands that have old tree characteristics. These characteristics include old crown and branch pattern characteristics, crown form and vigor, thick bark with wide plates (relative to each species) and coloring indicative of old bark for that species, sometimes (but not always) large size, and an age that is near the upper portion of the maximum biological age for that species or site (Van Pelt 2007). Some individuals also have some form of internal decay or branch dieback (Van Pelt 2007).

As described below under trends and forecasts, threats facing the forests within the Monument include climate change, altered disturbance regimes (including fire), invasive species, insect or disease infestation, herbivory, and human intrusions and disturbance. Current management activities directed at forest and woodlands are limited to hazard tree management for public and structure safety. The BLM does not currently use fire as a management tool within the Monument and all fires are suppressed. There is also currently no commercial resource use associated with forestry and woodland products occurring within the Monument. Similarly, no fuel wood collection is permitted in the Monument.

#### Dry Forest

Dry forests classified as North Pacific Maritime Dry-Mesic Douglas-fir-Western Hemlock Forest are the most extensive forest type within the Monument, occurring at Point Colville, Chadwick Hill, Iceberg Point, Kellett Bluff, and Turn Point. Tree species that occur in dry forests within the Monument include Douglas fir, grand fir (*Abies grandis*), Pacific madrone (*Arbutus menziesii*), lodgepole pine (also known as shore pine) (*Pinus contorta*), Garry oak (also known as Oregon white oak) (*Quercus garryana*), seaside juniper (*Juniperus maritima*), quaking aspen (*Populus tremuloides*), and other hardwoods. Dry forest sites are sometimes open and located on rocky and steep south facing slopes. The understory in this forest type is mostly grasses and forbs, though due to a lack of disturbance on the landscape, this understory cover type has declined.

Several of the dry forest species and vegetative communities within the Monument are considered ecologically important, including Garry oak and seaside juniper. For example, the transition area (or ecotone) between the grasslands and Douglas-fir forest on Lopez Island at Point Colville and Iceberg Point has been described as one of the finest examples of this type of habitat in the region (Dougherty 2004).

Garry oak and seaside juniper occur in limited locations in the San Juan Islands; both species have declined due to changes in disturbance patterns in the San Juan Islands (Mac Donald and Nakae 2015). Oak woodlands consist of single trees, as well as in mixed stands of conifer and oak, and are found on very droughty sites. Seaside juniper, which was identified as a species endemic to the Pacific Northwest in 2007 (Mac Donald and Nakae 2015), grows as single trees and in small groups in granitic or sandy soils. Within the Monument, Garry oak woodlands are found mostly on Henry Island and in small numbers in a few scattered other locations. Seaside juniper occurs in scattered locations throughout the Monument.

Similar to Garry oak and seaside juniper, quaking aspen and Pacific madrone have declined over time due to changes in disturbance on the landscape. Aspen occur as individuals and in small clumps; they grow best in deep, moist loamy soils in a range of precipitation zones (16 to 40 inches). Regeneration of aspen stands generally requires disturbance; historically the primary disturbance agent was fire.

Pacific madrone is a moderate-sized tree that requires direct sunlight to thrive. Historically, more open stands resulting from frequent burning would have maintained habitat to ensure healthy madrone trees on the landscape. With the relative absence of fire across the landscape for many decades, madrone has had to compete for sunlight, water, and nutrients on many sites. Madrone dieback has been occurring on the San Juan Islands (Mehmel 2006).

#### Moist Forest

Moist forest in the Monument is extensive on Patos and Little Patos islands, where precipitation levels can reach 29 inches per year. Moist forest types on the southern San Juan Islands, which receive less precipitation, is restricted to draws, which are usually more moist and productive and are protected from wind and salt spray (Gray and Daniels 2006).

Moist forest types present within the Monument include: North Pacific Maritime Mesic-Wet Douglas-fir-Western Hemlock Forest, North Pacific Hypermaritime Seasonal Sitka Spruce Forest, and North Pacific Hypermaritime Western Red-Cedar-Western Hemlock Forest, and Western Red Cedar-Grand-Fir/Swordfern Forest. Moist forest tree species include western red cedar (*Thuja plicata*), grand fir, western hemlock (*Tsuga heterophylla*), and Douglas-fir.

The moist forest associations on Patos Island are also considered of high ecological importance (Crawford and Chappell 2006). The Western Red Cedar-Grand-Fir/Swordfern Forest association that occurs on Patos has been described as the best example of this moist forest type in Washington (Crawford and Chappell 2006).

#### *Shrublands and Grasslands*

This section addresses the Vancouverian Lowland Grassland and Shrubland macrogroup from Table 4. The Vancouverian Lowland Wet Shrubland, Wet Meadow, and Marsh macrogroup is discussed in the Wetland section below. Vancouverian Lowland Grassland and Shrubland is made up of the North Pacific Herbaceous Bald and Bluff plant community, which is a dry to mesic (i.e., moderate moisture) shrubland and grassland (Kittel 2010). The description below will refer to this community as shrubland and grassland.

There are approximately 142 acres of non-wetland shrubland and grassland within the Monument. This vegetation community is found scattered throughout the Monument, but the majority of the Monument acreage can be found in the Iceberg Point and Point Colville properties at the south end of Lopez Island. The shrubland and grassland system consists of mostly herbaceous-dominated areas (balds) located primarily on shallow rocky soils (NatureServe 2015). Due to shallow soils, steep slopes, sunny aspect, and/or upper slope position, these sites are dry and marginal for tree establishment and growth except in favorable microsites. The vegetation is grassland with some dwarf-shrubs, which can occur as small patches but are usually in a matrix with the herbaceous vegetation. Rock outcrops are a typical small-scale feature within balds and are considered part of this system (Kittel 2010). Sites with many favorable microsites can have a "savanna" type structure with a sparse tree layer of Douglas fir or, less commonly, Garry oak. The southern extent of the Monument has a relatively dry climate, always with a distinct dry summer season when these sites usually become droughty enough to limit tree growth and

establishment (NatureServe 2015).

The shrublands and grasslands in the San Juan Islands were once maintained by fires, both naturally occurring and, primarily, set by native peoples (Kittel 2010). The occurrence of fire on the landscape supported camas (*Camassia* spp.), an important food source that figured prominently in cultural practices of the native inhabitants. Shrublands and grasslands have declined throughout the San Juan Islands and the broader ecoregion, primarily due to development and a decrease in fire frequency. Euro-American settlement brought livestock grazing and more intensive cultivation, reduced the frequency of fire, and resulted in the introduction of numerous non-native plants which have invaded the landscape. This resulted in fewer native forbs, including camas. Because of this change in the fire regime, the extent of shrublands and grasslands has declined locally through tree invasion and growth. Areas formerly maintained as herbaceous by burning have filled in with trees. There is currently no active management to prevent this encroachment.

Grasslands, both native and non-native, throughout the Puget Lowland and Willamette Valley ecoregions are estimated at 9 percent of pre-Euro-American settlement levels (Chappell et al. 2000). Further, less than 3 percent of grasslands dominated by native species are extant, as measured using aerial photographs, soil surveys, ground-truthing, and previous mapping efforts (Chappell et al 2000). Most of the shrublands and grasslands in the San Juan Islands, including those within the Monument, are largely composed of non-native grasses, and support a mixture of native and non-native forbs.

Threats to the Monument shrublands and grasslands include changes in the fire regime, climate change, and invasive species competition with native plants. Additional threats include overgrazing by native black-tailed deer, Canada goose, and non-native European rabbits. Finally, fragmentation caused by excessive social trailing is also a threat to the integrity of remaining grasslands in Monument. Shrublands and grasslands on the south end of Lopez Island are popular among visitors to the Monument and user-created trails are noticeably present in these areas. These systems tend to be very sensitive to disturbance and trampling.

### *Nearshore*

While BLM administration, and so inclusion in the Monument, only applies above mean high tide, the BLM will consider the potential effect of its actions on the coastal system surrounding the Monument.

The Monument's shoreline includes portions of Watmough Bay, Point Colville, and Iceberg Point on Lopez Island; Carter Point on Lummi Island; Kellett Bluff on Henry Island, Turn Point on Stewart Island, a piece of Cattle Point on San Juan Island; the entire perimeter of Patos Island; and the perimeter of various small rocks and islands. The shoreline habitat type comprises sandy/gravelly (unconsolidated) shoreline and rocky shoreline. Sandy/gravelly shoreline is defined by having substrata consisting of components smaller than cobble (10 inches diameter), including: gravel, sand, mud, and organic materials (Dethier 1990). Rocky shoreline is defined by having substrata composed of bedrock, boulders (rocks greater than 10 inches diameter that are large enough not to be rolled by moderate wave action), and/or hardpan. Steep, rocky cliffs can be associated with rocky shoreline and are generally devoid of vegetation with occasional shrubs, succulents, and grasses growing from fissures. The North Pacific Maritime Coastal Sand Dune and Strand ecological system is associated with sandy/gravelly shoreline and spits (NatureServe 2009).

Much of the shoreline within the Puget Sound has been modified (historically and recently) for agricultural, industrial, and residential uses. San Juan County—which makes up the great majority of the San Juan Islands—has the lowest modification level in the Puget Sound region, with around 5 percent of its shorelines modified (Herrera 2011, FSJ 2011). In addition to being less heavily developed than other parts of the Puget Sound region, many of the San Juan County shorelines are rocky, which do not tend to erode.

Native eelgrass (*Zostera marina*) covers an estimated 9 percent of Puget Sound below the mean lower low water (MLLW) mark, and is found along roughly 20 percent of San Juan County Shoreline (SSPS 2007). Eelgrass occurs as patches or narrow bands near the shore, or as solid meadows in the subtidal zone. Eelgrass provides both physical structure and trophic support for the biological community and is nursery habitat for many sensitive species including salmon (Murphy et al. 2000, Mumford 2007).

Kelp forests in the San Juan Islands may include multiple species of algae, often dominated by bull kelp (*Nereocystis luetkeana*). Most kelp forests occur in the shallow subtidal zone from mean lower low water (MLLW) to about 65 feet below MLLW and are associated with high-energy environments (Mumford 2007). Floating kelp species occur along approximately 31 percent the county's shoreline, while non-floating kelps occur along 63 percent (Mumford 2007). Of the 23 kelp species known to occur in Puget Sound (Mumford 2007), at least 17 have been observed in San Juan County. Kelp forests provide refuge habitat for a number of fish species (Mumford 2007). Through food web interactions, kelp forests are an important community for sea urchins, herring, crabs, mollusks, and a variety of marine mammals including sea otters and whales (Steneck et al. 2002, Mumford 2007, NOAA 2010).

Threats facing the shorelines of San Juan Islands include climate change-induced sea level rise, geologic events, invasive species, human disturbance, contaminants, and marine debris.

### *Wetlands*

This section addresses the Vancouverian Flooded and Swamp Forest and the Vancouverian Lowland Wet Shrubland, Wet Meadow, and Marsh macrogroups described in Table 4.

As described in the proclamation, the Monument contains limited freshwater habitats. The limited freshwater resources of the San Juan Islands as a whole enhance the importance of these limited habitats. All freshwater wetlands within the Monument are found on Lopez Island. Chadwick Marsh is the most sizeable (approximately 30 acres). The freshwater wetland behind Watmough Bay (Watmough Bay wetland) is approximately 5 acres in size. Both of these wetlands provide habitat for multiple waterfowl and amphibian species.

Point Colville on Lopez Island includes a palustrine (freshwater) forested wetland approximately 2 acres in size. This wetland is dominated by sedge (*Carex obnupta*) under a Sitka spruce (*Picea sitchensis*) overstory. This area has been called a bog, but does not meet bog definitions (Glossary), as it is not overly acidic and does not support sphagnum moss. Comparisons with old aerial photos suggest that this wetland is filling in with trees (BLM 1990). Outside of the areas already described, the Monument lands on Lopez Island support an additional acre of identified scrub-shrub wetland, emergent and open water wetland areas, and less than 0.5 acres of identified palustrine forested wetlands.

Patos Island supports one known habitat area with wetland plants and seasonally ponded water (approximately 1 acre in size). However, this area does not support hydric soils (i.e., soils

seasonally or permanently saturated by water), and thus does not meet the Clean Water Act definition of a wetland.

No lotic (flowing) riparian systems have been identified within the Monument. Although several stream segments have been identified on Lopez Island, these segments are either inundated by ponded and wetland areas (Chadwick Marsh) or are no longer active (connection between Watmough Bay Wetland and Watmough Bay). Mesic (i.e., moderately moist) areas in forest and woodlands within the Monument may support some riparian species (e.g., red alder (*Alnus rubra*) and willow (*Salix scoulerii*)) and mesic microclimates, but do not have defined scour or flowing water associated with streams.

Threats to wetlands within the Monument include reduction of wetland size due to gradual succession to scrub/shrub vegetation and potential salt water encroachment due to sea level rise and storm surge associated with climate change.

**Trends and Forecasts**

Table 5 summarizes trends in the vegetation communities of the Monument. The subsections below the table provide a more detailed description of the trends and forecasts for the different vegetation communities and habitats.

**Table 5. Summary vegetation community trends within the Monument**

Attribute	Trend	Cause
Nearshore (San Juan Islands)	↓	Threats facing the nearshore environments within and adjacent to the Monument include climate change-induced sea level rise, geologic events, invasive species, human intrusions and disturbance, and contaminants and marine debris.
Shrublands and Grasslands	↓	There has been a substantial decrease in shrublands and grasslands from pre-Euro-American settlement levels. Losses of grasslands were primarily due to a lack of fire on the landscape, invasive non-native species, and development. Current threats include encroachment, especially fir and rose species at Iceberg Point, invasive species, climate change, and trampling.
Forest and Woodland	↔	The current forest stands within the Monument on dry sites are showing signs of stress from lack of disturbance and overcrowding. Forests on moist sites are relatively healthy and temporarily stable. Additional concerns in this habitat include the alteration of the fire regime.
Wetland	↔	Predicted processes influencing Monument wetlands include succession (fill in), stabilization of historic fill areas and development of hydric soils, and sea level rise and saline intrusion converting freshwater to estuarine wetlands.
Human Disturbance	↑	Increase in population sizes and increase in visitation to Monument lands.

## *Forests and Woodlands*

This section first describes general trends and forecasts for Monument forests and woodlands and then addresses trends and forecasts specific to dry and moist forest communities and species within the Monument.

As noted above, the forests and woodlands within the San Juan Islands were historically described as being shaped by wildland fire and as being stunted and having few large trees (U.S. Congress 1867). The current lack of fire and other disturbance on the landscape is creating conditions where woodlands and grasslands are converting to closed forests due to tree encroachment (Kruckeberg 1991). A comparison of two databases from 1874 and 1990 shows that Douglas-fir was, as it currently is, the dominant tree species, but this species, along with grand fir and western red cedar, has increased on the landscape. Currently, there are fewer red alder and lodgepole pine than were historically present; additional tree species with populations that have diminished due to changing disturbance patterns are described below.

The large, old trees that occur within the Monument at Point Colville, Iceberg Point, and Patos Island initially grew in more open conditions than currently exist. Frequent disturbances including fire, insects and disease, and weather events ensured adequate growing space for these trees. The most frequent and important regulating mechanism maintaining this open condition was fire, with the likely majority of fire starts being from intentional ignitions by Native Americans to maintain specific conditions (Avery 2004).

The relative absence of fire on the landscape over the last hundred years has allowed new trees in large numbers to become established. Some older stands and individual large, old trees are becoming stressed by competition from these new trees. When competition between trees becomes intense it is usually the big trees that die first (Dolph et al. 1995). An unstable landscape pattern is being created that is susceptible to future severe fire (Brown et. al. 2004) and insect and disease outbreaks. Without management intervention, this trend towards stress and instability is likely to continue.

Expanding deer populations are also causing changes to some Monument forest. Due to lack of predation and hunting pressure, black-tailed deer populations within the San Juan Islands have expanded to such densities that they are having an influence on vegetative cover within forest and woodlands.

Recent studies suggest that climate change will also have an influence on forested vegetation. The climate will become more extreme, suggesting oscillations between wet and drought conditions will be more common (North et al. 2009). Warmer temperatures are likely to cause decreases in lower elevation forest productivity; increases in wildfire frequency, severity, and area (Westerling et al. 2006; University of Washington 2007; Peterson 2009); increases in tree mortality due to insects, drought, and wildfires; and changes in species distribution and composition (University of Washington 2007; Peterson 2009). A climate change study for the state of Washington projects that the acreage of Washington forests that are severely water-limited will increase by 32 percent in the 2020s (Littell et al. 2010).

### **Dry Forest**

Several BLM funded studies have found that there has been a departure from historic dry forest conditions within the Monument (Dougherty 2004, Gray 2006, Spurbeck 2003, Sherck 2013). These studies show that dry forests in the Monument have a history of frequent disturbance by wildland fire that is similar to low elevation eastern Washington forests (Spurbeck and Keenum

2003). Given the lack of lightning-caused fires in the 20<sup>th</sup> century within the San Juan Islands, human ignitions were likely the dominant ignition source for these fires, which is consistent with historical accounts (e.g., Avery 2004). The fire return interval on the southern end of Lopez Island was found to be 11 to 14 years over a 340-year-period, but the last recorded fire in this area was in 1916 (Spurbeck and Keenum 2003). Forests with this type of return interval are generally stable, but dry forests in the Monument appear to have departed substantially from this pattern of disturbance. Woodlands and grasslands are converting to closed forests due to tree encroachment (Kruckeberg 1991).

The lack of disturbance on the landscape is causing a decline in several dry forest species, including Garry oak, madrone, seaside juniper, and aspen. The decline of Garry oak is due to conifer shading and tree encroachment on grasslands, both influenced by the departure of the landscape from the historic fire regime (i.e., frequency and intensity of fire on the landscape). Sherck (2013) cited a number of sources indicating the existence of mature oak trees that show evidence of being open grown with old lower limbs, but these trees are now encroached upon by younger trees. Pre-settlement oak woodlands were characterized by relatively open canopies dominated by trees with full, mushroom-shaped crowns (Vesely and Tucker 2004). This translates to tree densities that vary with age but would eventually range from 25 to 50 trees per acre with a canopy closure of 25 to 50 percent. Without management intervention, the decline of Garry oak is likely to continue.

The great reduction in fire incidence in the San Juan Islands has also degraded conditions for Pacific madrone, by increasing competition for sunlight, water, and nutrients on many sites. Currently madrone dieback has been occurring on the San Juan Islands (Mehmel 2006). This dieback is a result of overhead shading from conifers and side-shading from conifers and other tree species.

Aspen stands in the San Juan Islands were also once more abundant than today. Aspen stands often contained a mixture of age classes with a skirt or fairy ring of regeneration around the edge of the stand (Shepperd et.al. 2001). This regeneration results from root sprouting that would occur from full sunlight reaching the ground and a lack of competing vegetation. Fire, insects, and disease benefitted aspen by keeping encroaching conifers and other vegetation from outcompeting aspen and by creating conditions that allowed aspen to regenerate by sprouting. The reduction of fire and other disturbances on the landscape has created conditions that are less favorable for aspen regeneration.

Under current management, the trends in the Monument's dry forest are likely to continue until a disrupting event, such as a wildfire, wind event, insect and disease outbreak, or climate change effect, takes place. Dry forest stands will continue to become denser with increasingly closed canopies; dry forest species will continue to encroach on grasslands in certain areas. Without management intervention, or a return of disturbance to the landscape, populations of tree species that are declining due to the changed disturbance regime are likely to continue to decline.

#### Moist Forest

As with dry forest, the current moist forest conditions in the San Juan Islands are likely very different from historic landscapes, which were characterized by more open grassland and uneven-aged patches of forest (Gray and Daniels 2006). In addition, western hemlock, Sitka spruce, lodgepole pine, and grand fir, now a part of the moist forest species composition, may not have been present in the past (Gray and Daniels 2006). These stands appear to be temporarily stable.

Under current management, the trends in the Monument moist forest are likely to continue until a

disrupting event, such as a wildfire, insect and disease outbreak, wind event, or climate change effect, takes place. Moist forest species will continue to encroach on grasslands and openings will continue to fill in with trees creating more closed canopy conditions. Western hemlock, Sitka spruce, lodgepole pine, and grand fir will continue to increase.

### *Shrublands and Grasslands*

Due to changes in the fire regime, shrublands and grasslands in the Monument are being encroached upon by native forest species as well as by native and introduced shrubs and forbs. BLM and partner monitoring indicate that much of the remaining acreage has been degraded by invasion of non-native species. In the absence of active vegetative management this trend is likely to continue.

Well-established populations of non-native annual grasses are unlikely to be displaced in the absence of intensive and prolonged restoration efforts. Invasive non-native species are expected to continue to spread; control efforts may reduce the rate of spread but are unlikely to eradicate them.

Since visitation is likely to continue increasing in the Monument (see Recreation section below), impacts to the shrublands and grasslands, including herbaceous balds and other accessible sparsely vegetated communities, from visitor use are likely to increase in the absence of management action. Similarly, under current trends, impacts from herbivores are likely to increase.

### *Nearshore*

In general, the physical structure of the Monument nearshore habitats is stable. However, some natural processes such as erosion and subsequent sedimentation may be affected by altered upland conditions, roads, and houses within the watersheds. At this time, there are insufficient data to quantify the degree to which erosion and sedimentation have been altered. However, due to the resistance of the basalt bedrock and the lack of significant wave action, the shoreline and rock cliffs within the Monument have largely undergone negligible erosion and retreat. Climate change, and the possibility of increased intensity of storm surges, may create additional threats to these systems over time.

The San Juan Islands have been experiencing declines in native eelgrass. Over 80 acres of eelgrass were lost in this area from 1995 to 2004 (Dowty et al. 2005, PSAT 2007). The distribution and quality of eelgrass prairies in the San Juan Islands are impacted by water clarity and quality, which are influenced by nutrient levels, pollutants, and substrate conditions (PSAT 2007). Installation of bulkheads or other structures, adjacent agriculture or nonpoint source runoff (including turbidity), and boat propeller scour can impact eelgrass communities.

Kelp forests are similarly impacted by adverse changes in water quality and changes in nearshore marine substrate composition. Other potential indirect threats to kelp forests include loss of detritus feeders (such as sea cucumbers) that help maintain water quality and increase of herbivores that eat kelp (Mumford 2007).

### *Wetlands*

Several processes are occurring that could change wetland type and extent within the Monument. Without management intervention, succession (also termed development (Mitsch and Gosselink

1993)) in emergent wetlands will lead to some transition to scrub shrub wetland in systems like Chadwick Marsh. Barring management intervention, wind events, or other disturbances, freshwater (palustrine) forested wetlands will develop more overstory, increasing transpiration and reducing size of wetlands like the Point Colville swamp.

Sea level rise and increased storm surge associated with climate change (see Climate Change section, above) could breach a sediment plug maintaining the freshwater Watmough Bay wetland. If this occurs, this marsh would become an estuary, with a transition from estuarine wetland (at the mouth) to freshwater wetland further inland. Freshwater wetland habitat in this area would decrease as sea level rose.

Several historically modified areas (presumably push up dams established to facilitate farming and grazing) adjacent to Chadwick Marsh may become wetlands, as defined by the Clean Water Act, as upland soil in push up dams became saturated for long enough periods to convert to hydric soils. This would increase the size of wetland in this area by less than 0.5 acres.

### **Management Opportunities**

#### *Forests and Woodlands*

The BLM will explore using active management of forests and woodlands to maintain or enhance the objects and values for which the Monument was designated. For example, the BLM will explore the use of silvicultural prescriptions designed to restore forests to something reminiscent of their historic range of variability. This might include removing conifers that are encroaching on meadows and oak woodlands and reducing stocking in forested areas. The BLM will explore targeting these treatments to benefit species—such as Garry oak, quaking aspen, and Pacific madrone—that are declining due to competition from encroaching species and other changes in forest conditions.

The BLM will consider how to best manage forest stands in general, including the existing large, old trees within the Monument. This will include consideration of an active management approach with thinning and other forms of fuel reduction. Implementation of forest health and fuel reduction treatments on additional acres could reduce the extent and intensity of potential insect, disease, and fire disturbances.

The BLM will consider whether commercial forest products could be produced as a by-product of management actions taken to restore or enhance the Monument forest and woodland communities and species. To date, fuelwood permits have not been issued in the Monument; the decision to permit or deny will be considered during the planning process.

#### *Shrublands and Grasslands*

Shrublands and grasslands are of particular management concern for the Monument due to the loss and degradation of this vegetation type throughout the San Juan Islands. Many species of flora and fauna associated with this unique habitat are of conservation concern due to declines in population, local extirpation, or close associations with declining habitat (Chappell et al 2000).

The BLM will explore the use of various levels of active management to maintain or enhance the objects and values for which the Monument was designated. For example, the BLM will consider the use of vegetative treatments to maintain or restore shrublands and grasslands within the Monument. The BLM will also explore working with tribal partners to enhance conditions for culturally important plants such as camas. The BLM will explore management of human use

where visitation is negatively affecting sparsely vegetated systems.

#### *Nearshore*

The BLM will explore management actions to reduce erosion where this is a threat to nearshore communities or to other Monument objects and values. The BLM will also consider how the management of human use may affect nearshore habitat.

#### *Wetlands*

The BLM will explore opportunities to maintain and potentially enhance the Monument's wetlands habitats. There are upland areas adjacent to existing wetlands in the decision area that could potentially be enhanced (through construction) to support wetland habitats, structures, and functions. The BLM will also consider how its management of other resources might affect these freshwater habitats. This will include considering the impact of the possible use of herbicides and recreational activities on the freshwater habitats.

#### **Indicators**

The basic indicator the BLM is likely to use to compare the effects of its draft alternatives on the Monument's vegetative communities is the estimated acreage in each vegetation category under the various alternatives over time. In addition, the BLM is likely to estimate the likely condition of each habitat type under the various draft alternatives.

#### *Forests and Woodlands*

The BLM is likely to use the following indicators to assess how the draft management alternatives might affect the Monument's forest and woodland communities:

- An estimate of the acreage in different forest types that would occur within the Monument over time under each alternative.
- An estimate of how the alternatives might mimic the conditions that would have been maintained under the historic fire regime (i.e., frequency and intensity of fire on the landscape).

#### *Shrublands and Grasslands*

Similar to Forests and Woodlands, the BLM is likely to use the following indicators to assess how the draft management alternatives might affect the Monument's shrubland and grassland communities:

- An estimate of the acreage of shrubland and grassland that would occur within the Monument over time under each alternative.
- An estimate of native shrub, forb, and grass cover over time.

#### *Nearshore*

The BLM is likely to consider how each draft alternative might contribute to erosion that could degrade nearshore habitat at least over the short term. The BLM will also consider how human use management in the Monument might impact nearshore habitat.

#### *Wetlands*

The BLM is likely to use the following indicators to assess how the draft alternatives might affect the Monument's wetland communities:

- An estimate of the wetland acreage that would occur within the Monument over time under each alternative.
- Wetland functional class (properly functioning condition, functioning at risk, not functioning).

#### **4.8 Hazardous Materials**

##### **Key Points**

- Hazardous materials and wastes in the Monument are primarily associated with historic lighthouses and their ancillary facilities.
- The BLM will follow policy and law concerning hazardous materials for any relevant project undertaken in implementing the RMP.

##### **Context and Current Condition**

There are hazardous materials associated with some of the maritime cultural resources for which the Monument was designated.

The BLM's Hazardous Material Management Program is responsible for the proper uses and reporting of hazardous materials and the timely, efficient, and safe response to hazardous materials incidences on BLM-administered lands. State and Federal regulations and BLM policy provide the Bureau with management guidelines, objectives, and actions pertaining to hazardous materials management. Hazardous materials and wastes in the Monument are primarily associated with historic lighthouses and their ancillary facilities and include above and underground storage tanks, asbestos, and lead-based paint.

Historic lighthouses and ancillary facilities on Monument lands include those on Stuart and Patos Islands. The BLM is working to abate asbestos within these facilities through remodeling projects and has removed several aboveground and underground storage tanks. As with many historic structures, the facilities were painted with lead-based paint. Over the course of decades, the paint weathered and flaked, causing the contamination of the soils around the buildings. The BLM encapsulated the exterior of the buildings to prevent further release of lead into the soil. In addition, the BLM initiated actions under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 to address the contaminated soil to protect human health and the environment. These actions include human health and ecological risk assessments and a removal site inspection.

##### **Trends and Forecasts**

The BLM will continue working towards compliance regarding facilities and associated hazardous materials and wastes within the Monument.

##### **Management Opportunities**

The BLM will follow policy and law concerning hazardous materials for any relevant project undertaken in implementing the RMP.

##### **Indicators**

The draft management alternatives are likely to have no effect on hazardous materials within the Monument.

## 4.9 Invasive Plant Species

### Key Points

- Through inventories in 2010 and 2013, the BLM identified 15 noxious weed species within the Monument.

### Context and Current Condition

The proclamation references invasive species as a threat from which the Monument’s fire-dependent grasslands are susceptible. More broadly, noxious weeds and invasive plants pose a substantial threat to the Monument’s woodland, wetland, and small island systems both directly, through competition with native plants, and indirectly, through disruption of ecosystem function that supports native communities. The encroachment of native species within the Monument’s vegetation communities is addressed in the Habitat and Vegetation Communities section, above.

Invasive plants are non-native plants that have been introduced into an environment in which they did not evolve and are capable of establishing free-living populations in areas beyond their natural range of dispersal. These plants are characteristically adaptable, aggressive, and lacking in natural enemies to limit their reproduction and spread. Their vigor, rapid growth, and high reproductive capacity allow them to outcompete native plants for key resources, resulting in their dominance of human-influenced and native ecosystems.

Noxious weeds, a subset of invasive plants, are designated and regulated by state and Federal laws because they are known to be detrimental to agriculture, commerce, natural resources, and public health. The Revised Code of Washington State defines ‘noxious weeds’ as nonnative plants that when established are “highly destructive, competitive, or difficult to control by cultural or chemical practices.”

Through inventories in 2010 and 2013, the BLM identified 15 noxious weed species, out of the 140 species on the Washington State Noxious Weed Control list, as occurring within the Monument (see Table 6).

**Table 6. Washington State Noxious Weeds and Invasive Plants Occurring within the Monument**

Common Name				
shiny geranium	<i>Geranium lucidum</i>	A	Eradication	Posey Island
common catsear	<i>Hypochaeris radicata</i>	B	Not Designated	Iceberg Point
herb Robert	<i>Geranium robertianum</i>	B	Not Designated	Posey Island, Broken Point Island
Scotch broom	<i>Cytisus scoparius</i>	B	Control Required	Blind Island
spurge laurel	<i>Daphne laureola</i>	B	Control Required	Victim Island, Blind Island, Twin Rocks
tansy ragwort	<i>Senecio jacobaea</i>	B	Control Required	Henry Island, Patos Island, Parks Bay Island

bull thistle	<i>Cirsium vulgare</i>	C	Not Designated	Cattle Point, Point Colville, Watmough Bay, Iceberg Point, Posey Island, Victim Island, Blind Island Oak Island, Little Patos Island, Twin Rocks, Kanaka Bay Islands, Carter Point, Guthrie Cove Island, Parks Bay Island, Reads Bay Island, Stuart Island, Chadwick Hill, Little Mac Island, Rabbit Island
Canada thistle	<i>Cirsium arvense</i>	C	Not Designated	Watmough Bay, Kanaka Bay Islands
common groundsel	<i>Senecio vulgaris</i>	C	Not Designated	
common St. Johnswort	<i>Hypericum perforatum</i>	C	Not Designated	Carter Point
common tansy	<i>Tanacetum vulgare</i>	C	Control required	
English ivy	<i>Hedera helix</i>	C	Control Required	Blind Island, Broken Point Island, Indian Island
English hawthorn	<i>Crataegus monogyna</i>	Invasive in CA, OR, WA	Not Designated	Cattle Point, Skull Island
English holly	<i>Ilex aquifolium</i>	Invasive in CA, OR, WA	Not Designated	Henry Island, Eliza Island, Patos Island
evergreen blackberry	<i>Rubus laciniatus</i>	C	Not Designated	
Himalayan blackberry	<i>Rubus armeniacus</i>	C	Not Designated	Cattle Point, Watmough Bay, Posey Island, Blind Island, Broken Point Island, Eliza Island, Freeman Island, Indian Island, Oak Island, Patos Island, Skull Island, Twin Rocks
oxeye daisy	<i>Leucanthemum vulgare</i>	C	Not Designated	Iceberg Point
reed canary grass	<i>Phalaris arundinacea</i>	C	Not Designated	Chadwick Marsh
Sweet briar	<i>Rosa rubiginosa</i>	Invasive in Australia	Not Designated	Point Colville

Source: BLM 2013 Inventory

Noxious weeds and other invasive plants (collectively referred to here as ‘weeds’) can create a variety of plant community changes through altering the floristic structure and composition of the community as well as disrupting the key ecosystem processes that enable the community to function. At local scales, these species can displace native plants due to their conferred competitive and reproductive advantages resulting in the degradation of the community’s biotic integrity. The loss of native plant diversity from weeds may lead to loss of wildlife habitat and

productivity and increase the risk of extirpation of special status species. Once established, these species can cause substantial harm to environmental and economic values.

The Monument's grasslands are largely composed of non-native grasses and support a mixture of native and non-native forbs. They are also being invaded by woody shrubs such as blackberry (*Rubus* spp.). Weed populations not only affect the condition of Monument habitats, but can also spread to adjacent or nearby lands outside of the BLM's administration. For example, in a comment submitted during the scoping period for this planning process, the San Juan County Noxious Weed Control Board expressed concern that the spurge laurel (*Daphne laureola*) population at Victim Island (part of the Monument) could spread. They have also expressed concerns that visiting boaters could easily spread the population of shiny geranium (*Geranium lucidum*) on Posey Island (also part of the Monument) to other islands.

Across the San Juan Islands disturbances associated with recreation and other forms of human activity have contributed to the spread of invasive plants. As activities contributing to disturbance and loss of native cover increases, invasions of weeds can interfere with site-recovery mechanisms, resulting in permanent changes in ecological condition and function.

The BLM is currently undertaking a limited approach to the management of invasive plants, due to the lack of a management plan for the Monument. Current control measures include using hand tools to cut weeds.

The land ownership pattern of the Monument presents several challenges to the management of weeds. Many of the small rocks and islands are remote and challenging to access regularly, which limits opportunities to detect new infestations and address existing populations. Parcels on larger islands are generally adjacent to private lands, which can restrict access to BLM-administered lands and create inconsistent weed management between parcels.

### **Trends and Forecast**

It is likely that weeds will continue to be introduced and spread across the Monument and the San Juan Islands in general. Mechanisms for introduction and dispersal include natural disturbances, management activities, and increasing public use. Many different vectors can influence the dispersal of weeds, including abiotic factors, vehicles, administrative and recreational equipment, wildlife, and people engaged in a variety of activities on public lands. Specifically, seeds and other propagules can be dispersed after becoming attached to wildlife, pets, equipment, vehicles (including boats), and the clothing and footwear of recreationalists, volunteers, and employees. Recreation is increasing within the Monument, which may lead to an increase in the spread of weeds through visitors and recreational equipment.

Under the current management approach, the expansion of noxious weeds and invasive plants will likely continue at the current average annual rate of 14 percent (Westbrooks 1998). Spread rates will vary depending on the intensity of land use activities, the degree of any disturbance, the resilience of the native plant community, the presence of weeds, and the duration, intensity, and method of weed control activities and other management approaches.

At locations where BLM and its partners actively manage weed infestations, weed populations will likely decline over time. Many infestations are heavily entrenched, especially the invasive annual grasses, and will require repeated and sustained inputs to reduce weed impacts. However, many noxious weed infestations may be at levels where rapid gains can be achieved with current and improved control methods and management strategies. An increased emphasis on prevention and control of newly-detected weed populations may reduce the risk of those infestations becoming established.

Climate change will likely have substantial impacts on plant communities as some species and/or entire systems will not be able to adapt to increased environmental stress and disturbance associated with changes in climatic conditions. Some native plants and animals may no longer be able to persist in their current ranges and may create additional open niche opportunities for weeds to invade. Increased global temperatures and altered patterns of precipitation and water storage patterns will likely affect soils as well as native plant tolerances. The physiological tolerances of some invasive plant species may be within the projected variation in climate and will in some instances be more suited to changed conditions. It is also possible that some of the current weeds will become extirpated in response to variation in climate patterns.

### **Management Opportunities**

Invasive plants move across jurisdictional boundaries and property lines; therefore, coordination and partnerships with local, state, tribal governments, and other Federal agencies, as well as with interested organizations and individuals, is a critical component of management. The remoteness of, and limited public access to, some of the Monument lands makes such partnerships particularly important.

In the planning process, the BLM will consider what objectives it should adopt related to invasive plants and what tools are appropriate for the management of these species in the Monument. While the BLM is likely to look at a range of objectives the management of weeds, it will follow requirements for plants on the Washington State Noxious Weeds list.

While an integrated pest management approach (including education and physical, biological, and chemical (herbicides) is generally used in addressing weeds on BLM-administered lands, the BLM is likely to explore the trade-offs involved in excluding herbicides from the list of tools available for the management of weeds within the Monument.

In implementing the plan, the BLM will also take a variety of measures to limit the dispersal of invasive plants. Such measures could include requiring: the use of weed-free materials for road and trail construction, repair, and maintenance; the cleaning of equipment before use in the Monument (including between use on different islands within the Monument); and the use of weed-free hay, straw, mulch, and seed for restoration activities. Education around the potential distribution of weeds through recreational activities would also be useful.

### **Indicators**

The BLM is likely to use the various estimated disturbance levels from management activities, treatment methods, and rate of weed spread to compare the effects of the different draft alternatives on invasive plant species in the Monument and the San Juan Islands in general.

## **4.10 Lands and Realty**

### **Key Points**

- The proclamation withdrew the Monument from all forms of disposition except for by exchange that furthers the proclamation's protective purposes.

### **Context and Current Condition**

The proclamation withdrew the Monument from all forms of disposition except for by exchange that furthers the proclamation's protective purposes. This means that the land within the Monument must remain under BLM administration except where an exchange of lands would enhance the protection of the objects and values for which the area was designated. The proclamation also provided that, "lands and interests in lands within the Monument boundaries

not owned or controlled by the Government of the United States shall be reserved as a part of the Monument upon acquisition of ownership or control by the Secretary of the Interior (Secretary) on behalf of the United States.” Any lands acquired, by purchase, donation, or exchange, by the BLM within the San Juan Islands would thus become part of the Monument.

*Conveyances out of BLM-administration*

Historical conveyances (1921-1992) of land out of BLM-administration (or the administration of the BLM’s precursor) affect the current boundaries of the Monument. These included transactions such as a land exchange, several Recreation and Public Purposes (R&PP) Act patents, and conveyances mandated by special acts of Congress.

A land exchange in 1993 conveyed approximately 87 acres of Federal land on Orcas Island near Lawrence Point, along with Cypress Island, to the state of Washington. Between 1965 and 1985, seven R&PP patents conveyed approximately 337 acres of Federal lands to the Washington State Parks and Recreation Commission (Washington State Parks); these patents are still in place and these lands are currently managed by the State. Most of these transactions were for small islands or portions of small islands. Individual acts of Congress directed the conveyance of Federal land to specific entities such as San Juan County (Odlin Park) and the University of Washington (the Point Caution Biological Research Center).

The BLM continues to have compliance responsibilities for the R&PP and congressionally-patented lands to ensure the patentee complies with the terms of the patent. In most cases, if the use on the patented land is found not to be in compliance, the patent shall revert to the Federal government. The patentee may request to the BLM to have the reversionary clauses in their patent eliminated if they wish to clear the encumbrance in order to utilize the land for a purpose that is not in conformance with the conveyance authority for the existing patent.

*Acquisitions*

Acquisition of private land by the BLM is authorized under section 205 (a) of FLPMA and can be pursued to facilitate various resource management objectives; acquisitions are only pursued with willing sellers. Acquisitions, including easements, can be completed through exchange, Land and Water Conservation Fund (LWCF) purchases, and donations. In 1964, Congress established the LWCF (Public Law 88-578) to provide for the acquisition of public lands to meet the needs of all Americans for outdoor recreation and open space. Between 1992 and 1999, the BLM acquired approximately 365 acres at Iceberg Point, Watmough Bay, and Chadwick Hill on the south end of Lopez Island through LWCF acquisitions and a land exchange with the State of Washington.

**Table 7. Acquisitions and Conveyances**

<b>Land Tenure Action</b>	<b>Acres Acquired</b>	
Exchange	140	
LWCF	225	
R&PP Patents		337
Special Act Patents		570
<b>Total</b>	<b>365</b>	<b>993</b>

### *Withdrawals*

Between 1875 and 1949, six executive orders and public land orders withdrew approximately 700 acres of Federal land in the San Juan Islands to the U.S. Coast Guard (USCG) for lighthouse purposes. Approximately 250 acres of these withdrawals have been revoked and returned to the jurisdiction of the BLM. Another 150 acres were eventually conveyed to the State. The remaining 300 acres of withdrawn lands, originally thought to have been returned to the BLM's jurisdiction in the mid-1980s, are in the process of being relinquished by the USCG with the intention that they will be under BLM's jurisdiction. After the completion of the relinquishment process, the total acreage under BLM's jurisdiction within the San Juan Islands will increase to approximately 1,000 acres. These agencies are currently co-managing lands in the process of relinquishment.

### *Rights-of-way*

A right-of-way (ROW) grant is an authorization to use a specific piece of public land for certain projects. While new rights-of-way are not necessarily prohibited in national monuments, they can only be authorized where compatible with the designating proclamation. There are currently six ROW authorizations within the Monument, all issued to the USCG for road and utility access to lighthouse related structures and equipment, as well as protective areas for visibility and noise from navigational equipment. Two of these ROW authorizations do not take effect until the relinquishment back to the BLM of lands currently under USCG jurisdiction. Any request for a ROW authorization prior to the completion of the land use plan would be considered on a case by case basis and must be consistent with the protective mandate of the proclamation.

The proclamation provides that “nothing in this proclamation shall be deemed to limit the authority of the Secretary of Homeland Security to engage in search and rescue operations, or to use Patos Island Light Station, Turn Point Light Station, or other aids to navigation for navigational or national security purposes.” One implication of this language is the necessity of maintaining existing, and potentially authorizing new, ROW authorizations to the USCG to operate and maintain navigational equipment and associated facilities within the Monument.

### *R&PP Leases*

The Recreation and Public Purposes (R&PP) Act authorizes the sale or lease (for information on R&PP Act patents, see above) of BLM-administered lands for recreational or public purposes to State and local governments and to qualified non-profit organizations. Between 1975 and 1984 there were four R&PP leases issued to Washington State Parks. Although all the leases have expired, Washington State Parks and the BLM have entered in a Memorandum of Understanding (MOU-8300-OR-130-09-005) to cooperatively manage and improve the effectiveness and efficiency in attaining shared mission and goals at Patos, Little Patos, Blind, and Posey Islands. These lands are all formally administered by the BLM and are part of the Monument.

### **Management Opportunities**

Through the land use plan, the BLM will develop a set of criteria to guide any potential acquisition of lands or interests in lands (e.g., easements) in the San Juan Islands. These criteria might include items such as prioritizing the acquisition of lands or interests in lands that would improve public access, that are adjacent to existing Monument parcels, and/or that enhance the objects and values for which the Monument was designated. In all cases, any acquisition of lands or interest in lands would only be pursued from willing landowners.

While the BLM is prohibited from disposing of Monument lands except “where the exchange of lands would enhance the protection of the objects and values for which the area was designated” it will identify land tenure zones for the lands it administers in the Monument. Three land tenure zones are generally identified during a land use planning process:

- Land tenure zone 1: lands that will be retained by the BLM.
- Land tenure zone 2: lands that are available for exchange (criteria of lands that describe the attributes of lands that may be included in exchanges rather than specific locations).
- Land tenure zone 3: lands that are available for disposal (this zone would not be applied to any lands within the Monument).

The BLM anticipates retaining lands within the Monument, though, as described above, exchanges that would enhance the values for which the area was designated are not prohibited by the proclamation. Exchange of lands in land tenure zone 1 requires a land use plan amendment.

#### *Rights-of-way and other Land Use Authorizations*

The BLM will consider designating part or all of the Monument as an avoidance or exclusion area for rights-of-way and other land use authorizations. Lands designated as exclusion areas are unavailable for any future land use authorization without a land use plan amendment, except when mandated by law. Lands designated as avoidance areas are available for land use authorizations under specified circumstances. The BLM would grant future ROW and authorizations on any lands designated as avoidance areas only when they are compatible with the purpose of which the area was designated and would not be otherwise feasible outside the avoidance area. Authorizations may be considered if design features and mitigation, including compensatory mitigation, can offset resource impacts such that there would be neutral or beneficial impacts to the resource for which an area was designed.

If Monument lands are not designated as an avoidance or exclusion area, land use authorization applications will continue to be considered on a case by case basis and must be consistent with the designating proclamation.

#### **Indicators**

The BLM is likely to compare the acres in land tenure zones 1 and 2, and in ROW exclusion or avoidance areas, across its draft management alternatives.

#### **4.11 Paleontology**

##### **Key Points**

- One fossil locality has been identified within the Monument. The locality includes remains of *Serpula vermicularis*, a calcareous tube worm, fan worm, or plume worm, often found in marine inter-tidal zones.

##### **Context and Current Condition**

The proclamation referred to fossils that have been discovered throughout the San Juan Islands, though it did not specifically address paleontological resources within the Monument. There is one known fossil locality within the Monument that had not been confirmed at the time of designation.

Paleontological resources are a fragile and non-renewable resource. Paleontological resources include fossil remains or traces of plants and vertebrate and invertebrate animals. Locations where fossils occur on the landscape are known as “localities.” In addition, the geological setting where fossils are known to occur or where processes important in the formation of fossils have been identified may also constitute paleontological resources.

### **Trends and Forecasts**

The known fossil locality currently appears to be in a stable condition. Increases in recreational activities around the locality could increase exposure and risk of damage to the fossils. Increased exposure and increased recreational use may also increase risk of unauthorized collection or vandalism in areas where fossils are exposed.

### **Management Opportunities**

The BLM will explore whether management actions are necessary to identify and protect sensitive fossil areas or to mitigate impacts to paleontological resources. There is currently no known interest in further academic study or investigation of paleontological resources in the Monument.

### **Indicators**

There is likely to be no effect from the management actions on paleontological resources within the San Juan Islands.

## **4.12 Recreation**

### **Key Points**

- Since the early 1990s recreation and visitation within the Monument has increased dramatically.
- Trends suggest that public desire for recreational experiences and visitation will increase in the region, including for opportunities associated with the Monument.

### **Context and Current Condition**

The proclamation does not directly address recreation as an object or value for which the Monument was designated. Recreation is, however, a primary means by which the public can interact with and learn to appreciate the Monument’s ecological and cultural objects and values. Recreational use also has the potential to degrade the values that attract visitors to the Monument and the San Juan Islands in general.

The exceptional maritime environment of the San Juan Islands provides outstanding and diverse recreational opportunities. Recreation is vital to the San Juan Island’s economy and plays an important role in the culture of the local communities. Visitors to the San Juan Islands predominately arrive via some type of watercraft, usually either by the Washington State Ferry, private or charter boat, or smaller crafts such as canoes and kayaks. About 900,000 visitors utilized the Washington State Ferry system to reach the San Juan Islands in 2009 (Compilation of San Juan Visitors Bureau Surveys, 2005–2009; San Juan Visitors Bureau 2010).

Although the BLM-administers only a small percentage of the land in the San Juan Islands, the Monument lands are an important recreational resource for both local residents and visitors. In 2014, the BLM and its partners counted over 100,000 visitors to the Monument. These visits were recorded through an array of methods, including trail counters, volunteer monitors, partner monitoring, and BLM staff reporting. The difficulty of monitoring use at some of the Monument’s more remote rocks and islands means that this is probably an underestimate of

current usage. The great majority of this visitation takes place between May 15 and September 15. The shoulder seasons for visitor use are typically March 15 to May 14 and September 16 to October 15. The off season occurs predominantly between October 16 and March 14. In fair weather conditions, visitors can still enjoy most of the Monument's recreational opportunities during the shoulder and off seasons.

Opportunities available to visitors to the Monument currently include hiking, kayaking, camping, photography, lighthouse appreciation, volunteer events, hunting, and wildflower and marine mammal viewing (see Table 8). Fishing is a popular recreation activity in the San Juan Islands, but the Monument offers only limited opportunities for this activity. Visitors participating in motorized and non-motorized boating (including those following the Cascadia Marine Trail) to access sites comprise the greatest number of visitors to the Monument. Boaters, including those using sea kayaks and other small watercraft, who visit the Monument may visit Turn Point Light Station, Watmough Bay, Patos, Blind, Posey, Victim, Skull, Freeman, McConnell, and other rocks and islands.

Traditionally, hunting within the Monument has been limited to shotgun and archery only. Residents have raised safety concerns about conflicts between deer hunting and visitors participating in hiking and volunteer activities (BLM 2015).

Developed and semi-developed recreation areas are scattered throughout the Monument, with most of the sites occurring at Patos, Blind and Posey Islands, Turn Point Light Station, and the lands included in the area of critical environmental concern (ACEC) at the south end of Lopez Island. These dispersed sites and resources substantially contribute to the overall recreation opportunities available in the Monument and the San Juan Islands in general. The BLM maintains and monitors them for recreation uses and benefits.

Developed facilities at these sites are relatively limited and range from primitive developments (an area with a kiosk or sign to identify the site) to fully developed sites (campgrounds with designated sites and vault toilets). The BLM relies on a partnership with Washington State Parks to manage the developed camping opportunities currently available within the Monument (see Table 8). Recreation also occurs outside of these prominent areas; visitors may seek out these more remote sites due to their primitive nature and opportunities for solitude.

In addition to providing traditional recreational opportunities, the lands on the south end of Lopez Island are also culturally important to members of the local community, as expressed in an array of feedback received by the BLM during the scoping period for this planning process. Residents expressed a sense of spiritual connection to these lands and described using them for celebrations, coming of age ceremonies, memorials, and visits of a contemplative nature (BLM 2015).

**Table 8. San Juan Islands Recreational Opportunities at Prominent Sites**

Site	Facilities						Recreation Opportunities						
	Fees	Camping		Toilets	Picnic Area	Boat Launch	Handicap Access	Boating	Fishing	Hiking	Horse-back Riding	Hunting	Additional notes
		Stay Limit (Days)	Units										
Blind Island	✓	14	4					✓	✓				Campsites maintained by WSP; boat access only
Patos Island	✓	14	7 <sup>1</sup>	✓	✓			✓	✓	✓			Campsites maintained by WSP; boat access only
Posey Island	✓	14	2	✓	✓			✓	✓	✓			Campsites maintained by WSP; boat access only
Cattle Point		Day Use								✓			Wildflower viewing
Chadwick Hill, ACEC		Day Use								✓	✓	✓	Wildlife viewing and scenic vistas
Kellett Bluff		Day Use						✓					Wildlife viewing and scenic vistas
Iceberg Point, ACEC		Day Use						✓		✓		✓	Viewing and scenic vistas
Indian Island		Day Use						✓		✓			Wildlife viewing and scenic vistas
Point Colville, ACEC		Day Use								✓		✓	Viewing and scenic vistas
San Juan Islands outer islands		Day Use						✓		✓			Wildlife viewing and scenic vistas
Turn Point Light Station		Day Use		✓				✓		✓			Boat, hike access only
Watmough Bay, ACEC		Day Use		✓				✓	✓	✓			Viewing and scenic vistas

<sup>1</sup> Permit required for group camping.

### *Commercial, Competitive, and Organized Group Recreation Uses*

While most recreational users participate in dispersed recreation activities individually or in small groups, others participate in organized events such as weddings or commercial recreational pursuits such as sea kayaking tours. Groups of ten or more individuals require permits to visit the lands included in the ACEC at the south end of Lopez (BLM 1990). The BLM issues special recreation permits for the Monument that allow specified commercial and organized group uses of the Monument. On average, approximately 1-2 permits are issued each year. Most are area or activity specific permits, such as those for weddings.

For the past 20 years, the BLM's Spokane District Office has been concerned with unauthorized commercial uses, which should otherwise be captured under the special recreation permit program. There continues to be a suspected number of non-permitted outfitters—primarily sea kayaking guides and charter boat operators—making use of the Monument without obtaining the appropriate authorization for commercial activities. Efforts have been made to research and bring these unauthorized activities into compliance; however the relative isolation of some of the Monument lands and the limited staff and law enforcement presence has made enforcement and monitoring difficult.

#### **Trends and Forecasts**

Overall trends show a substantial increase in visitor use at prominent sites within the Monument (see Table 9), though improved data collection at the Monument lands not on Lopez Island has also caused the overall visitation numbers to increase. This use fluctuates from time to time due to weather patterns, water levels, fuel prices, and national economic indicators. Regardless of these fluctuations, it is expected that the recreational demand for the Monument will increase. Without active management of recreation, natural and cultural resource conditions and the quality of the recreation experience within the Monument would decline with increased recreation use. \

Throughout Washington State, recreation is expected to increase due to a combination of social and environmental conditions in Washington and neighboring states, overall population growth, and the growing trend of people seeking to recreate on public lands. As identified in *Outdoor Recreation in Washington: the 2013 State Comprehensive Outdoor Recreation Plan*, demand for recreational opportunities has increased across the region (Ritchie et al. 2013). Over time, there have also been changes in the level of participation in different types of recreation in the region (see Table 10).

Recreation demand is also increasing nationally, as identified in the National Survey on Recreation and the Environment (NSRE), which showed that between 2000 and 2007, the total number of people in the United States who participated in one or more outdoor activities grew by 4.4 percent (Cordell 2008). Prominent among the growing activities identified in the NSRE were viewing and photographing natural scenery, flowers, trees, wildlife, birds, and fish. Based upon the most recent information available, recreation demand is expected to continue to rise for the types of activities available within the Monument.

The reliance of many visitors on the Washington State Ferry system to access the San Juan Islands may eventually provide a limit on the increasing number of visitors able to seek these recreational opportunities within the Monument.

**Table 9. Monument total recreation, including all recreation sites and dispersed uses, from 2001–2014**

Management Area/ Recreation Site	Visits													
	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
Blind Island	7,900	7,700	7,750	7,750	Data NA									
Cattle Point	12,200	10,100	9,950	9,900	Data NA									
Chadwick Hill ACEC	3,700	3,200	5,500	5,250	2,400	3,467	3,507	3,208	2,060	2,000	2,000	2,000	2,000	2,000
Iceberg Point ACEC	15,300	13,000	15,500	15,210	10,500	7,543	5,209	4,676	3,090	3,000	5,000	6,500	5,000	5,000
Indian Island	9,550	7,650	7,500	7,450	Data NA									
Kellett Bluff	320	250	250	250	Data NA									
Patos Islands	8,500	6,900	6,500	6,450	5,500	7,128	7,030	7,204	6,695	6,500	6,500	8,450	6,500	6,500
Point Colville ACEC	3,500	3,100	3,200	3,100	2,200	3,102	3,074	2,897	2,060	2,000	2,000	2,600	2,000	2,000
Posey Island	Data NA	2,750	2,750	2,750	2,750	Data NA								
San Juan Island Outer Islands	8,750	7,900	7,800	7,780	Data NA									
Turn Point	13,750	12,200	12,000	11,735	10,500	10,239	10,112	9,673	6,180	6,001	8,500	8,700	6,000	6,001
Watmough Bay ACEC	17,500	16,000	15,500	15,450	10,500	10,215	10,368	10,110	9,370	23,100	15,700	17,300	5,000	5,000
<b>Monument: Total Visits</b>	<b>100,970</b>	<b>90,750</b>	<b>94,200</b>	<b>93,075</b>	<b>41,600</b>	<b>41,694</b>	<b>39,300</b>	<b>37,768</b>	<b>29,455</b>	<b>42,601</b>	<b>39,700</b>	<b>45,550</b>	<b>26,500</b>	<b>26,501</b>

**Table 10. Rankings of activities by participation level in Washington State: 2002, 2006, and 2012**

Activity	2002	2006	2012	2002	2006	2012
Fishing for shellfish	39	45	29	10	16	13
Visiting a nature interpretive center	20	33	14	6	19	12.5
Firearms (hunting or shooting)	22	41	21	1	20	10.5
Camping—backpacking/primitive location	46	47	36	10	11	10.5
Camping—tent camping with	26	19	16	10	3	6.5
Hiking		16	6	2	10	6
Fishing from a bank, dock, or jetty		31	19	-2	12	5
Beachcombing	21	14	13	8	1	4.5
Picnicking, BBQing, or cooking out	9	1	1	8	0	4
Horseback riding	34	50	38	-4	12	4
Wildlife viewing/photographing	2	11	3	-1	8	3.5
Boating—canoeing, kayaking, rowing, manual craft	38	28	30	8	-2	3
Fishing from private boat	19	30	22	-3	8	2.5
Jogging or running	15	12	12	3	0	1.5
Swimming or wading at beach	14	3	8	6	-5	0.5
Walking without a pet	1	2	2	-1	0	-0.5
Sightseeing	3	4	4	-1	0	-0.5
Boating—motorboating other than personal watercraft	18	17	18	0	-1	-0.5
Walking with a pet	5	7	7	-2	0	-1
Gathering/collecting things in nature	7	21	15	-8	6	-1
Archery (hunting or shooting)	44	53	51	-7	2	-2.5

Source: Ritchie et al. 2013

### Management Opportunities

Under BLM policy, areas that are managed for recreation should be designated as recreation management areas (RMAs) in the pertinent land use plan. Because the Monument is not currently management under a land use plan, there are no existing RMAs. Through this land use planning process, the BLM will bring the Monument into conformance with existing policy by designating RMAs and developing recreation objectives where it intends to manage areas for recreation.

Through the planning process, the BLM will consider the compatibility of various levels and types of recreation use with the protection of the objects and values for which the Monument was designated. This may include exploring the pros and cons of approaches as disparate as facilitating increased recreational use and developing new recreational opportunities and limiting or prohibiting recreational uses of the Monument.

The BLM will primarily explore these approaches in the draft management alternatives through the designation of RMAs in areas where the BLM intends to manage recreation. The BLM will develop management objectives and direction for each RMA that will define the type of activities and experiences

it intends to provide in each area. Areas that the BLM does not intend to manage for recreation would be identified as “areas not managed for recreation.”

There are two tiers of RMAs that can be applied through a land use plan:

- Special Recreation Management Area (SRMA): an SRMA is an area where existing or proposed recreation opportunities are recognized for their unique value, importance, and/or distinctiveness, especially as compared to other areas used for recreation.
  - The BLM manages SRMAs to protect and enhance a targeted set of activities, experiences, and benefits. Within an SRMA, the BLM recognizes recreation and visitor service management as a predominant management focus for the area. Because of the proclamation’s focus on ecological and cultural values, the BLM may determine that SRMAs are not appropriate for designation within the Monument.
- Extensive Recreation Management Area (ERMA): An ERMA is an area that requires specific management consideration in order to address recreation use, demand, or facilities.
  - The BLM manages ERMAs to support and sustain recreation activities in conjunction with the management of other values. The BLM manages recreation in these areas, but it is not the predominant management focus.

In identifying RMAs and associated direction and objectives, the BLM will explore managing for a variety of visitor experiences, including those that emphasize a quiet and contemplative experience. In an alternative with objectives to provide such a quiet and contemplative experience, the BLM would consider how it can minimize the impacts of its management, and the activities of other visitors, on the sights and sounds experienced within the Monument. Similarly, the BLM will explore opportunities to limit its impact on the experience of dark night skies within the San Juan Islands. The BLM will also consider ways of managing potential conflicts between different visitor uses of the land, including between the use of the Monument for hunting and walking or monitoring the landscape.

#### *Commercial, Competitive, and Organized Group Recreation Uses*

The BLM will consider what criteria it should use for issuing special recreation permits in the future. This could include the types of activities, and the size of group, for which a permit would be required.

#### **Indicators**

The BLM is likely to compare the acres available under each alternative for various recreational activities to estimate the effect of its management on recreational opportunities available in the San Juan Islands.

#### **4.13 Roads and Trails**

##### **Key Points**

- The Monument currently has approximately 16 miles of undesignated, user created trails.
- The BLM also manages .87 miles of motorized routes that are used to access various Monument sites.

##### **Context and Current Condition**

Regarding the use of motorized and mechanized vehicles (e.g., mountain bikes) the proclamation states, “except for emergency, Federal law enforcement, or authorized administrative purposes, motorized vehicle use in the Monument shall be permitted only on designated roads, and non-motorized mechanized vehicle use in the Monument shall be permitted only on designated roads and trails.”

In 2015, the BLM worked with a local contractor to complete an inventory of all motorized and non-motorized roads and trails throughout the Monument (this inventory was initiated in 2012). This inventory found approximately 16 miles of undesignated, user created trails. These non-motorized trails currently support hiking and limited horseback riding (Chadwick Hill), but are often primitive and unmarked. Trails associated with recreation sites receive regular use. The BLM also manages approximately .87 miles of motorized routes that are used to access Point Colville, Watmough Bay, and Turn-Point Light Station.

The BLM currently has no formally designated trail network within the Monument. Currently, all trails are user created.

### **Trends and Forecasts**

From the early 1990s through 2009, the BLM documented 6-8 miles of trails within what is now the Monument. The current inventory documents approximately twice that mileage of trails. The current inventory is more comprehensive than past efforts, which may account for some of this increase, but there has also been an increase in user created trails in the more accessible Monument lands. As described in the Recreation section of this document, recreation within the Monument has increased substantially over the past two decades. Following this trend in recreational use, overall trail use is increasing across the Monument. Under current management it is likely that social trails within the Monument will continue to proliferate.

### **Management Opportunities**

Currently there is no comprehensive travel management plan covering the Monument. Travel and transportation planning need to be addressed at both the plan and implementation level. Comprehensive travel management is defined as the proactive planning and on-the-ground management of road and trail travel networks, and it addresses all resource aspects (recreational, administrative, traditional, casual, agricultural, industrial, educational, cultural, etc.) and accompanying modes and conditions of travel on the public lands, including motorized, mechanized (e.g. mountain biking), and non-motorized or mechanized uses (e.g. hiking, horseback riding). The Monument plan will include both planning-level and implementation-level travel decisions.

Acknowledging the proclamation's designation as a minimum restriction applied to the Monument for motorized and non-motorized mechanized vehicle use, the plan will determine if greater restrictions are appropriate. The BLM will consider whether to designate all or part of the Monument as closed to motorized vehicle use. It will also consider limiting all recreational use of the Monument to designated trails. In undertaking implementation level travel planning, the BLM will consider recreational objectives for each area, along with administrative needs, to develop an appropriate network of trails by formally designating or closing existing trails or developing new ones.

### **Indicators**

The BLM is likely to use an estimate of acres closed or limited to designated for motorized and mechanized vehicles, along with an estimate of trail miles available for various activities, to compare the effect of the draft management alternatives on how the public accesses the Monument.

## **4.14 Socioeconomics**

### **Key Points**

- Residents of the San Juan Islands have a high quality of life by a number of measures.
- San Juan County has a strong tourism-based economy but is vulnerable and recovering slowly from the recession.

- Residents support provision of natural space and open areas, hiking and walking trails, and shoreline access and wildlife viewing.
- Residents are working to ensure that tourism is socially and environmentally sustainable.
- The BLM makes a very minor contribution to the local economy, but Monument designation has increased the area's profile.
- There do not appear to be environmental justice populations or issues.

### **Context and Current Conditions**

While the proclamation does not explicitly address the socioeconomic value of the Monument, it does recognize that humans have been present on the landscape for thousands of years. It also mentions that the area's marine mammals draw a stream of wildlife watchers.

The great majority of the Monument lands are within San Juan County (see Table 1, above) so this document uses the county as the socioeconomic planning area. San Juan County, the only county in Washington State surrounded entirely by water, is composed of the San Juan Islands and encompasses about 180 square miles. Residents and visitors can access San Juan County, and the Monument, only by boat or air. The ~1,000 acres of the Monument represent a small percentage of both the overall land (<1 percent), and the land available for public visitation (~8 percent), in the San Juan Islands (San Juan County 2010b). The lands included in the Monument are important to local communities and are also a draw for seasonal visitors to the islands.

The San Juan Islands draw regional, national, and international visitors. The primary access point to the San Juan Islands is the Washington State Department of Transportation ferry terminal in Anacortes, Washington. In 2014, approximately 1.8 million total riders used the Washington State Ferry system to access the San Juan Islands from Anacortes, and an additional nearly 18,000 traveled to the islands from Sidney, British Columbia (WDOT 2014).

### *Population Characteristics*

Of the 172 named islands and islets in the San Juan Islands, humans inhabit only about 20. The majority of inhabitants live on Lopez, Orcas, San Juan, and Shaw islands, which are the only four locations in the San Juan Islands served by Washington State ferries. The Town of Friday Harbor on San Juan Island is the commercial center of the islands. Eastsound on Orcas Island and Lopez Village on Lopez Island are smaller commercial centers within the San Juan Islands.

San Juan County's population of year-round residents was 16,015 in 2014, an increase of 6.6 percent since 2005 and much higher than the 3,903 population in 1970. However, the recent rate of growth is lower than what was previously anticipated in the 2005 version of the San Juan County Comprehensive Plan, which estimated that 2015 population would be 19,168 (San Juan County 2005).

In the high season, the day-to-day population increases dramatically with visitation. The 2011 San Juan Islands Scenic Byway Corridor Management Plan (San Juan Islands Visitors Bureau 2011) estimates that summer resident/vacation home/hotel night population at least doubles the resident population on any given date during the summer months, which does not include day visitors or overnight visitors who stay in informal accommodations such as house guests or campground stays. It goes on to say that this is consistent with other estimates that population increases by as much as 60 percent during the summer (San Juan Islands Visitors Bureau 2011).

Friday Harbor, incorporated in 1909, is the only incorporated town in the county. Almost 75 percent of county residents live outside of the three urban village areas. The population breakdown by the three most populated islands and by the largest community on each island is shown in Table 11.

**Table 11. Population of the San Juan Islands by most populated islands and communities**

Island			
San Juan Island (unincorporated)	5,214	Friday Harbor	2,220
Orcas Island	4,894	Eastsound	980
Lopez Island	2,396	Lopez Village	190

The county attracts many retirees; the San Juan Islands are regularly included on lists of America’s most desirable places to live. The median age of San Juan County residents is 53, much higher than the statewide average of 37 (Economic Profile System 2015). The county has a considerably higher percentage of individuals age 65 and older (29 percent) than occurs statewide (14 percent). It has a lower percentage of those under 18 (14 percent) than occurs statewide (23 percent) (Vance-Sherman 2015). Residents also have higher levels of education; 45 percent age 25 and up have a bachelor’s degree or above compared to 32 percent statewide (Economic Profile System 2015).

San Juan County has a much lower proportion of minority residents than the statewide average. As of 2014, 90 percent of county residents are White alone, not Hispanic or Latino, a much higher proportion than the 70 percent statewide. The proportions of members of each minority race (Black, Asian, American Indian and Alaska Native, Native Hawaiian and other Pacific Islanders, and those who reported being two or more races) and ethnicity (Hispanic/Latino) are lower in the county than the statewide averages (U.S. Census Bureau 2015).

Based on annual County Health Rankings developed by the University of Wisconsin Population Health Institute and the Robert Wood Johnson Foundation, San Juan County has been one of the top two healthiest counties in Washington State from 2010-2015, including four years as the healthiest of the 39 counties (County Health Rankings 2015). The rankings are based on data linked to two categories of health: health outcomes, which are defined as length of life and quality of life; and health factors, defined through indicators of clinical care, health behaviors, social and economic factors, and the physical environment. For example, San Juan County has very low rates of violent crime, and residents smoke less, are less likely to be obese, have greater access to recreational facilities, and are more physically active than in the rest of the state. Not every indicator is positive; county residents are slightly less likely to have health insurance, and a higher proportion of adults report binge or heavy drinking compared to the statewide average. The county also has a higher percent than the statewide average of households with “severe housing problems,” or households with at least one of the following four housing problems: overcrowding, high housing costs, lack of kitchen facilities, or lack of plumbing facilities. The issue of lack of affordable housing is shaped by the seasonal population trends; in 2013, the county had a much higher proportion of homes that are seasonal (34 percent) than the statewide average of just 3 percent (Economic Profile System 2015).

*Resident Attitudes and Values*

As described in the Recreation section of this document, the BLM heard from local residents during the scoping period about the importance to their community of the Monument lands on the south end of Lopez Island. In addition to comments describing the use of these lands by local residents for walking and other non-motorized forms or recreation, some commenters mentioned the use of the lands for community celebrations, naming ceremonies, and spiritual purposes (BLM 2015).

The BLM Spokane District Office contracted James Kent Associates (JKA) to collect information on communities in Eastern Washington and the San Juan Islands. They collected information within human resource units (HRU), which are roughly equivalent in size to a county. They collected information on the following topics: settlement patterns, publics, networks, support services, work routines, recreation activities, and natural and human caused features of the landscape. Residents of Orcas Island described loving their island and their community and the value of knowing their neighbors and taking care of each other, because “we’re all in it together” (James Kent Associates 2010). Lopez Island, known as the most rural and agricultural of the major islands, has a slow pace of life valued by its residents. People interviewed by James Kent Associates made numerous references to the bustle of Friday Harbor, underscoring the importance of a quiet lifestyle. One person said, “People come for the beauty, but they stay for the community.” However, living on the islands is difficult economically; many believed that “locals are dying out, young people leave, and over time, the island gets wealthier and wealthier” (James Kent Associates 2010).

The vision statement contained in the current San Juan County Comprehensive Plan (Fig.1) reflects the local residents’ sense of place and community values, which include recognition and conservation of ecosystem services, sustainability, and a desire for a high quality of life, with basic needs met for all (San Juan County 2010a). The values of neighborliness, rural character, sound leadership, tolerance, self-sufficiency, independence, and community pride appear especially important to the culture of the San Juan Islands.

The San Juan Islands Scenic Byway Corridor Management Plan describes the sense of place and how it is shared by visitors, yet potentially threatened by increased visitation and the social vulnerability of island life:

Many people choose to live in the San Juan Islands because of the sense of peace and isolation, the immediate availability of nature and recreation opportunities, and the surrounding scenic beauty. They are also drawn to the small town pace, rural lifestyle, and strong sense of community. These are the same qualities that draw visitors to the islands. But with more people coming to the islands, these qualities are at risk. This is why most residents in the islands are deeply committed to living sustainably and managing tourism effectively to avoid impacts to natural resources and the local quality of life. (San Juan Islands Visitors Bureau 2011)

Another source of information about residents’ values is a 2009 survey conducted by San Juan County to support development of its Parks, Trails and Natural Areas Plan 2011-2016 (San Juan County 2010b). Almost all respondents (98 percent) said that parks, trails, and natural areas were important to their quality of life, whether or not they and their families actively used these areas. Almost 2/3 of the respondents (and almost 3/4 of Lopez residents) believed that not enough public land was being managed for conservation and public use. The top three priorities for the county parks system were provision of natural space and open areas, hiking and walking trails within parks, and shoreline access and wildlife viewing.

**Figure 1. San Juan County Vision**

<b>A DECLARATION OF VISION AND COMMITMENT TO THE FUTURE OF SAN JUAN COUNTY</b>	
<b>PREAMBLE</b>	
<p>WE THE PEOPLE of San Juan County recognize that these rural islands are an extraordinary treasure of natural beauty and abundance, and that independence, privacy and personal freedom are values prized by islanders. Being a diverse people bound together by these shared values, we declare our commitment to work towards this vision of the San Juan Islands in 2020 A.D.</p>	
<p><b>COMMUNITY</b></p> <p>We envision a community that is primarily rural, made up of islands of varying character, each with its own unique qualities. The islands are places of peace and mutual tolerance, where citizens of differing backgrounds and beliefs respect each other's dignity, privacy, and freedoms. We communicate effectively and openly and work together toward goals identified as being for the common good. We foster a sense of neighborliness, of self-sufficiency, and community pride that has long been a part of our island character.</p> <p><b>BASIC HUMAN NEEDS</b></p> <p>Our islands are places where all citizens can safely walk or play, day or night. The drinking water supply is clean and adequate. Health care and help in time of need are accessible and affordable. The supply of affordable housing is adequate to meet the needs of our diverse population.</p> <p><b>EDUCATION</b></p> <p>Learning is a continuing lifelong process which is encouraged and aided by the community. A partnership of families and community creates a supportive and challenging environment founded on academic excellence and artistic expression. This educational environment produces ethical, self-directed, compassionate, responsible world citizens, alive with the love of learning.</p> <p><b>ECONOMY</b></p> <p>We support a pattern of economic growth and development which serves the needs of our community, and which recognizes the rural, residential, quiet, agricultural, marine and isolated nature of the islands. Our economy comprises a wide spectrum of stable, year-round activities that provide employment for islanders. We support and encourage traditional industries including forestry, farming, aquaculture, construction, fishing and tourism without jeopardizing the resources on which they depend. We have home occupations and cottage industries which are compatible with surrounding neighborhoods. We encourage new ideas and new technology for improving the quality and profitability of our goods and services. Value-added activities are encouraged. Environmental conservation and sustainable development are balanced.</p> <p><b>NATURAL ENVIRONMENT</b></p> <p>Our islands have exceptional natural beauty and healthy diverse ecosystems surrounded by pollution-free marine waters. The air is fresh and clean, the water quality is excellent, and the soil is uncontaminated. As careful stewards of these islands, we conserve resources, preserve open space, and take appropriate action to assure healthy land and marine environments. Native plants and animals of the islands thrive, and are identified, appreciated and conserved.</p>	<p><b>LAND USE</b></p> <p>Neighborhoods, hamlets, villages and towns are clearly defined so as to conserve agricultural, forest, mineral resource and environmentally sensitive lands. These areas provide for commerce and community activities without losing their small scale and attractive island ambiance. There is housing for people of all incomes. The unique character of our shorelines is protected by encouraging uses which maintain or enhance the quality of the shoreline environment. Through innovative land use strategies, our citizens and institutions balance and protect private property rights, public rights, and our natural environment.</p> <p><b>TRANSPORTATION AND COMMUNICATION</b></p> <p>We have water, land, and air transportation systems commensurate with our island culture. On-island circulation is by means of a system of scenic rural roads with automobile, bicycle and pedestrian ways functioning without conflict. In some places, the roads are unpaved, narrow, and winding, and care is taken to maintain a rustic quality in public signs. Expansion or new construction of basic public transportation facilities occurs only on the basis of demonstrated local public need. Advanced interactive communication systems are encouraged.</p> <p><b>ENERGY AND RESOURCES</b></p> <p>Our community fosters resource and energy conservation. Energy independence is encouraged. Recycling, solid waste, and sewage treatment are managed within the confines of each island in an environmentally sound manner. Renewable natural resources are used on a sustainable basis. Nonrenewable resources are conserved wherever possible and practical.</p> <p><b>ARTS, CULTURE AND RECREATION</b></p> <p>Our community nurtures the expression of its creative talents and supports diverse cultural and entertainment activities. Our cultural facilities such as libraries, museums, and theaters are focal points of activity and community support. Well managed parks, trails, and shoreline access, where appropriate, provide islanders with recreation with due regard for both the rights of private property owners and the natural limitations of each site.</p> <p><b>HERITAGE AND HISTORIC PRESERVATION</b></p> <p>Our community is enriched by a strong sense of identity, tradition, legacy, and continuity, where past and present freely mingle. We recognize the contributions to our rural and maritime heritage made by indigenous peoples, explorers, and island pioneers, and encourage the preservation of that heritage. We encourage preservation of historic sites, structures, and traditions for the enjoyment of all.</p> <p><b>GOVERNANCE</b></p> <p>We are self-governed by informed citizens. We are equally represented by elected officials who conduct the activities of government in an ethical, fair, impartial, responsive and open manner which recognizes the independent, self-reliant nature of its citizens. Our government institutions balance responsibility with resources and costs, consolidate services where practical, manage prudently, provide reliable data, are service-oriented, and perform in a timely manner.</p>
<b>OUR COMMITMENT:</b>	
<p>AS FORTUNATE CITIZENS OF THE SAN JUAN ISLANDS, WE COMMIT ourselves individually and communally to a future for ourselves and our children that reflects this vision. To this end, we, the undersigned individuals dedicate our time and our talents.</p>	

The San Juan County's Lodging Tax Advisory Committee (LTAC) Master Plan for the Lodging Tax Facilities Grant Program (San Juan County 2015a) has several emphases that reflect the area's values. One emphasis area is to promote tourism that typifies the "best of the San Juan Islands"—natural beauty, geology, outdoor activities, anthropology, agricultural attractions, lifelong learning opportunities, history, culture, and the arts. This demonstrates the strong sense of place and desire to take advantage of the area's natural capital, while being sustainable environmentally, economically, and socially. Under the Wildlife & Environment priority for tourism development, the LTAC supports projects to provide visitors with nonintrusive opportunities to enjoy the county's abundant natural resources—including such things as birding, nature hikes, and marine activities. A program goal to "improve visitor/resident relationships" recognizes that in an area economically linked to tourism, it is important for locals and visitors to find ways to coexist.

Many of the visitors returning to the islands also have a strong sense of place, presumably for similar reasons as the people who live there. However, as often happens in communities with high levels of seasonal tourism, conflicts are inevitable. As one example, some residents were frustrated by new ferry reservation system introduced over the 2015 Memorial Day weekend under which up 90 percent of vehicle space was reservable ahead of time (Johnson 2015). Washington State Ferries implemented the vehicle reservation system in the San Juan Islands, hoping to spread out traffic to lesser-used sailings and reduce lines. Although lines were shorter, a number of San Juan County residents said they were unable to make trips that are not planned well in advance because of the system; others reported no difficulties (Johnson 2015). Another example is the housing issues mentioned above; housing is discussed in more detail in the context of economic conditions in the next section.

### *Economy of the San Juan Islands*

The San Juan Islands have played an important role for Coast Salish peoples for thousands of years. Native American people have occupied the region for more than 10,000 years, utilizing lands in the San Juan Islands, and in the Monument, for hunting, fishing, plant gathering, trade and exchange, and other cultural, social, and religious activities. Descendants of the first inhabitants continue to utilize the public lands and resources in their traditional use areas.

European settlements were established by the Hudson Bay Company in the 1850s, although British and Spanish explorers visited the islands in the 1700s (Vance-Sherman 2015). Along with Friday Harbor, ports at Roche Harbor at the northwest tip of San Juan Island and Richardson on the southern end of Lopez grew rapidly in the late 1800s and early 1900s as island industry and commerce expanded; fishing, farming, timber, ship building, and lime works all played prominent roles in the emerging economy (Oldham 2015).

While some residents still make a living from fishing, farming, or forestry, tourism-related industries and retirement communities are the foundation of the current San Juan County economy (Vance-Sherman 2015). With its focus on tourism and the service industry, the county has the highest number of businesses per capita of any county in Washington State (San Juan County 2014).

Major contributors to the economy include leisure and hospitality (26 percent of jobs), trade, transportation and utilities (17 percent), government (15 percent), education and health services (11 percent), and construction (11 percent) (Vance-Sherman 2015). Manufacturing, while a relatively small economic sector, provides high-wage jobs (San Juan County 2014). The agricultural sector, while also a minor component, helps to diversify the local economy, maintain the pastoral landscape, and provide local options for farm commodities for residents and tourists alike (San Juan County 2014).

The county's economic development strategy links economics to sustainability and quality of life: "Economic development in San Juan County is a critical way to enhance community vitality, and it is a

process where the retention and enhancement of the archipelago's assets must be paramount: the islands' natural beauty, heritage and culture should be considered during any planning process” (San Juan County 2014).

The San Juan County job market has taken longer than the state or the nation to recover from the recession that began in 2008, and is still fragile and highly dependent on the demand for high season travel to the San Juan Islands (Vance-Sherman 2015). The county’s goods-producing industries lost an estimated 37 percent of jobs from 2008 to 2013 and only began to recover in 2014 (Vance-Sherman 2015). Service-providing employment in San Juan County lost 7 percent of jobs from 2008 to 2011 but expanded by 40 jobs in 2013 (Vance-Sherman 2015).

In 2013, San Juan County’s per capita personal income (\$58,718) was well above both state (\$47,717) and U.S. (\$44,765) averages (Vance-Sherman 2015); this includes all types of income, not just earned wages. Two-thirds of total personal income is non-labor income, a percentage that has risen steadily since 1970 (Economic Profile System 2015); this is an indicator of a place in which it is attractive to live and retire. As would be expected with the county’s proportion of older residents, 61 percent of the households have retirement and/or social security income, higher than the statewide average of 45 percent (Economic Profile System 2015). Over the 2009 to 2013 period, 10.8 percent of the resident population was living below the official poverty line, compared to 13.4 percent statewide and the national average of 15.4 percent (Vance-Sherman 2015). A lower proportion of county residents receive public assistance income (12 percent) compared to 22 percent statewide (Economic Profile System 2015). In 2013, the county also had a lower unemployment rate (6 percent) than the state’s (7 percent); the county rate declined from 2012 to 2015 (San Juan County Economic Development Council 2015).

Due to the large tourism component of the economy, employment levels are highly seasonal, with peak private nonfarm employment occurring each year in July and August, with an average gain of about 1,700 jobs (34 percent) from the January low point of the jobs cycle (Vance-Sherman 2015). While seasonal tourism is a pillar of the county’s economy, this seasonality can create challenges for local communities, which are affected by the instability of year-round business and by the stress placed on infrastructure and community services by summer visitors (San Juan Islands Visitor Bureau 2011). Restaurants and food services are among the businesses most affected due to the difficulty of achieving year-round profitability and the increasing challenge of finding seasonal workers (San Juan Islands Visitor Bureau 2011).

Another ongoing challenge is housing affordability; seasonal workers and long-time residents alike can have a hard time finding permanent housing in the county at prices local wages can support (San Juan Islands Visitor Bureau 2011). San Juan County's residents have the greatest gap between household incomes and housing prices of any county in the state (San Juan County 2015b). This affects the ability to fill jobs, especially for seasonal tourism-related businesses (San Juan Islands Visitor Bureau 2011).

### *BLM Role in the Local Economy*

The BLM has a very minor direct economic role in the county. The BLM makes payments in lieu of taxes (PILT) to the county to compensate for tax revenues not received from Federal lands, as well as additional funds authorized by the Emergency Economic Stabilization Act of 2008 (Public Law 110-343). Due to the small amount of BLM-administered lands in the county, recent payments have totaled less than \$1,000 annually, about 1/5 of the total payments received by the county from the Federal government. The BLM also makes a direct contribution by employing people who reside there and by spending dollars on project-related goods and services in the San Juan Islands. In addition to two full-time employees currently living and working in the islands, seasonal staff work and live in the area. Regardless of the management alternative selected, it is likely that BLM-related activities will continue to constitute a tiny percent of the local economy.

As one of the providers of opportunities to the public, the BLM contributes to recreation and tourism spending in the area. The Monument provides a variety of recreational opportunities (see the Recreation section, above). These opportunities support the lifestyle beloved by the local residents and are a draw for visitors. While most non-resident visitors to the Monument are likely also to visit non-Monument lands, the Monument does receive substantially more visitation during the summer months, indicating that these lands play some role in the seasonal tourism economy. On their way to Monument locations, visitors spend money on goods and services they would spend elsewhere if these opportunities did not exist. The National Park Service estimates that the San Juan island National Historic Park's 266,717 visits in 2011 generated about \$17 million in non-local visitor spending, creating 235 jobs and nearly \$6 million in income (Cui et.al. 2013).

Through its management, the BLM also contributes to non-market values including ecosystem services. The other sections of this AMS describe those contributions to air, vegetation and habitat, protection of historic and archaeological sites, and fish and wildlife.

### *Environmental Justice*

Environmental justice refers to the fair treatment and meaningful involvement of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, programs, and policies. Executive Order 12898 requires Federal agencies to “identify and address the disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.”

According to the Council on Environmental Quality's (CEQ) Environmental Justice Guidelines for NEPA (1997), “Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.” Low-income populations are those whose residents live at or below the poverty level.

As described above, the San Juan County population does not meet the threshold for either minority or low-income status, so environmental justice is not expected to be an issue in the EIS. However, given the long tradition of use and current interests in the San Juan Islands by Native Americans, government-to-government consultation with Native American tribes, along with other forms of engagement, will take place (see Tribal Interests section of this AMS).

### **Trends and Forecasts**

The population of San Juan County has been growing steadily, although with slower rates over the past several years. The population increase from 2010 to 2014 in San Juan County was 1.6 percent, lower than the statewide increase of 5 percent over the same period. Preliminary population projections conducted for San Juan County suggest that populations will continue to increase at about 2.2 percent annually (Eldred and Associates 2015), a lower rate than used for earlier projections. This would likely mean an increase in local visitation to the Monument.

Tourism spending within San Juan County has more than doubled since the early 1990s, with an estimated \$52.2 million in tourist spending in 1991 increasing to an estimated \$116 million in 2009 (Dean Runyan Associates, Inc. 2010). The limited accessibility of the islands, with visitation restricted by the number of ferries serving the islands, may place some constraints on the long-term increase in visitation and spending. However, visitation to the lands within the Monument has increased substantially over the last decade, and Monument designation appears to have attracted additional visitors. It is very likely that

local residents will continue to be involved in efforts to ensure that tourism remains environmentally and socially sustainable.

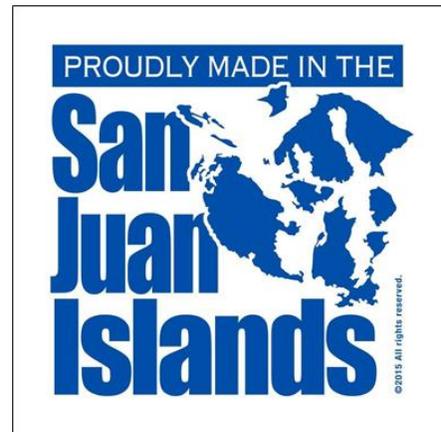
Stabilizing the local economy over a more sustained, year-round period is an ongoing priority for local leaders, policy-makers, and citizens (San Juan Islands Visitors Bureau 2011). The San Juan Island Visitors bureau has promoted new spring and fall events in an effort to enhance off-season and shoulder-season tourism, with some success (San Juan Islands Visitors Bureau 2011). Efforts to strengthen small businesses include a branding initiative and logo (Figure 2).

**Figure 2. San Juan Islands Logo**

Research on other areas where national monuments have been designated indicates that trends in important economic indicators such as population, employment, personal income, and per-capita income, often increase after designation (Headwaters Economics 2014). This increased or continued growth is not necessarily a direct result of designation, however. There is also evidence that the presence of parks and preserves can increase property values (Compton 2001).

### **Management Opportunities**

The BLM will consider the impacts of its draft management alternatives on socioeconomic conditions within the San Juan Islands, including consistency with current economic development strategies and the values of county residents.



### **Indicators**

The BLM will consider the effects of the draft alternatives on the socio-economic conditions in the San Juan Islands. The BLM is likely to describe these effects in mostly qualitative terms. The BLM will also compare the relative approximate cost of implementing the draft alternatives.

## **4.15 Soil Resources**

### **Key Points**

- Soils are one of the underpinnings for the Monument's diverse vegetative communities.
- Potential for soil erosion will need to be considered as the BLM undertakes management actions during the implementation of the RMP.

### **Context and Current Condition**

The proclamation does not specifically mention soils, but they are one of the underpinnings for the diverse vegetation communities it identifies as a value for which the area was designated.

Soil functions to:

- Sustain biological diversity, activity, and productivity;
- Regulate and partition water and solute flow;
- Filter and buffer, degrade, immobilize, and detoxify organic and inorganic materials;
- Store and cycle nutrients and carbon within the Earth's biosphere; and
- Provide physical stability and support for plants or socioeconomic structures or protection for archeological treasures associated with human habitation.

The great majority of the Monument is within San Juan County (see Table 1, above); because of this the BLM used the USDA Natural Resources Conservation Service’s (NRCS) soil data for San Juan County for this section of the AMS. The San Juan Islands’ soils are primarily formed from glacial drift mixed with colluvium from metasedimentary bedrock, glacial drift over dense glacial drift, or glacial drift over dense glaciomarine deposits. The dominant soil orders in this area are Inceptisols (721), Mollisols (101), and Alfisols (72), with other minor orders. The soils in the area dominantly have a mesic (i.e., warm) soil temperature regime, a typic soil moisture regime (i.e., soils will stay moist for a few days after rain), and isotic (i.e., mixed) mineralogy (NRCS 2016).<sup>1</sup>

**Table 12. Soil taxonomic class and map unit name for lands within the Monument**

<b>Taxonomic Classification Name</b>	<b>Acres</b>	<b>Map Unit Name</b>
Loamy-skeletal, isotic, mesic Typic Dystroxerepts	360	Doebay, moist-Cady-Doebay complex, 25 to 75 percent slopes
Loamy-skeletal, isotic, mesic Aquic Dystroxerepts	140	Alderwood-Everett complex, warm, 5 to 15 percent slopes
Loamy, isotic, mesic Lithic Dystroxerepts	92	Cady-Doebay-Rock Outcrop complex, 25 to 75 percent slopes
Loamy, isotic, mesic Lithic Ultic Haploxerolls	78	Haro-Hiddenridge-Rock Outcrop complex, 25 to 75 percent slopes
Loamy-skeletal, isotic, mesic Typic Dystroxerepts	78	Beaches-Endoaquents, tidal-Xerorthents association, 0 to 5 percent slopes
Fine-loamy, mixed, superactive, mesic Aquultic Haploxeralfs	69	Deadmanbay-Morancreek complex, 2 to 15 percent slopes
Mesic Andic Xerochrepts	29	Andic Xerochrepts-Rock outcrop complex, 60 to 90 percent slopes
Euic, mesic Typic Haplosaprists	27	Semiahmoo muck, 0 to 2 percent slopes
Sandy, isotic, mesic Pachic Ultic Haploxerolls	21	San Juan sandy loam, 2 to 8 percent slopes
Coarse-loamy, isotic, mesic Typic Epiaquolls	14	Limepoint-Sholander complex, 0 to 8 percent slopes
Dysic, mesic Typic Sphagnofibrists	14	Orcas peat, 0 to 2 percent slopes
Coarse-loamy, isotic, mesic Aquic Dystroxerepts	12	Roche-Killebrew complex, 2 to 10 percent slopes
Loamy-skeletal, isotic, mesic Andic Dystroxerepts	9	Pickett-Rock outcrop complex, 30 to 60 percent slopes

<sup>1</sup> The complete description of soils and conditions within the counties can be found at the Natural Resources Conservation Service’s Soil Survey Website: [websoilsurvey.nrcs.usda.gov](http://websoilsurvey.nrcs.usda.gov)

Coarse-loamy, isotic, mesic Typic Haplorthods	3	Kickerville silt loam, 3 to 8 percent slopes
Fine-loamy, mixed, superactive, mesic Aquic Haploxeralfs	3	Coveland loam, 0 to 5 percent slopes
Xerorthents	1	Xerorthents-Endoaquents, tidal association, 0 to 100 percent slopes
Sandy, isotic, mesic Aquic Dystrocherepts	1	Sholander gravelly loam, 2 to 8 percent slopes
Fine-loamy, mixed, superactive, mesic Xeric Argialbolls	1	Pilepoint loam, 2 to 8 percent slopes

*Source:* NRCS 2016

Areas of highly erodible soils occur throughout the San Juan Islands and are not confined to one particular area. The NRCS categorizes soils by both their susceptibility to water erosion and their susceptibility to wind erosion. Soils formed on steep slopes with grades of 30 percent or more and having textures of loam, silt loam, and some sands have a high water erosion hazard rating (severe or very severe). Soils without exposure, those covered with vegetation, and non-erodible surfaces like rock, have lower ratings. The NRCS rated the erosion potential for approximately 67 percent of the Monument as severe. It rated the erosion potential for 25 percent of the Monument as moderate (NRCS 2016). Therefore, if these lands are exposed during management actions taken during the implementation of the plan, mitigation to prevent or control erosion will be necessary.

The NRCS categorizes soils into wind erodibility groups, with the soils with the greatest susceptibility to wind erosion in Group 1 and the soils with the least susceptibility to wind erosion in Group 8. Wind erosion can result in the displacement or loss of topsoil, increased sediment deposition, and impacts to ambient air quality from elevated dust levels. Soils within the Monument range from Group 2 to Group 8, with most in Group 4 (NRCS 2016). Approximately 10 percent of the mapped lands are in Group 2 (NRCS 2016). Wind erosion is more likely to occur when vegetative cover is removed, so mitigation to prevent or control erosion will be necessary if management actions taken during the implementation of the plan remove vegetation cover in areas with soils that are more susceptible to wind erosion.

The NRCS also identifies the extent to which soils are limited in their suitability for different types of uses. It rated nearly 76 percent of the acreage of the Monument as having a very limited suitability for trail and path development; it rated the remainder of the soil map units in the Monument as somewhat limited in their suitability for this use (NRCS 2016). These ratings are related to the soils' susceptibility to erosion, which is described in the above paragraphs. These ratings do not apply in conditions where exposed surfaces are under forest cover.

Deep loamy soils are important features for wildlife, particularly for fossorial species (i.e., species that burrow) such as the Shaw Island Townsend's vole. The majority of soils within the Monument are less than 36 inches in depth, which is relatively shallow compared to mainland soils described by the NRCS, which may exceed 60 inches in depth (NRCS 2016). Due to the soils' glacial origin, there is a restrictive layer found at ten or fewer inches beneath the surface. The restrictive layer can impede movement of water, as well as some roots and animals, deeper into the soil. There are some exposures of basalt that have no overlying soil layer at all. These exposed basalt areas support a diversity of lichens, forbs, and mosses.

## **Trends and Forecasts**

*Wildfire:* Wildfires are fairly rare on the San Juan Islands. Under current management, any fire that occurred within the Monument would be suppressed. High intensity fire that would directly affect vegetation cover and soil erosion are unlikely. Many of the secondary effects such as soil mass movement that follows intense fires are also not expected due to limited elevation on steeper slopes.

*Vegetative Treatments:* Currently vegetative treatments within the Monument are limited to hazard tree management to address safety and structure concerns. Through the planning process, the BLM will consider a variety of vegetation management approaches that could impact soils. These may include conifer thinning, removing encroaching forest species in historic meadow areas, and prescribed burning, which can cause temporary increases in erosion and compact surfaces.

*Recreation:* The Monument has seen an increase in recreation over the last decade. User-created trails on the landscape have also proliferated. Given the susceptibility of many of the soils in the Monument to erosion, and the NRCS's rating of 76 percent of these soils as being very limited in their suitability for trails, it is likely that at least some of these user-created trails are causing erosion. This is likely to continue without management action.

## **Management Opportunities**

Through the planning effort, the BLM will consider the effect of its draft alternatives on soils and erosion within the Monument and the San Juan Islands in general. The BLM will consider how to protect soils through the travel and transportation designations and requiring best management practices for management activities implementing the final plan. Proper design features during plan implementation would potentially limit disturbance, erosion, and adverse effects to minimum levels.

## **Indicators**

The BLM is likely to consider the effects of its draft alternatives on soil/site stability and hydrologic functions. The estimated amount of surface disturbance under each alternative is likely to serve as a comparison between alternatives.

### **4.16 Special Designations**

#### **Key Points**

- The Monument status that applies to all BLM-administered lands in the San Juan Island is a protective special designation that can only be removed by an act of Congress.
- The Monument currently includes two areas of critical environmental concern, which are administratively created special designations.
- The Monument has two sites identified in association with the Cascadia Marine Trail: Blind Island and Posey Island. The Cascadia Marine Trail is designated as a national recreation trail and is one of only 16 recognized as a national millennium trail.

#### **Context and Current Condition**

In establishing the Monument, the proclamation created a special designation that applies to all BLM-administered lands in the San Juan Islands.

There are two types of special designations that can occur within BLM-administered lands:

- Congressionally or presidentially established special designations.
  - These designations are created by legislation or presidential proclamation.

- They can only be removed by an act of Congress.
- Management of these lands must take place within the restrictions or requirements of the designating legislation or proclamation.
- Examples are wilderness, national parks, national conservation areas, national monuments, national trails and wild and scenic rivers.
- Administratively established special designations.
  - Administrative designations are created through a BLM land use plan decision.
  - Designations can be changed or removed by amending the land use plan decision.
  - Management of these lands must conform to the objectives and management direction identified in the land use plan that established the designation.
  - An area of critical environmental concern (ACEC) is an example of an administrative designation.

*Congressionally or presidentially established special designations*

Other than the Monument designation and the Cascadia Marine Trail, there are no congressionally or presidentially established special designations within or affected by the Monument. There are no wilderness areas, wilderness study areas, wild and scenic rivers within the Monument. The Monument has no stretches of rivers or streams meeting the requirements for eligibility and/or suitability for wild and scenic river designation(s).

*Administratively established special designations*

ACECs highlight areas where important values require special management that differs from the management of the rest of a BLM decision area. These values may be biological, geological, cultural, historic, scenic, or safety-related.

There are two ACECs within the Monument. The Iceberg Point and Point Colville Areas of Critical Environmental Concern Decision Record (ACEC DR 1990) designated the BLM-administered lands at Iceberg Point and Point Colville as ACECs; decisions in this document were later extended to Watmough Bay and Chadwick Hill after the BLM's acquisition of these areas. The acreage managed under the ACEC decision now total approximately 400 acres.

**Management Opportunities**

*Congressionally or presidentially established special designations*

The focus of the Monument planning process is on how the BLM will implement the protective mandate of the proclamation in managing the lands and activities it administers in the San Juan Islands.

*Administratively established special designations*

The BLM will consider whether the existing ACECs, and any additional potential ACECs, meet the criteria for ACEC designation. The criteria for designation as an ACEC are:

- **Relevance.** In order to meet the relevance criterion, the area must have one or more of the following:
  - A significant historical, cultural, or scenic value (including but not limited to rare or sensitive archeological resources and religious or cultural resources important to Native Americans).

- A fish and wildlife resource (including but not limited to habitat for endangered, threatened, or sensitive species, or habitat essential for maintaining species diversity).
  - A natural process or system (including but not limited to endangered sensitive, or threatened plant species; rare, endemic, or relic plants or plant communities which are terrestrial, aquatic, or riparian; or rare geological features).
  - Natural hazards (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human action may meet the relevance criteria if it is determined through the RMP process that it has become part of a natural process.
- **Importance.** The value, resource, system, process, or hazard described in the relevance section must have substantial significance and values to meet the importance criterion. This generally means that the value, resource, system, process, or hazard is characterized by one or more of the following:
    - Has more than locally significant qualities which give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource.
    - Has qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change. 3. Has been recognized as warranting protection in order to satisfy national priority concerns or to carry out the mandates of FLPMA.
    - Has qualities that warrant highlighting in order to satisfy public or management concerns about safety and public welfare.
    - Poses a significant threat the human life and safety or to property.
  - **Requires Special Management Attention.** To be designated as an ACEC, an area must require special management attention to protect the important and relevant values. The BLM will determine whether special management is required to protect the relevant and important values given the management direction and objectives in each alternative.

### Indicators

The BLM is likely to consider the impact of the alternatives on the Cascadia Marine Trail; all alternatives will meet the mandate of the proclamation designating the Monument. The BLM is also likely to compare acres within administrative special designations across the draft alternatives.

### 4.17 Special Status Plants

#### Key Point

- Three species of BLM sensitive plants are known to occur within the Monument (Table 13). Populations of these species are known to occur at Iceberg Point and Point Colville on Lopez Island.

#### Context and Current Condition

The proclamation referred to the federally threatened golden paintbrush (*Castilleja levisecta*), which is a regional endemic of open grasslands in the Puget Trough. As described below, there are no known current populations of golden paintbrush within the Monument, though three other special status plant species do occur within the Monument.

Special status plants are those included on the Oregon/Washington State Director's Special Status Species List. The BLM and the USFS compile and periodically update this list (BLM 2015). The list includes

three categories:

1. Species listed or proposed for listing under the Endangered Species Act (ESA).
2. Sensitive species as designated by the state director. This includes all documented or suspected Federal candidate species, species that State has listed as endangered or threatened, and any other species designated by the state director in accordance with additional criteria. Species listed as sensitive by the Washington Natural Heritage Program are included as BLM sensitive species on the 2015 list.
3. Strategic species as designated by the state director. The BLM does not target strategic species for special management, but identifies them as priorities for site identification during botanical surveys.

The BLM has two objectives for special status species: (1) To conserve and/or recover ESA listed plants and their habitats so that ESA protections are no longer needed; and (2) to initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species so as to minimize the likelihood of, and need for, listing under the ESA.

During scoping, members of the public presented the BLM with a list of plants that they consider of local importance, though they do not meet the BLM criteria for special status plants. The BLM has included the list of these plant species below.

Golden paintbrush is considered critically imperiled at both State and global levels. The species has been documented at several sites in the San Juan Islands, but there are no known current populations within the Monument. In 2012, there was a small reintroduction program in the San Juan Islands, including at Iceberg Point, to determine survivability of introduced plants. In 2015, the single reintroduction plot at Iceberg Point contained zero plants. While the golden paintbrush does not currently exist within the Monument, the Monument's fescue grasslands have the potential to support a population of the plant. The recovery plan for golden paintbrush (USFWS 2000) calls for reintroducing the plant into unoccupied areas of its former range. The Monument may provide appropriate habitat for reintroduction of this species.

The Monument has documented populations of the three other special status plant species listed in Table 13. Limited populations of California buttercup (*Ranunculus californicus*), a Washington State threatened species, are known to occur within the Monument at Iceberg Point. An additional historical occurrence was recorded at Point Colville. Other occurrences of California buttercup have been mapped on non-Monument lands on Lopez and San Juan Island, but only about 5 recent sites are known throughout the San Juan Islands (Camp and Gamon 2010; WDNr 2015).

Single populations of slender crazyweed (*Oxytropis monticola*) and white-top aster (*Sericocarpus rigidus*)—both Washington State sensitive species—have been documented at Iceberg Point. Within the San Juan Islands, slender crazyweed occurs only along the southern end of Lopez Island. Outside of the islands, slender crazyweed is also extant in Okanogan, Jefferson, and Clallam counties in Washington State. The white-top aster population at Iceberg Point is the only population documented in the San Juan Islands, and is the northernmost population in Washington State. White-top aster is restricted to the Willamette Valley and Puget Lowlands (Camp and Gamon 2010).

**Table 13. Bureau sensitive plants currently or historically documented within Monument**

Species Name	Federal Status	State Status	BLM Status	Habitat
California buttercup ( <i>Ranunculus californicus</i> )		T	Sen	Open grasslands
Golden paintbrush ( <i>Castilleja levisecta</i> )	T	E	T	Open grasslands
Slender crazyweed ( <i>Oxytropis monticola</i> )		S	Sen	Open grasslands and rocks
White-topped aster ( <i>Sericocarpus rigidus</i> )		S	Sen	Open grasslands

Sources: Bureau sensitive plants documentation source: GeoBOB and WNHP databases, BLM files. Sen=BLM Sensitive, S=sensitive, T=threatened, E=endangered

Sharp-fruit peppergrass (*Lepidium oxycarpum*) is a BLM strategic species that has been documented on State Department of Natural Resources (DNR) land at Cattle Point; it has not been documented within the Monument. This is the only known Washington State occurrence of this species. Nuttall’s quillwort (*Isoetes nuttallii*) is a BLM sensitive species documented on Washington State DNR land at Cattle Point, but has not been documented within the Monument. Several populations of this species occur throughout western Washington State.

Local stakeholders requested that the BLM address several other plants of importance to local residents in this RMP (Table 14). Venus’ looking glass (*Triodanis perfoliata*) is considered globally and nationally secure (not rare, NatureServe 2015), and is currently not ranked by the Washington Natural Heritage Program (WNHP). Showy Jacob’s ladder (*Polemonium pulcherrimum*) is considered globally secure and is not ranked nationally or by WNHP. Yampah (*Perideridia gairdneri*), or Indian carrot, is considered globally secure and is not ranked nationally or by WNHP. Hare bell (*Campanula rotundifolia*) is considered globally secure and is not ranked nationally or by WNHP. Chick lupine (*Lupinus microcarpus*) is considered globally secure and is not ranked nationally or by WNHP. Brittle prickly pear (*Opuntia fragilis*) is considered globally, nationally, and state secure. Kinnickinnick (*Arctostaphylos uva-ursi* and *columbiana*) is considered globally and nationally secure and is currently not ranked by WNHP. The BLM and WNHP do not track occurrences of the species referred to in this paragraph.

**Table 14. Plants of local concern within the San Juan Islands\***

Species Name		
Sharp-fruit peppergrass ( <i>Lepidium oxycarpum</i> )	Salt Spray Zone	Str
Nuttall’s quillwort ( <i>Isoetes nuttallii</i> )	Vernal pools	Sen
Venus’ looking glass ( <i>Triodanis perfoliata</i> )	Open rocky	none
Showy Jacob’s ladder ( <i>Polemonium pulcherrimum</i> )	Open rocky	none
Yampah (Indian carrot) ( <i>Perideridia gairdneri</i> )	Open grassland	none
Hare bell ( <i>Campanula rotundifolia</i> )	Open rocky	none
Chick lupine ( <i>Lupinus microcarpus</i> )	Open grassland	none
Brittle prickly pear ( <i>Opuntia fragilis</i> )	Open grassland	none
Kinnickinnick ( <i>Arctostaphylos uva-ursi</i> and <i>columbiana</i> )	Open grassland, understory	none

Sen=BLM sensitive, Str=BLM strategic

\* This table is made up of species which do not have special designation or protection per the BLM Special Status Species Manual and not considered rare by State or Federal agencies, or species with special designation that have not been documented within the Monument. This is not an exhaustive list.

### **Trends and Forecasts**

In comparison to the conditions that existed prior to extensive Euro-American settlement, trends for many special status plants in Washington State have been downward as a result of conversion of natural habitats to development and altered communities. Exotic invasive species have spread into much of the remaining habitat, competing with native plants. Anticipated changes in temperature and precipitation patterns are also likely to affect special status species through alterations in competitive relationships, phenology, and fire frequency.

At the time of its listing in 1997, there were only ten known populations of golden paintbrush in Washington and British Columbia. A recovery plan for the golden paintbrush was published in 2000 (USFWS 2000) with additional conservation measures added in 2010 (USFWS 2010b). The recovery actions focus on the reintroduction of the species into likely historical habitat. Through reintroductions in Oregon and Washington, there are now 40 known populations of golden paintbrush (USFWS 2015).

If additional reintroductions of golden paintbrush were considered on the Monument or other lands within the San Juan Islands, and implemented successfully, this species could increase or expand. Under current management, the grassland vegetation community that provides potential habitat for golden paintbrush within the Monument would continue to decline due to encroachment by shrubs and forest species. Detailed trend information is not available for the California buttercup, slender crazyweed, or white-topped aster, or for the locally important plants, but all are subject to the trends described in the first paragraph of this subsection.

### **Management Opportunities**

The BLM will explore working with the U.S. Fish and Wildlife Service on further reintroductions of golden paintbrush. It will also consider the impact of its management actions on potential habitat for golden paintbrush.

Maintaining or improving the conditions of the open grasslands and rocky areas of the Monument would ensure the security of existing populations of BLM sensitive plants. Taking management action to curtail weed invasion, conifer encroachment, and trampling by humans may be considered. Efforts in these areas are also likely to benefit species of local significance.

### **Indicators**

The BLM is likely to compare acres of potential habitat for grassland species, as well as objectives for listed species reintroductions, across its draft alternatives to compare their potential effect on special status plant species. The BLM may also use acres of known plant populations as an indicator.

## **4.18 Tribal Interests**

### **Key Points**

- The BLM has a trust responsibility to ensure healthy habitats and water quality for maintaining treaty resources and access to public lands for the exercise of treaty rights including hunting, fishing, and gathering activities, as well as resources important to cultural and socioeconomic needs and interests of the tribes.

- The BLM, in consultation and collaboration with Coast Salish tribes, will ensure the protection of religious and cultural sites in the Monument and provide access to the sites by members of Coast Salish tribes for traditional cultural and customary uses.

**Context and Current Condition**

The proclamation describes the use of the San Juan Islands by native peoples dating back to the end of the last glacial period. Archeological resources associated with this long-standing use of the land are a value of scientific or historic interest for which the Monument was designated. In addition, the proclamation states: “Nothing in this proclamation shall be deemed to enlarge or diminish the rights of any Indian tribe. The Secretary shall, in consultation with Native American tribes, ensure the protection of religious and cultural sites in the Monument and provide access to the sites by members of American Indian tribes for traditional cultural and customary uses, consistent with the American Indian Religious Freedom Act (42 USC 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites).”

Native American people have occupied the region for more than 10,000 years, utilizing lands in the San Juan Islands for hunting, fishing, plant gathering, trade and exchange, and other cultural, social, and religious activities. Many of these activities occurred within the Monument. Descendants of the first inhabitants continue to utilize the public lands and resources in their traditional use areas.

Eleven federally recognized Native American tribes are known to have interests in the Monument; these are:

- Jamestown S’Klallam Tribe
- Lower Elwha Tribe
- Lummi Nation
- Nooksack Tribe
- Port Gamble S’Klallam Tribe
- Samish Indian Nation
- Skokomish Indian Tribe
- Stillaguamish Tribe of Indians
- Swinomish Indian Tribal Community
- Tulalip Tribes of Washington
- Upper Skagit Tribe

Federally recognized tribes retain rights and/or interests in public lands through treaties, executive orders, and/or Federal statutes. Treaty rights are pre-existing rights specifically reserved (retained) by tribes in the treaty or agreement between the tribe and the Federal government. As a Federal land management agency, the BLM has a trust responsibility to ensure healthy habitats and water quality for maintaining treaty resources and access to public lands for practicing treaty rights including hunting, fishing, and

gathering activities, as well as resources important to cultural and socioeconomic needs and interests of the tribes.

The areas of interest to Native American tribes include areas of historical or traditional use, particularly lands ceded to the Federal government during treaty negotiations or other agreements with specific tribes and/or bands that historically occupied lands in the region. Historically, some ceded lands were occupied exclusively by a single tribe or band, while others were used by multiple tribes or bands. Although treaties were negotiated with representatives of numerous tribes in the region, not all were ratified by Congress. In many instances where treaties were not ratified or negotiated, reservations were created by executive order, and off-reservation rights and interests were identified in other agreements or statutes. Disputes regarding aboriginal territories were adjudicated by the Indian Claims Commission in the 1950s through the 1970s. Most of the Monument is composed of ceded lands that are located in the interest areas of one or more tribes.

### *Treaty Rights and Interests*

Native American rights and interests in the San Juan Islands include a wide array of cultural, social, and economic activities and practices. Hunting, fishing, and gathering of roots and berries in usual and accustomed places are examples of specific rights reserved to some tribes by treaties or agreements. As a Federal agency, BLM has a trust obligation to consult with tribes to identify and consider potential impacts of plans, projects, activities, or other actions that may adversely affect reserved tribal rights, resources, and other tribal interests.

The BLM is responsible for ensuring meaningful consultation and coordination is conducted with tribes on a government-to-government basis. Through the consultation process, the BLM and tribes identify issues to be considered in land use or project plans. Issues and concerns may include treaty rights and resources, sacred sites, traditional uses including areas of traditional cultural and religious importance, and any other areas that may affect tribal interests. In some instances, agreement documents have been developed to guide consultations between the BLM and a tribe.

Geographic areas of interest are defined through consultation with tribes and encompass a broad range of tribal interests and concerns. Interest areas, sometimes referred to as aboriginal areas, traditional use areas, or zones of influence, may be exclusive to a specific tribe or band, or overlap those of several tribes or bands. "Usual and accustomed areas" identified in Steven's Treaties also may assist in defining the spatial extent of tribal areas of interest (USFS and BLM 1997). Identification of the areas of tribal interest is open to ongoing discussion and project-by-project consultation. Although tribal members may use public land resources for cultural and subsistence purposes, specific locations of resource use on public lands may not be known to BLM.

Maintaining healthy habitats for fish and wildlife and access to locations of traditional procurement activities is essential to the exercise of reserved rights and tribal interests. However, opportunities to exercise reserved rights and the availability of resources have changed since the signing and ratification of treaties and agreements. Increased settlement and changes in land use practices including agriculture, irrigation, ranching, and resource extractive practices continue to alter the landscape and natural habitats. The changes contribute to reductions in resource availability and access to the locations of traditional use. Decreased availability of culturally and economically important resources such as native fish (including salmon), game, or plant species, and loss of access to areas of traditional use, affects the traditional socio-cultural activities and practices essential to the exercise of reserved rights and tribal interests.

### *Traditional Use and Sacred Sites*

Habitats for fish, wildlife, and plants of traditional cultural value to the tribes occur on public lands within the San Juan Islands. Habitats supporting wildlife species that were traditionally hunted, gathered, or fished, and where culturally important plants were gathered for subsistence, medicinal, ceremonial practices, and other uses are available for access and use. However, the specific locations of traditional use or the resources utilized while exercising tribal rights and interests in the Monument is largely unknown to the BLM. Identification of traditional uses or properties of traditional cultural and religious importance is an ongoing process addressed during consultation between the BLM and tribes and is often specific to individual tribes or groups that value them.

Several locations important to gathering of traditional resources, particularly plants, have been identified on lands in the Monument. However, BLM may be unaware of many traditional resource procurement locations and their ongoing use. Traditional root gathering, a critical resource for ancestral peoples living in the Salish Sea, continues to be important to the tribes for its nutritional values and the added benefit of perpetuating tribal traditions. Locations of root gathering, often passed down through families, continue to be utilized in many areas. Collection ceases when access is prohibited or the root grounds are altered through environmental changes, particularly those resulting from land use practices. In addition to plant gathering areas, villages, graves, prayer sites, pictographs, petroglyphs, talus/cache pits, rock cairns and alignments, and various other sites may be considered traditionally important.

Sacred sites or specific locations of ongoing ceremonial or religious practices have not been formally identified to BLM on lands in the Monument. This might be attributed in part to the culturally sensitive nature of the values at those locations or the practices or ceremonies conducted. The BLM is unaware of Coast Salish sacred sites or locations of ceremonial or religious practices that may occur on lands within the Monument.

Forest products traditionally used in construction or manufacture of tools, utensils, or other uses include western red cedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), Douglas-fir (*Pseudotsuga menziesii*), red alder (*Alnus rubra*), Rocky Mountain maple (*Acer glabrum*), Pacific yew (*Taxus brevifolia*), big leaf maple (*Acer macrophyllum*), ocean spray (*Holodiscus discolor*), and various other woody plants (Suttles 1990) occur in the Monument.

Various roots, bulbs, berries, seeds, and nuts are important components of the traditional diet. Important traditional food plants include many varieties of fruits and berries, particularly salmonberry (*Rubus spectabilis*), salal (*Gaultheria shallon*), strawberry (*Fragaria vesca*), huckleberry (*Vaccinium parvifolium*), Oregon-grape (*Mahonia aquifolium*), and rose (*Rosa* spp.) (Suttles 1990). In addition to the fruits and berries, a variety of traditional roots and bulbs including wapato (*Sagittaria cuneata*), camas (*Camassia quamish*), and various lilies occur within the Monument.

Habitats within and adjacent to the Monument support larger terrestrial species important to subsistence and traditions including deer, and numerous smaller mammals, and traditional marine subsistence resources, including salmon, halibut, cod, various shellfish, sea mammals, and birds. Access to Puget Sound through Monument lands is available for exercise of tribal fishing rights and interests, but specific locations of ongoing traditional use for fishing related activities are with few exceptions largely unknown to the BLM.

### **Management Opportunities**

The BLM will ensure meaningful consultation and coordination is conducted with tribes on a government-to-government basis. This will include consulting with tribes to identify and consider potential impacts from the draft management alternatives on reserved tribal rights, resources, and other tribal interests. The BLM will also consult with tribes to identify, protect, and potentially enhance

habitats for plants, fish, and wildlife of traditional value and importance to tribes.

### **Indicators**

The BLM is likely to look at how alternatives would affect habitat conditions that contribute to traditional uses.

## **4.19 Visual Resources**

### **Key Points**

- A 2010 inventory rated the whole of the Monument as having visual resource class II (high) visual resource values.

### **Context and Current Condition**

While visual resources are not a historic or scientific value for which the Monument was designated, the language of the proclamation does capture the importance of these resources to the human experience of the San Juan Islands. It describes the San Juan Islands as “an unmatched landscape of contrasts where forests seem to spring from gray rock and distant, snow-capped peaks provide the backdrop for sandy beaches.”

The BLM visual resource management (VRM) system has two primary stages. The first consists of completing a visual resource inventory (VRI) using set criteria to determine inventory classes for different parts of the landscape. Through this inventory, an area’s visual resources are rated based on a combination of scenic quality, viewer sensitivity, and distance zones.

The second stage takes place through the land use planning process, as the BLM sets objectives for visual resources by designating visual resource management classes across the lands it administers. The objectives establish the maximum allowable level of contrast that a project can introduce to a particular landscape. Because there is no land use plan for the Monument, there are currently no VRM classes designated in the area.

In November 2010, a VRI was completed for the Monument. The Monument as a whole was determined to have a “distinctive, high degree of visual variety” and determined to have Class A scenic quality.

In conducting the VRI, the BLM, through a contractor, considered the fact that most of the Monument can be viewed while travelling through the Salish Sea area from smaller private and commercial craft. Several Monument properties can be seen while traveling through the San Juan Islands via the Washington State Ferry System. Recreational boating activities such as sailing, power boating, whale watching, and kayaking place all Monument islands within areas of high public use and visibility. The Monument lands are predominantly undeveloped and offer stunning vistas of wildflowers, rocky bluffs, open prairie, tide-pools, rocky and sandy beaches with lush vegetation and barren rocks colored with brilliant displays of dust lichens and seaweeds, as well as several historic buildings.

While much of the Monument consists of areas with relatively undisturbed characteristics, human disturbance has left an imprint on the land and on the overall scenic quality. For the most part, however, the region is relatively natural in appearance. The portions of the Monument that are not easily accessible by the public, due to a lack of ferry service or legal access, have generally retained a higher level of natural appearance. The degree of impacts from human use varies with the amount of use and the accessibility of the areas.

After considering these factors, the BLM rated the whole of the Monument as having VRI Class II (high) visual resource values. VRI Class I only applies to certain congressional designations.

### **Trends and Forecasts**

Anticipated future recreation and population growth will coincide with the need to address potential impacts to visual resources. Recreational use and commercial activities in some areas could result in increased adverse impacts to scenic vistas and natural settings, especially foreground scenes. The scenic quality of areas desired by recreationists (e.g., popular campsites, easy access areas) could degrade as use of these areas increases. The proliferation of social trails at certain areas within the Monument could increasingly impact visual resources.

### **Management Opportunities**

Through the planning process the BLM will determine appropriate VRM classes for the Monument. Once the plan is completed, the BLM will analyze implementation actions on a project-by-project basis for their conformance with VRM classifications and impacts to visual resource components and, where possible, use mitigation and minimization measures to design projects that blend with the natural background to minimize disturbances to the visual landscape.

Based upon the VRI results and other management considerations in the Monument, the planning process will assign each BLM-administered parcel to one of the following VRM Classes:

**Class I Objective:** To preserve the existing character of the landscape. The level of change to the characteristic landscape should be very low and must not attract attention.

**Class II Objective:** To retain the existing character of the landscape. The level of change to the characteristic landscape should be low.

**Class III Objective:** To partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate.

**Class IV Objective:** To provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high.

### **Indicators**

The BLM is likely to use acres of land in each VRM class and the reasons for those classifications under each alternative as a means of estimating the impact of the draft alternatives on the Monument's visual resources. Impact context will be provided through acres of assigned VRM Classes differing from VRI classes and acres of potentially allowable impacts to individual visual resource components (i.e. scenic quality, visual sensitivity, and distance zones).

## **4.20 Wilderness Characteristics**

### **Key Points**

- A 2011 inventory found that approximately 260 acres of the Monument have wilderness characteristics.

### **Context and Current Condition**

While the proclamation does not specifically refer to wilderness characteristics, in most cases the protection of these characteristics are likely to be compatible with the protection of the objects and values for which the Monument was designated.

The BLM is mandated to maintain an up-to-date inventory of wilderness characteristics on the lands it administers that are not currently designated as wilderness areas or wilderness study areas. It must also analyze impacts to this resource when undertaking actions and consider the protection of the resource in its management plans.

The criteria used in wilderness characteristics inventories are drawn from The Wilderness Act of 1964. Such inventories determine whether certain tracts of public land meet the minimum size requirement (5,000 acres or one of the size exceptions; roadless islands are an exception to the size requirement) and possess the minimum wilderness characteristics of naturalness and outstanding opportunities for solitude or for primitive and unconfined recreation, which are defined below:

**Naturalness:** An area must generally retain its “primeval character.” The area generally appears to be affected by the forces of nature, with the evidence of humans substantially unnoticeable.

**Solitude:** The state of being alone or remote from others; isolation; as in a lonely or secluded place.

**Primitive and unconfined recreation:** Non-motorized, non-mechanized (except as provided by law), and undeveloped types of recreational activities. Bicycles are mechanical transport.

A wilderness characteristics inventory was completed in December of 2011 and 26 units totaling approximately 260 acres were found to contain wilderness characteristics as defined in Section 2(c) of the Wilderness Act (16 USC 1132). Each area generally appears to have been affected by the forces of nature, with the imprint of man’s work substantially unnoticeable; has outstanding opportunities for solitude or a primitive and unconfined type of recreation; and may contain ecological, geological, or other features of scientific, educational, scenic, or historical value. As per the Wilderness Act, as well as Section 603 of the Federal Land Policy and Management Act (43 USC 1782), there is no minimum size criterion for islands surrounded by water.

### **Trends**

The BLM reviewed the inventory in the summer of 2015 and determined that the factors upon which the 2011 inventory decisions were based had not changed in the intervening four years.

### **Management Opportunities**

The BLM will consider where to protect wilderness characteristics where they have been found to occur within the Monument. It will determine whether there are any trade-offs between managing for wilderness characteristics and achieving other management objectives in the various alternatives.

### **Indicators**

The BLM is likely to compare the impact of the various alternatives on this resource by comparing the acres with wilderness characteristics being managed to protect these characteristics under each alternative.

## **4.21 Wildlife and Fish**

### **Key Points**

- The Monument is home to a diverse array of wildlife species.
- The management of the Monument may affect fish species occupying the waters adjacent to the Monument.
- Maintaining or improving habitat is essential for ensuring the long-term health and viability of the Monument’s wildlife populations.
- The resource management plan will provide an opportunity to consider how the BLM should manage the habitat upon which the Monument’s diverse wildlife relies.

### Context and Current Condition

The proclamation addresses both the diversity of habitats within the Monument and the varied wildlife that depend on them. This section provides a broad overview of wildlife within the Monument, before specifically addressing species that have a special status under policy or law. It goes on to describe wildlife generally associated with particular habitats within the Monument.

As described under Habitat and Vegetation Communities above, the Monument is composed of various plant community types (plant associations and/or alliances) that tend to co-occur within areas of the landscapes with similar ecological processes, substrates, and/or environmental gradients. Each of these vegetation communities supports an array of wildlife (Johnson and O’Neil 2001). The BLM generally manages the habitat within which wildlife occurs, but does not directly manage wildlife. The BLM coordinates closely with its State (Washington Department of Fish and Wildlife) and Federal (U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration Fisheries) partners that do manage wildlife.

There are approximately 250 vertebrate species present in the San Juan Islands, excluding fish. Table 15 below shows the approximate number of amphibians, reptiles, birds, and mammals (including marine mammals) that occur either seasonally or year-round in the San Juan Islands.

**Table 15: Vertebrate wildlife species known or suspected to occur within the San Juan Islands**

Category	Number of Species
Amphibians	7
Reptiles	7
Birds	201*
Mammals	35

\*Over 291 birds have been documented in the San Juan Islands, but some species are extremely rare transients, while others are believed extirpated from the area (Lewis and Sharpe, 1987).

While total species estimates are less available for invertebrates (e.g., insects), this category of wildlife contains some distinctive and rare species of concern relevant to the Monument. For example, the island marble butterfly (*Euchloe ausonides insulanus*), which occurs within the San Juan Islands, is a non-migratory, highly endemic species that lives its entire lifecycle within upland grasslands, sand dunes, or coastal lagoon habitat. Terrestrial mollusks (e.g., snails and slugs), which are also invertebrates, are quite abundant and diverse within in the San Juan Islands.

There are numerous fish species living permanently or seasonally in the waters surrounding the San Juan Islands. While the Monument designation, and so the decisions made through this planning effort, only applies above mean high-tide, the BLM will consider the impact of the draft alternatives on habitat below mean high-tide where pertinent. This section includes a discussion of special status fish that make use of the waters in the San Juan Islands. The Monument does not support any freshwater habitat for fish.

### *Special Status Species Overview*

Special status species include any species that is listed, or proposed for listing, as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS) under the provisions of the Endangered Species Act of 1973 (ESA) (16 USC 1531 et seq) (BLM 2008). This includes those species identified by USFWS as "candidate" or "species of concern," as well as those listed by the State as “threatened,” “endangered,” “sensitive” or “candidate” under Washington State regulation (WAC 232-12-297).

Bureau sensitive is an additional designation that BLM state directors can apply to species requiring special management consideration to reduce the likelihood of their future listing under the ESA. The sensitive species designation is normally used for species that occur on BLM-administered lands and for which the BLM has the capability to significantly affect the conservation status of through management.

Collectively, all of these designations comprise those species that will be referred to as “special status” throughout this document. The complete list of special status species considered for this planning effort comes from cross-referencing the Final State Director’s Special Status Species List (BLM 2015), the Washington Department of Fish and Wildlife’s (WDFW) Species of Concern in Washington State (WDFW 2015a), and USFWS’s Information for Planning and Conservation (USFWS 2015b).

**Table 16. Listed threatened and endangered species in the San Juan Islands**

Group	Species	Status	Presence	Habitat Association
Birds	Marbled Murrelet ( <i>Brachyramphus marmoratus</i> )	FT	D	Marine/nearshore
Marine Mammal	Orca ( <i>Orcinus orca</i> )	FE	D	Marine
Insect	Taylor’s Checkerspot Butterfly ( <i>Euphydryas editha taylori</i> )	FE	X	Shrublands and grasslands
Fish	Bocaccio ( <i>Sebastes paucispinis</i> )	FE	D	Nearshore (juv), deep water rocky (adult)
Fish	Green sturgeon ( <i>Acipenser medirostris</i> ), Southern Distinct Population Segment (DPS)	FT	D	Near shore marine, estuary, migratory marine
Fish	Eulachon ( <i>Thaleichthys pacificus</i> ), Southern DPS	FT	D	Marine areas deeper than 20 m, estuarine
Fish	Bull trout ( <i>Salvelinus confluentus</i> ), Puget Sound/Coastal DPS	FT	D	Nearshore marine areas, migratory marine
Fish	Chinook ( <i>Oncorhynchus tshawytscha</i> ), Puget Sound Evolutionarily Significant Unit (ESU)	FT	D	Nearshore marine areas, migratory marine
Fish	Chum ( <i>Oncorhynchus keta</i> ), Hood canal/Summer run ESU	FT	D	Nearshore marine areas, migratory marine
Fish	Coastal cutthroat ( <i>Oncorhynchus clarkii clarkii</i> ), Puget Sound/Coastal ESU	FT	D	Nearshore marine areas, migratory marine

Group	Species	Status	Presence	Habitat Association
Fish	Coho ( <i>Oncorhynchus kisutch</i> ), Puget Sound/Strait of Georgia ESU	FT	D	Nearshore marine areas, migratory marine
Fish	Steelhead ( <i>Oncorhynchus mykiss</i> ), Puget Sound DPS	FT	D	Nearshore marine areas, migratory marine
Fish	Canary rockfish ( <i>S. pinniger</i> )	FT	D	Nearshore (juv), deep water rocky (adult)
Fish	Yelloweye rockfish ( <i>S. ruberrimus</i> )	FT	D	Nearshore (juv), deep water rocky (adult)

*D-Documented, FE-Federally Endangered, FT-Federally Threatened, X-Extirpated or historically present*

#### *Federally-Listed Species*

Thirteen federally-listed species are known to occur in the San Juan Islands. Other transient listed species may occasionally be encountered in the area but are considered unlikely or rare. The endangered Taylor’s checkerspot butterfly is believed to be extirpated from the San Juan Islands. The majority of the listed species in the islands, including orcas and listed fish species, are found in the waters surrounding the islands and are not present in habitats directly managed by the BLM.

The Washington, Oregon, and California population segment of the marbled murrelet was listed as threatened on September 28, 1992 (USFWS 1997). Critical habitat for this population segment was designated on May 24, 1996, and then revised on October 5, 2011 (USFWS 2011). This small diving seabird occurs along the Pacific coast from the Aleutian Archipelago and southern Alaska to central California. It forages almost exclusively in the nearshore marine environment, but flies inland to nest in mature conifers (USFWS 1997). Marbled murrelet forage in the waters surrounding the Monument; however, there is no documented marbled murrelet use of Monument lands. There are no known nest sites within the Monument, nor is there any designated critical habitat for this species in the San Juan Islands (USFWS 2011).

The southern resident killer whale distinct population segment (DPS) was listed as endangered in 2005 with critical habitat for the DPS identified in 2006 (NOAA 2006). While BLM management decisions are unlikely to directly impact this species, the marine waters surrounding the San Juan Islands are within designated critical habitat.

The Taylor’s checkerspot is a federally endangered butterfly (USFWS 2013) that was historically found within the San Juan Islands. While this species is believed to be extirpated, and the San Juan Islands are not within designated critical habitat, USFWS has expressed an interest in reintroducing the species within suitable habitat to aid in recovery (Radmer 2015a, personal communication).

There are 11 federally-listed fish species occurring in the waters surrounding the San Juan Islands (see Table 16). As with the orca, these species occupy habitat that is not administered by the BLM but that may be affected by the decisions made through the Monument planning effort. These listed fish include

evolutionarily significant units and DPS (comparable to fish “runs”) in four groups: salmonids, rockfish, eulachon, and sturgeon.

There are six salmonids with federally-listed evolutionarily significant units and DPS in or adjacent to the San Juan Islands (Table 16). Designated critical habitat for salmonid species includes nearshore marine areas, estuaries, and offshore marine areas in the San Juan Islands (NOAA 1999); marine nearshore habitats are also identified as providing “space for individual and population growth and for normal behavior” as a part of critical habitat for ocean-migrating bull trout (USFWS 2010a).

Salmon use estuaries and nearshore marine areas including eelgrass prairies and high energy beaches in the San Juan Islands for juvenile rearing, refuge, feeding, and adult migration. Offshore marine areas provide migration corridors for these species. Juvenile salmon (especially chum) use high energy beaches for foraging, including the beaches of south Lopez Island (Herrera 2011). Factors affecting salmonids include habitat alteration, harvest practices, recreation in near-shore marine habitat, hatchery management, and additional factors such as climate change, ocean conditions, and species interactions (Shared Strategy for the Puget Sound 2007).

Three of the 19 species of rockfish that have been observed in the San Juan Islands are federally-listed under the ESA: bocaccio (*Sebastes paucispinis*), canary rockfish (*S. pinniger*), and yelloweye rockfish (*S. ruberrimus*) (NOAA 2010) (Table 16). During larval and juvenile stages, rockfish use shallow surface waters, kelp, and eelgrass for refuge and forage; rockfish utilize deeper rocky habitats as they mature (Wyllie-Echeverria and Sato 2005). Stressors on rockfish include overfishing, derelict fishing gear, pollution (especially of floating vegetative mats), and climate change (Palsson et al. 2009). Actions in the nearshore marine environment, including recreation, that disturb or remove kelp or eelgrass could impact rockfish. Actions that produce significant sediment or produce toxicants in or near kelp, eelgrass, or nearshore marine habitats could also impact rockfish.

The southern DPS of eulachon, an anadromous fish that spends most of its adult life at sea, is listed as threatened under the ESA (Table 16) and has been documented in Puget Sound (NOAA 2011). Designated critical habitat for eulachon includes only freshwater areas, and does not include any portions of the San Juan Islands. Threats to eulachon include: (1) climate change impacts on ocean conditions; (2) eulachon by-catch; (3) climate change impacts on freshwater habitat; (4) dams / water diversions; (5) water quality; (6) dredging; and (7) predation. The management of the Monument could have a minor effect on water quality, but is unlikely to affect the rest of these threats (NOAA 2011).

The southern DPS of green sturgeon (*Acipenser medirostris*), an anadromous fish that spawns in freshwater and forages in marine and estuarine areas, is listed as threatened under the ESA (Table 16) and has been documented in Puget Sound (NOAA 2011, Lindley et al 2011). Green sturgeon typically occupy the lower reaches of coastal rivers during freshwater life phases and spend much of their time in nearshore marine environments during marine phases. Green sturgeon are highly migratory, utilizing the open ocean to travel vast distances between freshwater rivers.

#### *Special Status Species Not Currently Federally-Listed*

In addition to the federally-listed species described above, 24 special status species are documented, suspected, or of interest to the Monument planning process based on historical occurrences and/or the presence of suitable habitat (see Table 17). As described above, the BLM emphasizes managing habitats to promote conservation and avoid the need for listing pursuant to the ESA (BLM 2008). As needed, the BLM will also consider whether certain species require specific management consideration in the plan (see below under wildlife by habitat type).

**Table 17. Special Status Species Not Currently Federally-Listed**

Group	Species	Federal Status	State Status	Presence	Habitat Association
Birds	Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	SC/ BGEPA	S	D	Forest and Woodlands/Nearshore
	Black Swift ( <i>Cypseloides niger</i> )	SC	M	U	Wetlands/nearshore
	Common Loon ( <i>Gavia immer</i> )	BS	S	D	Wetlands/Nearshore
	Golden Eagle ( <i>Aquila chrysaetos</i> )	BGEPA	C	D	Forest and Woodlands/Generalist
	Gyr Falcon ( <i>Falco rusticolus</i> )	BS	M	D	Shrublands and Grasslands/Wetlands
	Harlequin Duck ( <i>Histrionicus histrionicus</i> )	BS	-	D	Forest and Woodlands/Nearshore/Riparian
	Merlin ( <i>Falco columbarius</i> )	BS	-	D	Generalist
	Olive-sided Flycatcher ( <i>Contopus borealis</i> )	SC	-	D	Forest and Woodland
	Peregrine Falcon ( <i>Falco peregrines</i> )	SC	S	D	Shrublands and Grasslands/Nearshore
	Pileated Woodpecker ( <i>Dryocopus pileatus</i> )	-	C	D	Forest and woodlands
	Purple Martin ( <i>Progne subis</i> )	BS	C	D	Wetlands
	Rhinoceros Auklet ( <i>Cerorhinca monocerata</i> )	BS	-		Nearshore, Marine
	Short-eared Owl ( <i>Aegolius acadicus</i> )	BS	-	Suspected	Shrublands and Grasslands
	Mammals	Keen's myotis ( <i>Myotis keenii</i> )	-	C	Suspected
Little brown myotis ( <i>Myotis lucifugus</i> )		BS	-	D	Forest and woodland/Wetlands
Shaw Island Vole ( <i>Microtus townsendii pugeti</i> )		BS	M	D	Forest and woodland, Shrublands and Grasslands
Townsend's Big-eared Bat ( <i>Corynorhinus</i> )		BS	C	D	Forest and Woodlands

Group	Species	Federal Status	State Status	Presence	Habitat Association
	<i>townsendii</i> )				
Marine Mammal	Gray Whale ( <i>Eschrichtius robustus</i> )	-	S		Marine
Marine Mammal	Harbor Porpoise ( <i>Phocoena phocoena</i> )	-	C	D	Marine
Reptile	Sharptail Snake ( <i>Contia tenuis</i> )	SC	C	Suspected	Forest and Woodlands, Shrublands and Grasslands
Reptile	Western Pond Turtle ( <i>Clemmys marmorata</i> )	SC	E	X	Wetlands
Amphibians	Western Toad ( <i>Bufo boreas</i> )	SC	C	Suspected	Wetlands
Invertebrate	Island Marble Butterfly ( <i>Euchloe ausonides insulanus</i> )	FC, BS	C	D	Shrublands and Grasslands
Fish	Pacific hake ( <i>Merluccius productus</i> ), Georgia Basin DPS	SC		D	Marine areas: surface to 3300 ft.

BGEPA-Bald and Golden Eagle Protection Act, BS-Bureau Sensitive, C- State Candidate, D- Documented, E-State Endangered, FC-Federal Candidate, M-State Monitored, S-Sensitive, SC-Species of Concern, X-Extirpated or historically present

### *Migratory Birds and Eagles*

The BLM has a variety of legal and policy requirements regarding migratory birds, including the Migratory Bird Treaty Act of 1918 which generally prohibits hunting, taking, capturing, or killing, unless permitted by regulation. The BLM is also directed by policy to consider goals and objectives established in regional and state conservation strategy documents when adopting, revising, or amending land use plans that contain migratory birds and their habitat. Therefore, the BLM will consider how the draft alternatives that might alter or impact habitat for these species.

In addition to protections pertaining to migratory birds, bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (BGEPA). This act (16 USC 668-668c) prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, which is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

"Disturb" means: "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity,

by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

Bald eagles nest on the San Juan Islands in greater concentrations than anywhere else in the lower 48 states and many of those nests and territories occur on or encompass Monument lands (Stinson et al. 2007). The BLM will include management to avoid the disturbance of nesting/breeding bald and golden eagles within the draft alternatives. It will also consider the impacts of its management actions on suitable habitat for bald and golden eagles.

### *Marine Mammals*

Several species of marine mammals are found within the San Juan Islands. This includes cetaceans (whales, dolphins, etc.) that utilize the open marine waters as well as pinnipeds (seals, sea lions) that come ashore ("haul-out") on rocky shorelines and isolated islands to rest or give birth to their pups. While two special status marine mammals were listed above in Table 16 and 17, all marine mammals are protected under the Marine Mammal Protection Act (MMPA) (1972). Similar to the BGEPA mentioned above, the MMPA is aimed at conserving species and their habitat and limiting take, which is defined as "hunting, harassing, capturing, or killing" or attempting to do so.

Harbor seals are the most abundant marine mammal encountered on the Monument, but California and Stellar sea lions and elephant seals may also make use of the Monument's shoreline at times. Many of the Monument's isolated rocks and islands have been identified by WDFW as important marine mammal haul-outs (Jefferies et al. 2000). However, most of the Monument's shorelines have the potential for use by pinnipeds even those not officially identified as haul outs. The BLM will consider management objectives and direction within the draft alternatives to minimize threats to these marine mammals, including, but not limited to, human disturbance from vessels, wildlife viewing, and off-leash animals.

### *Wildlife of Management Concern*

There are native, introduced, and domesticated and/or feral wildlife species within the San Juan Islands that may pose a threat to the diversity of habitats and wildlife for which the Monument was partially designated. For example, due to lack of predation and hunting pressure, black-tailed deer populations within the San Juan Islands have expanded to such densities that they are having an influence on vegetative cover; similar issues may arise in the Monument with Canada goose, non-native European rabbits, or other species. While the BLM does not have jurisdictional authority to manage these species directly, options for collaborating with WDFW, USFWS, or Animal and Plant Health Inspection Services (APHIS) may be explored to aid in regional planning efforts for wildlife of management concern.

### *Wildlife by Habitat Type*

**Forest and Woodland:** A description of the current condition and trends for Forests and Woodlands is provided in the Habitats and Vegetative Communities section. Generally speaking, Monument forests support a multitude of migratory and resident birds, small mammals, amphibians, and terrestrial mollusks. While some of the wildlife species found in forest and woodlands occur in only a particular forest type, many others are generalists that can be found throughout the forest and woodland community types and/or transition zones and adjacent habitat.

As mentioned above, the BLM's primary responsibility is for managing habitat for wildlife, rather than directly managing individual species or their populations. Therefore, the BLM will explore alternatives for maintaining or enhancing forest and woodland habitats based on the assumption that healthy, structurally diverse, forests will provide a range of habitat necessary to support a diverse and healthy suite

of wildlife species. However, some species associated with forest and woodlands may be singled out for consideration as “focal” species if the BLM determines that specific habitat management objectives are needed to promote their recovery or prevent the need for future listing.

The marbled murrelet is an example of such a species that may warrant development of “species-specific” habitat goals or objectives. Marbled murrelet primarily nest in old-growth forests (characterized by large trees, a multistoried stand, and moderate to high canopy closure), but also use mature forests with an old growth component. Monument forests include some relatively undisturbed, older, stands that may have the potential to provide habitat for the federally threatened marbled murrelet, though there are currently no known occurrences of marbled murrelet nesting within the Monument (WDFW 2015b), and the USFWS did not include the San Juan Islands in its 1996 designation of critical habitat for the species (USFWS 1997).

Other examples of forest and woodland associated species that may warrant specific management consideration includes, but is not limited to the following: bald eagles, olive-sided flycatchers, pileated woodpeckers, Townsend’s big-eared bat, myotis sp., northern flying squirrel, sharp-tailed snake, and Pacific tree frog.

**Shrublands and Grasslands:** A description of the current condition and trends for shrublands and grasslands is provided in the Habitats and Vegetative Communities section. These habitats support a variety of migratory and resident birds, small mammals, amphibians, and terrestrial mollusks. Similar to what was described above for forests and woodlands, the BLM will explore alternatives for maintaining or enhancing shrubland and grassland habitats for the benefit of wildlife species that utilize this habitat type. This habitat is of particular importance for the rare island marble butterfly (*Euchloe ausonides insulanus*), which was recently identified by the USFWS as a candidate species warranted but precluded from listing as threatened or endangered under the Endangered Species Act (USFWS 2016). Before its rediscovery on San Juan Island in 1998, the island marble was thought extinct for 90 years. The island marble is only known to occur in a few locations on San Juan Island and nearby Lopez Island (Schultz et al 2011). The majority of Monument land that is suitable for the island marble butterfly is at Cattle Point on San Juan Island; however, suitable habitat may occur on other Monument lands on Lopez Island.

An issue of management concern for island marble butterflies is that of the three species of larval host plants known to be currently utilized by the species in the wild, only Puget Sound peppergrass (*Lepidium virginicum menziesii*) is native. The other two host plants (tumble mustard [*Sisymbrium altissimum*] and field mustard [*Brassica campestris*]) are non-native species (USFWS 2016). While controlling or eliminating non-native species in native-dominated habitat is generally preferred, the dependence of the island marble on non-native mustards may limit opportunities for this type of control or elimination.

Another species of interest found in this habitat is the Shaw Island vole (*Microtus townsendii pugeti*), a subspecies of *M. townsendii* that is found only in the San Juan Islands. Although this species is endemic (i.e. found only in) the San Juan Islands, it is widespread and locally abundant in grassland and wetland habitats in the islands. While this subspecies is considered BLM sensitive, it is only identified as a “monitor” species by WDFW. It is often considered a destructive pest in gardens and orchards due to its soil disturbing activities, which can favor the spread of undesirable non-native plants, including noxious weeds.

Other examples of shrubland and grassland species that may warrant specific management consideration includes, but is not limited to the following: northern harrier, American kestrel, savanna sparrow, short-eared owl, purple martin, and Taylor’s checkerspot.

**Nearshore (San Juan Islands):** A description of the current condition and trends for nearshore habitats is provided in the Habitats and Vegetative Communities section above. At the interface of the terrestrial and

marine environment, this habitat is important for a variety of seabirds, marine mammals, fish, marine invertebrates, and other wildlife species. The Monument's rocky shorelines are utilized by marine mammals while the exposed rocks, cliffs, and driftwood along the shoreline provide nesting habitat for many seabirds. While BLM's jurisdiction is delineated by mean high-tide, the BLM will consider the impact of the draft alternatives on habitat and species below mean high-tide where pertinent.

Several groups of fishes utilize nearshore marine habitats in the San Juan Islands, including forage fish, salmonids, rockfish, and green sturgeon. Occurrence and life history of listed species are discussed above. Forage fish that utilize nearshore environments in the San Juan Islands include Pacific herring (*Clupea pallasii*), surf smelt (*Hypomesus pretiosus*), and Pacific sand lance (*Ammodytes hexapterus*). Forage fishes are an important part of the marine food web and support sensitive salmonids and marine mammals as prey items. Other species using deeper habitats (e.g., ling cod, greenling, flounder, halibut, sea perch) are not addressed in this AMS since they are unlikely to be effected by the BLM's potential management actions.

Examples of nearshore-associated species that may warrant management consideration includes, but is not limited to the following: peregrine falcon, pelagic cormorant, double-crested cormorant, pigeon guillemot, glaucous-winged gull, black oystercatcher, special status fish, forage fish, and marine mammals.

**Wetlands:** A description of the current condition and trends for Monument wetland habitats is provided in the Habitats and Vegetative Communities section above. The limited freshwater resources within the San Juan Islands make these particularly important habitats for wildlife, especially amphibians and waterfowl.

Examples of wetland-associated species that may warrant management consideration includes, but is not limited to the following: Pacific tree frog, western toad, roughskin newt, long-toed salamander, red-winged blackbird, northern pintail, mallard, trumpeter swan, and great blue heron.

### **Trends and Forecasts**

Trends for fish and wildlife species are variable and tied to the habitats and locations where they occur. The Habitats and Vegetative Communities section above gives an overview of trends for the Monument habitats upon which wildlife depend. The BLM does not closely track trend of non-sensitive or sensitive species to the extent that State and Federal wildlife agencies do. Instead, most efforts focus on determining the extent that these species occur on BLM-administered lands, and sharing any relevant location/observation data with the aforementioned State and Federal wildlife agencies.

Increasing visitation within the Monument (see the Recreation section, above) could cause increased impacts to wildlife species without management action. Human disturbances and introduced structures can impact wildlife, and the absence of these can indicate higher quality habitat that can better support healthy populations. Noise may alter animal behaviors, breeding populations, the abilities of some species to detect predators (through auditory cues). Disturbance of nesting raptors can result in nest desertion and chick mortality even when disturbances are only temporary. Various buffers have been suggested to avoid these impacts.

Trend is unclear for marbled murrelets, with population estimates oscillating over the last 10 years between 18,000 and 23,000 birds, but the amount of suitable habitat has continued to decline throughout the range, primarily due to commercial timber harvest (USFWS 2011). The minor amount of potential habitat within the Monument is not currently utilized by marbled murrelets, but its potential for someday providing suitable nesting habitat should not be discounted without some consideration of climate projections.

Trends in population for salmon species that use marine areas adjacent to the Monument are dependent on many factors, including harvest, changes in marine and freshwater habitat, hatchery impacts, and climate. Wild salmon runs have been lost from about 40 percent of their historic breeding ranges in Washington (WRCS 2015). Commercial landings (harvest) of most salmonids is currently substantially lower than in the period from the 1950s to 1980s, and most salmonid stocks show negative trends in spawning escapement (juvenile outmigration) (Myers et al. 1998). The State of Washington and its partners (including BLM) have made efforts to improve fisheries by following salmon recovery plans (Governor's Salmon Recovery Office 2014). However, following a decade of effort, many salmonid species, including some listed chinook and steelhead runs, are consistently below recovery goals and decreasing (Governor's Salmon Recovery Office 2014).

### **Management Opportunities**

The BLM will explore what management is needed to restore, maintain, or enhance the habitat for priority fish and wildlife species. For the island marbled butterfly this may include considering how to minimize the impact of potential invasive species management on plant species utilized by this species. It will also consider whether visitor management is needed to minimize impacts of human use on fish and wildlife species.

As noted above, the USFWS has expressed an interest in reintroducing the endangered Taylor's checkerspot butterfly within suitable habitat in the San Juan Islands to aid in recovery (Radmer 2015a, personal communication). The draft range of alternatives will include objectives to work with USFWS on this reintroduction effort in at least one alternative.

The BLM will also work with its State agency partners to explore options for addressing wildlife of management concern (i.e., native, introduced and domesticated and/or feral wildlife species that pose a threat to ecological or cultural values) that may degrade Monument objects and values.

While not a plan decision, the BLM will explore developing/continuing monitoring partnerships and data sharing agreements with State and Federal partners, academic institutions, and other community partners (citizen science groups, youth corps, schools, etc.).

### **Indicators**

The BLM is likely to use habitat quantity and quality as the primary indicators to assess impacts to fish and wildlife from the various draft alternatives. For special status species, the BLM may also analyze potential impacts on number and extent of occupied sites, population size, population trend, habitat quality, and level of human disturbance, where data is available.

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## 6. Glossary

**Closed (motorized vehicle designation)** ~ Designated areas and trails where the non-administrative use of motorized vehicles is permanently or temporarily prohibited to protect resources, promote visitor safety, or reduce use conflicts.

**Environmental impact statement (EIS)** ~ A formal public document prepared to analyze the impacts on the environment of a proposed project or action and released for comment and review. An EIS must meet the requirements of NEPA, CEQ guidelines, and directives of the agency responsible for the proposed project or action.

**Extensive Recreation Management Area (ERMA)**~ An area that requires specific management consideration in order to address recreation use, demand, or facilities

**Fire management plan (FMP)** ~ A plan which identifies and integrates all wildland fire management and related activities within the context of approved land/resource management plans. It defines a program to manage wildland fires (wildfire, prescribed fire, and the use of wildland fire). The plan is supplemented by operational plans, including but not limited to, preparedness plans, preplanned dispatch plans, and prevention plans. FMPs assure that wildland fire management goals and components are

coordinated.

**Fire regime** ~ Description of the patterns of fire occurrences, frequency, size, severity, and sometimes vegetation and fire effects as well, in a given area or ecosystem. A fire regime is a generalization based on fire histories at individual sites. Fire regimes can often be described as cycles because some parts of the histories usually get repeated, and the repetitions can be counted and measured, such as fire return interval.

**Fuel management** ~ Act or practice of controlling flammability and reducing resistance to control of wildland fuels through mechanical, chemical, biological, or manual means, or by fire, in support of land management objectives.

**Impact** ~ The effect, influence, alteration, or imprint caused by an action.

**Inceptisols** ~ Soils with weakly developed subsurface horizons, usually moist.

**Limited (motorized vehicle designation)** ~ Designated areas and trails where the non-administrative use of motorized vehicles is subject to restrictions such as limiting the number or types of vehicles allowed, dates and times of use (seasonal restrictions), permitted or license use only, limiting use to existing roads and trails, or limiting use to designated roads and trails, or other limitations if restrictions are necessary to meet resource management objectives, including certain competitive or intensive use areas that have special limitations.

**Mollisols** ~ Grassland soils with organic rich surface horizons.

**Naturalness** ~ Refers to an area that “generally appears to have been affected primarily by the forces of nature, with, the imprint of man’s work substantially unnoticeable” (section 2[c] of the Wilderness Act of 1964).

**Prescribed fire** ~ Any fire intentionally ignited by management under an approved plan to meet specific objectives. Synonym: prescribed burn and controlled burn

**Primitive and unconfined recreation** ~ Non-motorized and undeveloped types of outdoor recreation.

**Recreation management areas** ~ Recreation management areas are units within a planning area guiding recreation management on public lands having similar recreation related issues and concerns. There are two types of recreation management areas, extensive and special.

**Resource management plan (RMP)** ~ A land use plan that establishes land use allocation, use guidelines, and management objectives for a given area of BLM-administered land.

**Solitude** ~ The state of being alone or remote from habitations; isolation. A lonely or secluded place. Factors contributing to opportunities for solitude may include size, natural screening, topographic relief, vistas, physiographic variety, and the ability of the user to find a secluded spot.

**Special recreation management area (SRMA)**~ An area where existing or proposed recreation opportunities are recognized for their unique value, importance, and/or distinctiveness, especially as compared to other areas used for recreation.

**Special recreation permit** ~ An authorization that allows for recreational use of public lands and related waters. They are issued as a means to manage visitor use, protect natural and cultural resources, as a

means to achieve the goals and objectives outlined in a land use plan.

**Suppression** ~ Management action to extinguish a fire or confining fire spread.

**Visual resource management (VRM)** ~ The inventory and planning actions taken to identify visual resource values and to establish objectives for managing those values, and the management actions taken to achieve the visual resource management objectives.

**Visual resource management (VRM) class** ~ VRM class identifies the degree of acceptable visual change within a characteristic landscape. A classification is assigned to public lands based on the guidelines established for scenic quality, visual sensitivity, and visibility.

**Visual resources** ~ The visible physical features of a landscape (topography, water, vegetation, animals, structures, and other features) that constitute the scenery of an area.

**Wilderness** ~ An area formally designated by Congress as a part of the National Wilderness Preservation System.

**Wilderness characteristic** ~ Identified by Congress in the Wilderness Act of 1964, namely, size, naturalness, outstanding opportunities for solitude or a primitive and unconfined type of recreation, and supplemental values such as geological, archaeological, historical, ecological, scenic, or other features.

**Wilderness study area** ~ A designation made through the land use planning process of a road-less area found to have wilderness characteristics, as described in section 2(c) of the Wilderness Act of 1964 (from H-6310-1, Wilderness Inventory and Study Procedures).

**Wildfire** ~ An unplanned ignition caused by lightning, volcanoes, unauthorized, and accidental human-caused actions and escaped prescribed fires.

**Wildland fire** ~ A general term describing any non-structure fire that occurs in the vegetation and/or natural fuels.

**Wildland urban interface (WUI)** ~ The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. Synonym: Izone, wildland/urban interface)

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## APPENDIX A: Presidential Proclamation 8947

Presidential Proclamation -- San Juan Islands National Monument

ESTABLISHMENT OF THE SAN JUAN ISLANDS NATIONAL MONUMENT

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BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

Within Washington State's Puget Sound lies an archipelago of over 450 islands, rocks, and pinnacles known as the San Juan Islands. These islands form an unmatched landscape of contrasts, where forests seem to spring from gray rock and distant, snow-capped peaks provide the backdrop for sandy beaches. Numerous wildlife species can be found here, thriving in the diverse habitats supported by the islands. The presence of archeological sites, historic lighthouses, and a few tight-knit communities testifies that humans have navigated this rugged landscape for thousands of years. These lands are a refuge of scientific and historic treasures and a classroom for generations of Americans.

The islands are part of the traditional territories of the Coast Salish people. Native people first used the area near the end of the last glacial period, about 12,000 years ago. However, permanent settlements were relatively uncommon until the last several hundred years. The Coast Salish people often lived in villages of wooden-plank houses and used numerous smaller sites for fishing and harvesting shellfish. In addition to collecting edible plants, and hunting various birds and mammals, native people used fire to maintain meadows of the nutritionally rich great camas. Archaeological remains of the villages, camps, and processing sites are located throughout these lands, including shell middens, reef net locations, and burial sites. Wood-working tools, such as antler wedges, along with bone barbs used for fishing hooks and projectile points, are also found on the islands. Scientists working in the San Juan Islands have uncovered a unique array of fossils and other evidence of long-vanished species. Ancient bison skeletons (10,000-12,000 years old) have been found in several areas, indicating that these islands were an historic mammal dispersal corridor. Butcher marks on some of these bones suggest that the earliest human inhabitants hunted these large animals.

The first Europeans explored the narrows of the San Juan Islands in the late 18th century, and many of their names for the islands are still in use. These early explorers led the way for 19th century European and American traders and trappers. By 1852, American settlers had established homesteads on the San Juan Islands, some of which remain today. In the late 19th century, the Federal Government built several structures to aid in maritime navigation. Two light stations and their associated buildings are located on lands administered by the Bureau of Land Management (BLM): Patos Island Light Station (National Register of Historic Places, 1977) and Turn Point Light Station (Washington State Register of Historic Places, 1978).

The lands on Patos Island, Stuart Island, Lopez Island, and neighboring islands constitute some of the most scientifically interesting lands in the San Juan Islands. These lands contain a dramatic and unusual diversity of habitats, with forests, woodlands, grasslands, and wetlands intermixed with rocky balds, bluffs, inter-tidal areas, and sandy beaches. The stands of forests and open woodlands, some of which are several hundred years old, include a majestic assemblage of trees, such as Douglas fir, red cedar, western hemlock, Oregon maple, Garry oak, and Pacific madrone. The fire-dependent grasslands, which are also susceptible to invasive species, are home to chick lupine, historically significant great camas, brittle cactus, and the threatened golden paintbrush. Rocky balds and bluffs are home to over 200 species of moss that are extremely sensitive to disturbance

and trampling. In an area with limited fresh water, two wetlands on Lopez Island and one on Patos Island are the most significant freshwater habitats in the San Juan Islands.

The diversity of habitats in the San Juan Islands is critical to supporting an equally varied collection of wildlife. Marine mammals, including orcas, seals, and porpoises, attract a regular stream of wildlife watchers. Native, terrestrial mammals include black-tail deer, river otter, mink, several bats, and the Shaw Island vole. Raptors, such as bald eagles and peregrine falcons, are commonly observed soaring above the islands. Varied seabirds and terrestrial birds can also be found here, including the threatened marbled murrelet and the recently reintroduced western bluebird. The island marble butterfly, once thought to be extinct, is currently limited to a small population in the San Juan Islands.

The protection of these lands in the San Juan Islands will maintain their historical and cultural significance and enhance their unique and varied natural and scientific resources, for the benefit of all Americans.

WHEREAS section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 USC 431) (the "Antiquities Act"), authorizes the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected;

WHEREAS it is in the public interest to preserve the objects of scientific and historic interest on the lands of the San Juan Islands;

NOW, THEREFORE, I, BARACK OBAMA, President of the United States of America, by the authority vested in me by section 2 of the Antiquities Act, hereby proclaim the objects identified above that are situated upon lands and interests in lands owned or controlled by the Government of the United States to be the San Juan Islands National Monument (monument), and, for the purpose of protecting those objects, reserve as a part thereof all lands and interests in lands owned or controlled by the Government of the United States and administered by the Department of the Interior through the BLM, including all unappropriated or unreserved islands, rocks, exposed reefs, and pinnacles above mean high tide, within the boundaries described on the accompanying map, which is attached to and forms a part of this proclamation. These reserved Federal lands and interests in lands encompass approximately 970 acres, which is the smallest area compatible with the proper care and management of the objects to be protected.

All Federal lands and interests in lands within the boundaries of the monument administered by the Department of the Interior through the BLM are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, leasing, or other disposition under the public land laws, including withdrawal from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of this proclamation.

The establishment of the monument is subject to valid existing rights. Lands and interests in lands within the monument boundaries not owned or controlled by the Government of the United States shall be reserved as a part of the monument upon acquisition of ownership or control by the Secretary of the Interior (Secretary) on behalf of the United States.

The Secretary shall manage the monument through the BLM as a unit of the National Landscape Conservation System, pursuant to applicable legal authorities, to implement the purposes of this proclamation, except that if the Secretary hereafter acquires on behalf of the United States ownership or control of any lands or interests in lands within the monument boundaries not owned or controlled by the United States, the Secretary shall determine whether such lands and interests in lands will be administered by the BLM as a unit of the National Landscape Conservation System or by another component of the Department of the Interior, consistent with applicable legal authorities.

For purposes of protecting and restoring the objects identified above, the Secretary, through the BLM, shall prepare and maintain a management plan for the monument and shall establish an advisory committee under the Federal Advisory Committee Act (5 USC App.) to provide information and advice regarding the development of such plan.

Except for emergency, Federal law enforcement, or authorized administrative purposes, motorized vehicle use in the monument shall be permitted only on designated roads, and non-motorized mechanized vehicle use in the monument shall be permitted only on designated roads and trails.

Nothing in this proclamation shall be deemed to enlarge or diminish the rights of any Indian tribe. The Secretary shall, in consultation with Indian tribes, ensure the protection of religious and cultural sites in the monument and provide access to the sites by members of Indian tribes for traditional cultural and customary uses, consistent with the American Indian Religious Freedom Act (42 USC 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites).

Nothing in this proclamation shall be deemed to enlarge or diminish the jurisdiction or authority of the State of Washington or the United States over submerged or other lands within the territorial waters off the coast of Washington.

Nothing in this proclamation shall be deemed to enlarge or diminish the jurisdiction of the State of Washington with respect to fish and wildlife management.

Nothing in this proclamation shall be deemed to limit the authority of the Secretary of Homeland Security to engage in search and rescue operations, or to use Patos Island Light Station, Turn Point Light Station, or other aids to navigation for navigational or national security purposes.

Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the monument shall be the dominant reservation.

Nothing in this proclamation shall be deemed to restrict safe and efficient aircraft operations, including activities and exercises of the Armed Forces and the United States Coast Guard, in the vicinity of the monument.

Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of the monument and not to locate or settle upon any of the lands thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this twenty-fifth day of March, in the year of our Lord two thousand thirteen, and of the Independence of the United States of America the two hundred and thirty-seventh.

BARACK OBAMA

## **APPENDIX B: Pertinent Laws and Regulations**

### **General**

- The Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.), as amended, provides the authority for BLM land use planning.
- The National Environmental Policy Act (42 USC 4321 et seq.), as amended, requires the consideration and public availability of information regarding the environmental impacts of major Federal actions significantly affecting the quality of the human environment. This includes the consideration of alternatives and mitigation of impacts.
- Presidential Proclamation 8947--San Juan Islands National Monument, signed under the authority of the Antiquities Act of 1906 (16 USC 431–43), this proclamation provides the basic legal mandate for the Monument.

### **Air Quality**

- The Clean Air Act (42 USC 7418), as amended (1990), requires Federal agencies to comply with all Federal, State, and local requirements regarding the control and abatement of air pollution. This includes abiding by the requirements of State implementation plans.
- Secretarial Order 3289: Addressing the Impacts to Climate Change on America's Land, Water, and Other Natural and Cultural Resources

### **Cave and Karst Resources**

- The Federal Cave Resources Protection Act of 1988 (16 USC 4301) requires Federal agencies to identify, protect, and maintain significant caves. The locations of such caves may be kept confidential. Protection is afforded to not only the geologic structure, but also the associated decorations, inhabitants, artifacts, and water resources.

### **Cultural Resources**

- The Antiquities Act of 1906 (16 USC 431-433) provides guidance for protecting cultural resources on Federal lands and authorizes the President to designate national monuments on Federal lands.
- The Historic Sites Act of 1935 (16 USC sec. 461-467) established a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the U.S.
- The National Historic Preservation Act of 1966 (16 USC 470), as amended, directs agencies to consider the effects of proposed actions on properties eligible for or included on the National Register of Historic Places. Section 110 of the NHPA requires each Federal agency to establish an affirmative program to identify, evaluate, protect, and preserve historic properties in consultation with others.
- The Archaeological Resources Protection Act of 1979 (16 USC 470), as amended, defines, and provides for the protection of archaeological resources on Federal lands, irrespective of eligibility for the National Register of Historic Places, establishes a permit system for resources over 100 years old, and requires agencies to provide for public education and continuing inventory of Federal lands.
- Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001) establishes rights to Indian tribes and Native Hawaiians to claim ownership for the repatriation of human remains, and also funerary, sacred, and other objects, controlled by Federal agencies and museums. Agency discoveries of such human remains and associated cultural items during land use activities require consultation with appropriate tribes to determine ownership and disposition.
- National Trails System Act of 1968 (16 USC 1241 et seq.), as amended, established a National Trails system to promote preservation of, public access to, travel within, and enjoyment of the open-air,

outdoor areas, and historic resources of the nation. The act designated initial trail system components and established methods and standards for adding additional components.

- Executive Order 11593 of 1971, directs Federal agencies to inventory public lands and to nominate eligible properties to the National Register of Historic Places.
- Executive Order 13175 of 2000 (Consultation and Coordination with Indian Tribal Governments) provides, in part, that each Federal agency shall establish regular and meaningful consultation and collaboration with Indian tribal governments in the development of regulatory practices on Federal matters that significantly or uniquely affect their communities.
- Executive Order 13287 of 2003 (Preserve America), directs Federal agencies to provide leadership in preserving America's heritage by actively advancing the protection, enhancement, and contemporary use of historic properties managed by the Federal government, and by promoting intergovernmental cooperation and partnerships for the preservation and use of historic properties, and establishing agency accountability for inventory and stewardship.

### **Environmental Justice**

- Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) (49 FR 7629) requires that each Federal agency consider the impacts of its programs on minority populations and low-income populations.

### **Fish and Wildlife and Special Status Species**

- The Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.), as amended, directs federal agencies to (1) conserve threatened and endangered species and the ecosystems upon which they depend, and (2) not contribute to the need to list a species.
- Sikes Act of 1974 (16 USC 670g et seq.), Title II, as amended, directs the Secretaries of Interior and Agriculture to, in cooperation with the State agencies, develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish, and game species.
- The Migratory Bird Treaty Act of 1918 (16 USC 715-715d, 715e, 715f-715r), as amended, establishes Federal responsibility to protect international migratory birds and authorizes the Secretary of the Interior, through the USDI FWS, to regulate hunting of migratory birds.
- The Bald and Golden Eagle Protection Act of 1940 (16 USC 668-668c), as amended, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."
- The Magnuson-Stevens Fishery Management and Conservation Act (16 USC 1801-1882; 90 Stat. 331), as amended, requires Federal agencies to consult with National Marine Fisheries Service on activities that may adversely affect Essential Fish Habitat of federally managed commercial fishery species. The BLM is required to consult on effects to chinook salmon, coho salmon, and Puget Sound pink salmon.

### **Forestry and Woodland Products**

- The Healthy Forests Restoration Act (16 USC 84), contains a variety of provisions to expedite hazardous-fuel reduction and forest-restoration projects on specific types of Federal land that are at risk of wildland fire or insect and disease epidemics. It also provides other authorities and direction to help reduce hazardous fuel and restore healthy forest and rangeland conditions on lands of all ownerships.

## **Hazardous Materials**

- Comprehensive Environmental Responses, Compensation, and Liability (42 USC 103) provides broad Federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.
- Resource Conservation and Recovery Act (42 USC 6901 et seq.), as amended, establishes a system for managing non-hazardous and hazardous solid wastes in an environmentally sound manner. Specifically, it provides for the management of hazardous wastes from the point of origin to the point of final disposal (i.e., “cradle to grave”). It also promotes resource recovery and waste minimization.

## **Invasive Species**

- The Carlson-Foley Act (43 USC 1241) establishes legal guidance and responsibility for the management of weeds on Federal lands. This law authorizes Federal agencies to allow states to take weed control measures on Federal lands.
- Executive Order 13112 (Invasive Species) provides that no Federal agency shall authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk or harm will be taken in conjunction with the actions.

## **Lands and Realty**

- Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.) provides the BLM a variety of authorities related to lands and realty, including those related to the disposal of public lands and the issuance of leases and permits for the public to use, occupy and develop public lands.
- Recreation and Public Purposes Act of 1926 (43 USC 869 et seq.), as amended authorizes the sale, lease, or patent of BLM-administered lands for recreational or public purposes to State and local governments and to qualified non-profit organizations.

## **Paleontology**

- Paleontological Resources Preservation Act of 2009 (16 USC 470aaa-aaa-11) requires that paleontological resources are managed and protected on Federal land using “scientific principles and expertise.” The act also affirms existing policies for the management of paleontological resources including “. . . permits for collecting paleontological resources, curation of paleontological resources, and confidentiality of locality data.” The statute establishes new criminal and civil penalties for fossil theft and vandalism on Federal lands.
- Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.) requires that the public lands be managed in a manner that protects the “. . . quality of scientific . . .” and other values. The act also requires the public lands to be inventoried and provides that permits may be required for the use, occupancy, and development of the public lands.
- Federal Cave Resources Protection Act of 1988 (16 USC Sec. 4301) and Title 43 CFR Subpart 37 address protection of significant caves and cave resources, including paleontological resources.
- Secretarial Order 3104 grants to the BLM the authority to issue paleontological resource use permits for lands under its jurisdiction.

## **Recreation**

- The Recreation and Public Purposes Act (43 USC 869 et seq.), as amended, authorizes the Secretary of the Interior to lease or convey BLM managed lands for recreational and public purposes under specified conditions.

- Executive Order 11644 (37 FR 2877), on February 8, 1972, provided that off-highway vehicle (OHV) use will be controlled and managed to protect resource values, promote public safety and minimize conflicts with uses of public lands. This executive order directed Federal agencies to designate specific areas and trails on public lands where OHV use may be permitted and areas where OHV use may not be permitted. On May 24, 1977, President Carter amended this order with Executive Order 11989. This executive order further defined OHV, administrative use exemptions, and directed agencies to immediately close areas and trails whenever the agency determines that the use of OHV will cause or is causing considerable adverse effects on the soil, wildlife, and wildlife habitat, cultural or historic resources (42 USC 4321).

### **Social and Economic Conditions**

- BLM planning regulations (43 CFR 1610.4-3 and 1610.4-6) require that RMPs consider social, economic, and institutional information.

### **Soil Resources**

- There is no single piece of legislation that provides for soil protection. However, soils are intricately linked to the Clean Water Act and Clean Air Act, and soil conservation is specifically cited in the National Environmental Policy Act (NEPA), Federal Land Policy and Management Act (FLPMA), Taylor Grazing Act of 1934, Bankhead-Jones Farm Tenant Act of 1937, and Farmland Protection Policy Act of 1981.

### **Tribal Interests**

Treaties constitute negotiated settlements between sovereign parties, and as such hold a unique status in defining Federal obligations toward Native American tribes. Rights reserved to Native American tribes vary from treaty to treaty. Hunting, fishing, and gathering rights and certain other land uses are common rights reserved through treaty. Although numerous treaties were negotiated with Indian Nations in the late 19th century, many were not ratified or honored. Some Native American tribes were recognized and reservations established through executive order.

#### **Treaties and Executive Orders**

- **Lummi Reservation:** The Point Elliot Treaty of 1855 with the Duwamish, Suquamish, Snoqualmie, Snohomish, Lummi, Skagit, Swinomish, Samish, Sauk Suiattle, Tulalip and other tribes was signed January 22, 1855, and ratified on April 11, 1859 (12 STAT., 927). The treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S.
- **Tulalip Indian Reservation:** The Point Elliot Treaty of 1855 with the Duwamish, Suquamish, Snoqualmie, Snohomish, Lummi, Skagit, Swinomish, Samish, Sauk Suiattle, Tulalip and other tribes was signed January 22, 1855, and ratified on April 11, 1859 (12 STAT., 927). The treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S.
- **Swinomish Indian Reservation:** The Point Elliot Treaty of 1855 with the Duwamish, Suquamish, Snoqualmie, Snohomish, Lummi, Skagit, Swinomish, Samish, Sauk Suiattle, Tulalip and other tribes was signed January 22, 1855, and ratified on April 11, 1859 (12 STAT., 927). The treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S. The Samish Indian Nation lost Federal recognition due to administrative error in 1969 and was re-recognized on April 26, 1996.

- Skokomish Indian Reservation: The Point-No-Point Treaty with the S’Klallam, Chimakum and Twana later known as the Skokomish Tribe was signed January 26, 1855, and ratified on April 20, 1859. The Skokomish Reservation was subsequently enlarged by Executive order on February 25, 1874. The Treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S.
  - Lower Elwha Klallam Tribe: The Point-No-Point Treaty (12 STAT. 933) with the S’Klallam, Chimakum and Skokomish Tribe was signed January 26, 1855, and ratified on April 20, 1859. The Lower Elwha Reservation was created on January 19, 1968. The treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S.
  - Jamestown S’Klallam Tribe: The Point-No-Point Treaty (12 STAT. 933) with the S’Klallam, Chimakum and Skokomish Tribe was signed January 26, 1855, and ratified on April 20, 1859. The Jamestown S’Klallam Reservation was created in 1980. The treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S.
  - Port Gamble S’Klallam Tribe: The Point Elliot Treaty of 1855 with the Duwamish, Suquamish, Snoqualmie, Snohomish, Lummi, Skagit, Swinomish, Samish, Sauk Suiattle, Tulalip and other tribes was signed January 22, 1855, and ratified on April 11, 1859 (12 STAT., 927). The treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S. The Port Gamble Reservation was established in 1936.
  - Nooksack Indian Tribe: The Point Elliot Treaty of 1855 with the Duwamish, Suquamish, Snoqualmie, Snohomish, Lummi, Skagit, Swinomish, Samish, Sauk Suiattle, Tulalip and other tribes was signed January 22, 1855, and ratified on April 11, 1859 (12 STAT., 927). The treaty reserved rights for the tribes to fish at usual and accustomed stations, and to erect temporary buildings for curing them, and to hunt, and gather resources on public lands in common with other citizens of the U.S. The Nooksack gained Federal recognition in 1973.
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- The Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.) requires coordination with Indian tribes, as well as with other Federal agencies and State and local governments, in the preparation and maintenance of an inventory of the public lands and their various resource and other values, in the development and maintenance of long-range plans providing for the use management of the public lands.
  - American Indian Religious Freedom Act of 1978 (42 USC 1996 and 1996a) resolves that it shall be the policy of the U.S. to protect and preserve for the American Indian, Eskimo, Aleut, and Native Hawaiian the inherent right of freedom to believe, express, and exercise their traditional religions, including but not limited to access to religious sites, use and possession of sacred objects, and freedom to worship through ceremonials and traditional rites. Federal agencies are directed to evaluate their policies and procedures to determine if changes are needed to ensure that such rights and freedoms are not disrupted by agency practices.
  - National Historic Preservation Act of 1966 (16 USC 470), as amended, addresses preservation of historic properties, including historical, archaeological, and architectural districts, sites, buildings, structures, and objects that are eligible for the National Register of Historic Places. In some cases, such properties may be eligible because of historical importance to Native Americans, including traditional religious and cultural importance. Federal agencies must take into account effects of their undertakings on eligible properties.
  - Archaeological Resources Protection Act of 1979 (16 USC 470) provides for the protection and management of archaeological resources, and specifically requires notification of the affected Indian

tribe if archaeological investigations proposed in a permit application would result in harm to or destruction of any location considered by the tribe to have religious or cultural importance.

- Native American Graves Protection and Repatriation Act of 1990 (25 USC 3001) establishes rights to Indian tribes and Native Hawaiians to claim ownership and repatriate human remains, and also funerary, sacred, and other objects, controlled by Federal agencies and museums. Agency discoveries of human remains and associated cultural items during land use activities require consultation with appropriate tribes to determine ownership and disposition.
- Executive Order 13007 of 1996 (Indian Sacred Sites) (61FR104) requires Federal agencies to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions to:
  - a. Accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners;
  - b. Avoid adversely affecting the physical integrity of such sacred sites; and
  - c. Maintain the confidentiality of sacred sites.
- Executive Order 13175 of 2000 (Consultation and Coordination with Indian Tribal Governments) provides, in part, that each Federal agency shall establish regular and meaningful consultation and collaboration with Indian tribal governments in the development of regulatory practices on Federal matters that significantly or uniquely affect their communities.
- Secretarial Order 3206 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act) requires DOI agencies to consult with Indian tribes when agency actions to protect a listed species, as a result of compliance with ESA, affect or may affect Indian lands, tribal trust resources, or the exercise of American Indian tribal rights.
- Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) (49 FR 7629) requires that each Federal agency consider the impacts of its programs on minority populations and low-income populations.

### **Water Resources**

- The Clean Water Act, as amended, 33 USC 1251, establishes objectives to restore and maintain the chemical, physical, and biological integrity of the Nation's water.
- The Federal Water Pollution Control Act, 33 USC 1323, requires the Federal land manager to comply with all Federal, State, and local requirements regarding the control and abatement of water pollution in the same manner and to the same extent as any nongovernmental entity.
- The Safe Drinking Water Act, 42 USC 201, is designed to make the Nation's waters "drinkable" as well as "swimmable." Amendments establish a direct connection between safe drinking water, watershed protection, and management.

### **Wildland Fire**

- Protection Act of 1922 (42 Stat. 857; USC 594) authorizes the Department of the Interior to protect and preserve, from fire, disease, or the ravages of beetles, or other insects, timber owned by the United States upon the public lands.
- Disaster Relief Act (42 USC 5121 et seq), as amended, provides statutory authority for most Federal disaster response activities.
- Healthy Forest Restoration Act of 2003 (16 USC 84) contains a variety of provisions to expedite hazardous-fuel reduction and forest-restoration projects on specific types of Federal land that are at risk of wildland fire or insect and disease epidemics. It also provides other authorities and direction to help reduce hazardous fuel and restore healthy forest and rangeland conditions on lands of all ownerships.

- Federal Land Assistance, Management and Enhancement (FLAME) Act of 2009 (43 U.S. Code 1748a) establishes two FLAME accounts in 1) Department of the Interior, and 2) Department of Agriculture, Forest Service, through the Appropriations Act of 2010. The funds concentrate on the impacts of increasing wildfire suppression costs and their effects on other agency programs. In addition, this act requires Secretaries of both aforementioned departments to prepare and submit a cohesive wildland fire management strategy document that addresses: 1) a system to identify the most cost effective means for allocating fire management budget resources, 2) an illustration of plans to reinvest in non-fire programs, 3) a description of how departments will employ appropriate management response, 4) a system for assessing the level of risk to communities, and 5) a system to ensure that the highest priority fuels reduction projects are being funded first. This act also requires the Department of Agriculture, US Forest Service, to provide written notification to adjacent private land owners of date and scope of planned prescribed fire(s) and an independent review of each wildfire incident in which expenses exceed \$10,000,000.
- Department of the Interior, Environment, and Related Agencies Appropriations Act of 2012 (Public Law 112-74), Division E, Title I, Department-wide Programs, Wildland Fire Management; This program was first implemented in the Department of the Interior and Related Agencies Appropriations Act of 2001, Title IV, Public Law 106-291.: To implement the National Fire Plan and assist communities at risk from catastrophic wildland fires by providing assistance in the following areas: Provide community programs that develop local capability including; assessment and planning, mitigation activities, and community and homeowner education and action; plan and implement hazardous fuels reduction activities, including the training, monitoring or maintenance associated with such hazardous fuels reduction activities, on federal land, or on adjacent nonfederal land for activities that mitigate the threat of catastrophic fire to communities and natural resources in high risk areas; enhance local and small business employment opportunities for rural communities; enhance the knowledge and fire protection capability of rural fire districts by providing assistance in education and training, protective clothing and equipment purchase, and mitigation methods on a cost share basis