

## 4. Environmental Consequences

### 4.1 Introduction

This section presents an analysis of the potential direct and indirect impacts each alternative would have on the affected environment as characterized in **Section 3.0**. Direct impacts are caused by the action and occur at the same time and place. Indirect impacts are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. As applicable, a framework for establishing whether an impact would be negligible, minor, moderate, or major is provided. These evaluation criteria were developed by environmental professionals in their respective fields based on accepted professional practice and in coordination and consultation with stakeholder agencies. Although some evaluation criteria have been designated based on legal or regulatory limits or requirements, others are based on best professional judgment and best management practices. The evaluation criteria include both quantitative and qualitative analyses, as appropriate to each resource area.

#### 4.1.1 Proposed NAIS Project Implementation Approach

As described in **Section 2.2**, The USCG would achieve the preferred implementation alternative of the proposed NAIS project through use of a combination of shore-based RF sites, satellites, and offshore platforms and data buoys. The USCG would be faced with the choice of installing AIS equipment at new sites (“new build”); installing AIS equipment adjacent to existing communications equipment (“collocation”); or, programwide, using a combination of the collocation and new build sites for shore-based RF sites. For the proposed implementation of the NAIS project, the USCG has chosen to bound or bracket the programmatic environmental analysis of the shore-based RF sites by evaluating three potential NAIS siting alternatives: **All New Tower Builds, Combination of Collocations and New Tower Builds, and All Collocations**.

As described in **Section 2.3**, the USCG has identified the Proposed Action to implement the NAIS project using a combination of the following coverage mechanisms as the Preferred Alternative:

1. Establishing a combination of collocated and newly built shore-based RF sites for short-range AIS coverage.
2. Leasing commercial satellite services for long-range AIS coverage.
3. Installing AIS equipment on existing offshore oil and gas platforms and data buoys for supplemental long-range coverage.

Items 2 and 3 would involve no physical disturbances, earth moving, or construction activities; no actions inconsistent with present and foreseeable land use patterns; no activities that would contribute to changes in socioeconomic resources; and would involve very minor installation and maintenance work. Leasing commercial satellite services would not require new satellites, but only new equipment onboard existing satellite constellations. As independent actions, leasing commercial satellite services for long-range AIS coverage and installing AIS equipment on existing offshore oil and gas platforms and data buoys for supplemental long-range coverage would likely be categorically excluded from detailed NEPA analysis. Consequently, no impacts would be expected, and any extraordinary circumstances would be addressed in the tiered NEPA analysis. Accordingly, the USCG has omitted detailed examination of leasing commercial satellite services for long-range AIS coverage and installing AIS equipment on existing offshore oil and gas platforms and data buoys for supplemental long-range coverage. The analysis in the PEIS focuses on the environmental impacts associated with the **No Action Alternative** and the three NAIS siting alternatives described above: **All New Tower Builds, Combination of Collocations and**

**New Tower Builds, and All Collocations.** A summary of the alternatives and associated assumptions are presented below.

## **4.1.2 Assumptions Associated with Each Alternative Analyzed**

### **4.1.2.1 No Action Alternative**

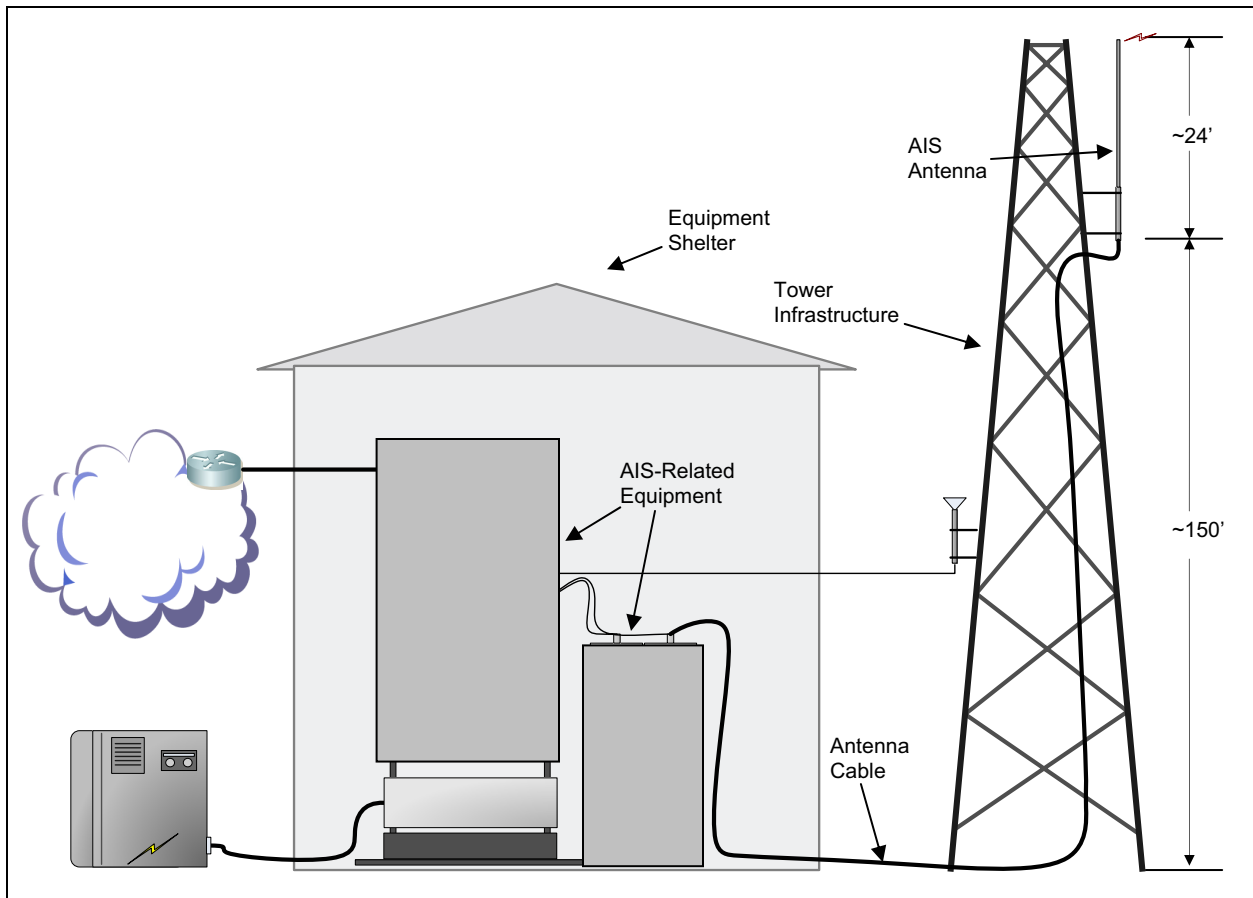
Under the No Action Alternative, the USCG would not implement the NAIS project. No collocated or newly built shore-based RF sites would be established. The USCG would continue, where possible, to collect, integrate, and analyze information concerning vessels operating on or bound for waters subject to the jurisdiction of the United States, including information related to crew, passengers, cargo, and intermodal shipments using traditional methods and existing AIS capabilities.

### **4.1.2.2 All New Tower Builds Alternative**

The USCG would implement the NAIS project using new shore-based RF sites. For the purpose of this PEIS, the USCG assumed that AIS equipment would need to be installed in approximately 450 locations to meet the technical and operational requirements of the NAIS project. Shore-based RF sites would consist of AIS equipment mounted on tower structures. A typical RF tower would be approximately 150 to 200 feet tall, with an approximate footprint of 6,400 square feet (ft<sup>2</sup>) (80 feet by 80 feet). The entire site would be graded and surrounded by a chain-link fence, gated, and locked. Typical equipment at a tower site would include the tower structure, a small generator, and a small building (approximately 8 feet by 12 feet) within the footprint to house electronic equipment. The building would be climate-controlled to protect AIS-related electronic equipment from the elements. Each generator would be approximately 60 horsepower (hp) and would operate only 12 hours per year. In addition, each generator would require a 500-gallon diesel or propane tank for fueling. Shore-based RF sites would require electric utility service and communications lines for routing AIS signals and data. Each site might require utilities run from the vicinity (approximately 2 miles of utility trenching was assumed), and might require construction of an access roadway (it was assumed that the roadway would be approximately 2 miles long and 18 feet wide). **Figure 4-1** presents a conceptual overview of an RF site.

### **4.1.2.3 Combination of Collocations and New Tower Builds Alternative**

The USCG would implement the NAIS project using a combination of newly built and collocated shore-based RF sites. For the purpose of this PEIS, the USCG assumed that AIS equipment would need to be installed in approximately 450 locations to meet the technical and operational requirements of the NAIS project; of these, 50 would be new RF sites and 400 would be collocations. The description of assumptions used for the new shore-based RF sites is presented in **Section 4.1.2.2**. For collocations, the USCG would add AIS equipment to an existing structure. A small structure (approximately 8 feet by 12 feet) could be needed at each collocated site to house electronic equipment and a small generator. In addition, new utility service and communications lines might be required to support the site. For the purposes of this PEIS, the USCG assumed for collocations that utility service and communications lines would be placed in existing utility easements and no new grading or ground disturbance would be required to mount the equipment on the existing structure.



**Figure 4-1. Conceptual NAIS Shore-based RF Site Diagram**

#### 4.1.2.4 All Collocations Alternative

The USCG would implement the NAIS project using entirely collocated shore-based RF sites. As previously stated, the USCG has assumed that AIS equipment would need to be installed in approximately 450 locations to meet the technical and operational requirements of the NAIS project. The description of assumptions used for collocation of the shore-based RF sites is presented in **Section 4.1.2.3**.

## 4.2 Noise

Noise impact analyses typically evaluate potential changes to the existing noise environment that would result from implementation of a proposed action. Potential changes in the acoustical environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels or reduce the ambient sound level), negligible (i.e., if the total number of sensitive receptors exposed to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased sound exposure to unacceptable noise levels or ultimately increase the ambient sound level). Due to the fact that specific proposed project implementation sites have not been identified, projected noise impacts were evaluated qualitatively. Once specific proposed project areas have been identified, more quantitative noise analysis will be conducted in future site-specific environmental documentation, if required.

### 4.2.1 No Action Alternative

Under the No Action Alternative, the USCG would not implement the NAIS project. No collocated or newly built shore-based RF sites would be established. The USCG would continue, where possible, to collect, integrate, and analyze information concerning vessels operating on or bound for waters subject to the jurisdiction of the United States, including information related to crew, passengers, cargo, and intermodal shipments using traditional methods and existing AIS capabilities. No adverse impacts on the ambient noise environment would occur under the No Action Alternative.

### 4.2.2 All New Tower Builds Alternative

**Construction-related Impacts.** Short-term negligible adverse impacts would be expected. Noise from construction activities varies depending on the type of construction being done, the area that the project would occur in, and the distance from the source. To predict how the construction activities would impact adjacent populations, noise from each of the probable construction activities (building, grading, and paving) was estimated. For example, as shown on **Table 3-2**, paving usually involves several pieces of equipment (pavers and rollers) which can be used simultaneously. The cumulative noise from the paver and roller can be estimated to determine the total impact of construction noise from paving at a given distance. Examples of expected construction noise are as follows:

- Populations 400 feet away from building construction would experience noise levels of approximately 74 dBA.
- Populations 1,000 feet from grading would experience noise levels of about 66 dBA.
- Populations 2,000 feet away from paving construction would experience noise levels of approximately 57 dBA.

Implementation of this alternative would have short-term minor adverse impacts on the noise environment from the use of heavy equipment during construction activities if noise-sensitive populations are adjacent to a proposed site. However, noise generation would last only for the duration of construction activities and would be isolated to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.). Therefore, it is anticipated short-term negligible adverse impacts would be expected as a result of the construction activities.

**Operations-related Impacts.** Once the proposed towers are constructed, the ambient noise level would return to its normal level. There is no equipment use proposed that would significantly increase the ambient noise level. As identified in **Section 4.1.2.2**, a backup generator would be required at most shore-based RF sites. These generators would be used as backup power and operate on an as-needed basis. The generator would not be expected to cause the ambient noise levels to increase due to its limited operation as a backup power source.

Therefore, it is not anticipated that adverse long-term impacts on the ambient noise level would occur.

### 4.2.3 Combination of Collocations and New Tower Builds Alternative

**Construction-related Impacts.** Short-term negligible adverse impacts would be expected. The noise impacts for new towers and the anticipated construction of additional equipment structures to support the collocations would be the same as described in **Section 4.2.2** resulting in negligible impacts as a result of the construction activities.

**Operations-related Impacts.** Once the Combination of Collocations and New Tower Builds Alternative is complete in each location, the ambient noise level would return to its normal level. As identified in **Section 4.1.2.2**, a backup generator would be required at most shore-based RF sites. These generators would be used as backup power and operate on an as-needed basis. The generator would not be expected to cause the ambient noise levels to increase due to its limited operation as a backup power source. Therefore, it is not anticipated that long-term adverse impacts on the ambient noise levels would occur.

#### 4.2.4 All Collocations Alternative

**Construction-related Impacts.** Short-term negligible adverse impacts would be expected. Some construction would likely be required at each of the proposed sites. Impacts from construction noise for collocations are anticipated and would be temporary in nature. Therefore it is anticipated that implementation of the All Collocations Alternative would have negligible impacts during the construction period.

**Operations-related Impacts.** Once the All Collocations Alternative is completed, the ambient noise level would return to its normal level. As identified in **Section 4.1.2.2**, a backup generator might be required. These generators would be used as backup power and operate on an as-needed basis. The generator would not be expected to cause the ambient noise levels to increase due to its limited operation. Therefore, it is not anticipated that adverse long-term impacts on the ambient noise level would occur as a result of the All Collocations Alternative.

### 4.3 Air Quality

The environmental consequences to local and regional air quality conditions near a proposed Federal action are determined based upon the increases in regulated pollutant emissions relative to existing conditions and ambient air quality. Specifically, the impact in NAAQS “attainment” areas would be considered significant if the net increases in pollutant emissions from the Federal action would result in any one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Expose sensitive receptors to substantially increased pollutant concentrations
- Represent an increase of 10 percent or more in an affected Air Quality Control Region (AQCR) emissions inventory
- Exceed any Evaluation Criteria established by a SIP.

Effects on air quality in NAAQS “nonattainment” areas are considered significant if the net changes in project-related pollutant emissions result in any of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Increase the frequency or severity of a violation of any ambient air quality standard
- Delay the attainment of any standard or other milestone contained in the SIP.

With respect to the General Conformity Rule, effects on air quality would be considered significant if the proposed Federal action would result in an increase of a nonattainment or maintenance area’s emissions inventory by 10 percent or more for one or more nonattainment pollutants, or if such emissions exceed *de minimis* threshold levels established in 40 CFR 93.153(b) for individual nonattainment pollutants or for pollutants for which the area has been redesignated as a maintenance area.

The *de minimis* threshold emissions rates were established by USEPA in the General Conformity Rule to focus analysis requirements on those Federal actions with the potential to have “significant” air quality impacts. **Table 4-1** presents these thresholds, by regulated pollutant. These *de minimis* thresholds are similar, in most cases, to the definitions for major stationary sources of criteria and precursors to criteria pollutants under the CAA’s New Source Review (NSR) Program (CAA Title I). As shown in **Table 4-1**, *de minimis* thresholds vary depending upon the severity of the nonattainment area classification. No *de minimis* threshold emissions rate has been established by USEPA for PM<sub>2.5</sub>; regardless, the proposed NAIS sites, no matter which alternative chosen, would not be expected to cause a significant increase in fine particulate emissions.

In addition to the *de minimis* emissions thresholds, Federal PSD regulations define air pollutant emissions to be significant if the source is within 10 kilometers of any Class I area, and emissions would cause an increase in the concentration of any regulated pollutant in the Class I area of 1 µg/m<sup>3</sup> or more (40 CFR 52.21(b)(23)(iii)).

**Table 4-1. Conformity *de minimis* Emission Thresholds**

Pollutant	Status	Classification	<i>de minimis</i> Limit (tpy)
O <sub>3</sub> (measured as NO <sub>x</sub> or VOCs)	Nonattainment	Extreme	10
		Severe	25
		Serious	50
		Moderate/marginal (inside ozone transport region)	50 (VOCs)/100 (NO <sub>x</sub> )
		All others	100
	Maintenance	Inside ozone transport region	50 (VOCs)/100 (NO <sub>x</sub> )
		Outside ozone transport region	100
CO	Nonattainment/ maintenance	All	100
PM <sub>10</sub>	Nonattainment/ maintenance	Serious	70
		Moderate	100
		Not Applicable	100
SO <sub>2</sub>	Nonattainment/ maintenance	Not Applicable	100
NO <sub>x</sub>	Nonattainment/ maintenance	Not Applicable	100

Source: 40 CFR 93.153

### 4.3.1 No Action Alternative

Under the No Action Alternative, the USCG would not implement the NAIS project. No impacts on air quality would be expected.

### 4.3.2 All New Tower Builds Alternative

Short-term and long-term negligible to minor adverse impacts on regional or local air quality would be expected. The All New Tower Builds Alternative would result in short-term minor adverse impacts on regional air quality during construction activities, primarily from site-disturbing activities and operation of construction equipment. In addition, long-term negligible to minor adverse impacts from the operation of a backup generator at each site would be expected.

Regulated pollutant emissions would not contribute to or affect local or regional attainment status with the NAAQS. The All New Tower Builds Alternative would generate both temporary and long-term air pollutant emissions. The construction and infrastructure projects would generate air pollutant emissions as a result of grading, filling, compacting, trenching, and construction operations, but these emissions would be temporary and would not be expected to generate any off-site impacts. The All New Tower Builds Alternative would not involve a net increase in personnel or commuter vehicles. Therefore, the emissions from existing personnel and commuter vehicles would not result in an adverse impact on regional air quality.

The construction projects would generate total suspended particulate and PM<sub>10</sub> emissions as fugitive dust from ground-disturbing activities (e.g., grading, trenching, soil piles) and from combustion of fuels in construction equipment. Fugitive dust emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. As discussed in **Section 4.1.2**, each NAIS site would be approximately 6,400 ft<sup>2</sup>. It is assumed that all 6,400 ft<sup>2</sup> would be graded for site development and then be revegetated after construction is complete. The length of trenching could vary greatly at each site depending upon the distance of the chosen site to available infrastructure in that area. However, it is estimated that up to 2 miles of trenching would occur. Access roads might have to be constructed at the chosen site if no roads are available. The length of these access roads could vary greatly at each site depending upon the distance of the chosen site to available roadways. However, it is estimated that each site would require a 1.5-lane road up to approximately 2 miles long.

Construction operations would result in emissions of criteria pollutants as combustion products from construction equipment, as well as evaporative emissions from architectural coatings and any needed asphalt paving operations. These emissions would be of a temporary nature. The emissions factors and estimates were generated based on guidance provided in USEPA AP-42, Volume II, *Mobile Sources*. Fugitive dust emissions for various construction activities were calculated using emissions factors and assumptions published in USEPA's AP-42 Section 11.9.

Each site would require a small diesel-powered backup generator. It is assumed that each generator would be approximately 60 hp and would operate only 12 hours per year. In addition, each generator would require a 500-gallon diesel or propane tank for fueling. Day-to-day operations would generate emissions of criteria pollutants as combustion products from the operation of each generator to produce electrical power. Operational emissions associated with the Proposed Action would not result in adverse impacts on air quality. The emissions factors and estimates were generated based on guidance provided in USEPA AP-42, Volume I, *Stationary Internal Combustion Sources*. After a site has been chosen for construction of a shore-based RF site, the USCG would coordinate with the appropriate local AQCR to determine if an air quality permit is required for the backup generator.

As discussed in **Sections 2.2 and 4.1.2**, each shore-based RF site would take between 4 to 6 weeks to construct. This assumption and other project details presented in **Section 2** were used to estimate fugitive

dust and all other criteria pollutant emissions. **Table 4-2** details potential emissions associated with constructing and operating a representative shore-based RF site.

Since the locations of the 450 shore-based RF sites are unknown at this time, it is possible that a chosen site might fall within a nonattainment area. Each NAIS site would not be classified as a major emissions source. As discussed in **Sections 1 and 2**, site-specific NEPA documentation will be completed for each site and conformity will be analyzed at that time. However, based on emissions estimates presented in **Table 4-2**, emissions from construction activities and operation of the generator would be well below *de minimus* air quality thresholds. In summary, short-term and long-term, negligible to minor adverse impacts on regional or local air quality would be expected. **Appendix E** details the emissions factors, calculations, and estimates of emissions for the All New Tower Builds Alternative.

**Table 4-2. Potential Construction and Station Source Emissions Estimates**

Description	NO <sub>x</sub> (tpy)	VOC (tpy)	CO (tpy)	SO <sub>x</sub> (tpy)	PM <sub>10</sub> (tpy)
Site Preparation and Construction Activities	0.046	0.023	0.054	0.001	6.122
Stand-by Generator Operation	0.035	0.003	0.008	0.002	0.002
Total Estimated Emissions	0.081	0.026	0.062	0.003	6.124

### 4.3.3 Combination of Collocations and New Tower Builds Alternative

Short-term and long-term, negligible to minor adverse impacts on regional or local air quality would be expected. As discussed in **Section 2.2.4**, the Combination of Collocations and New Tower Builds Alternative would include collocating NAIS equipment at approximately 90 percent of the 450 potential locations and constructing new shore-based RF sites for the rest. This alternative would have similar impacts as those discussed in **Section 4.3.2**. New facilities and a backup generator would be required at all new shore-based RF sites and some collocation sites. Air quality emissions for construction of the new sites would be the same as those presented in **Table 4-2**. Based on emissions estimates presented in **Table 4-2**, emissions from construction activities and operation of the generator would be well below *de minimus* air quality thresholds.

### 4.3.4 All Collocations Alternative

Short-term and long-term, negligible to minor adverse impacts on regional or local air quality would be expected. As discussed in **Section 2.2.4**, the All Collocations Alternative would include collocating all NAIS equipment at the 450 potential locations. However, some facilities and backup generators might be required at these locations. The All Collocations Alternative would have similar impacts as those discussed in **Section 4.3.2**. Air quality emissions for construction of the new facilities and operation of backup generators would be the same as those presented in **Table 4-2**. Based on emissions estimates presented in **Table 4-2**, emissions from construction activities and operation of the generator would be well below *de minimus* air quality thresholds.

## 4.4 Earth Resources

The following impact thresholds were used to assess the magnitude of impacts on earth resources:



- Negligible adverse impacts would result in a change to a natural physical resource, but the change would be small and localized and of little consequence. Adverse impacts on adjacent resources resulting from erosion and sedimentation would be small and localized and of little consequence.
- Minor adverse impacts would result in a change to a natural physical resource, but the change would be small and localized and of little consequence. Adverse impacts on adjacent resources resulting from erosion and sedimentation would be small and localized and of little consequence.
- Moderate adverse impacts would result in a change to a natural physical resource; the change would be measurable. Adverse impacts on adjacent resources resulting from erosion and sedimentation would be measurable.
- Significant adverse impacts would result in a noticeable change to a natural physical resource; the change would be measurable and result in a severely adverse or major impact. Adverse impacts on adjacent resources resulting from erosion and sedimentation would be severe.

#### **4.4.1 No Action Alternative**

Under the No Action Alternative, the USCG would not implement the NAIS project. No impacts on earth resources would be expected.

#### **4.4.2 All New Tower Builds Alternative**

Short-term and long-term negligible to minor adverse impacts on earth resources would be expected. Up to 450 new shore-based RF towers would be constructed to accommodate NAIS requirements under this alternative. The USCG would have some flexibility in the exact siting of NAIS towers and would seek to avoid impacts on earth resources to the greatest extent possible. Construction of each shore-based RF tower could result in the disturbance of approximately 6,400 ft<sup>2</sup> (0.15 acre) to accommodate the tower and the prefabricated utility building, and up to just over 5 acres for access road and utility line development. Therefore, the range of anticipated disturbance at any particular site would be between 0.15 acre and approximately 5 acres. Negligible adverse impacts on geologic resources could occur at locations where bedrock is at the surface and blasting would be necessary to grade for tower placement or access road development. Geologic resources could affect the placement of towers or access roads due to the occurrence of bedrock at the surface, or as a result of structural instability. In most cases, it is expected that project design and engineering practices could be implemented to mitigate geologic limitations to site development.

Long-term negligible to minor adverse impacts on soils would be expected as a result of grading, excavation, placement of fill, compaction, mixing, or augmentation necessary to accommodate tower, access road, and utility line development. Additional impacts on soils could occur as a result of erosion, if properly designed erosion and sediment controls and storm water management practices are not implemented during site development. Minor adverse impacts on adjacent habitats could also result from the deposition of soils eroded from the development site during construction. Properly designed erosion and sediment control and storm water management practices would be implemented, consistent with state and USCG requirements and guidelines, to minimize potential adverse impacts. The USCG would ensure that applicable NPDES construction permits would be obtained in accordance with the CWA and the Draft Phase II Storm Water Management Guide (COMDTPUB 11300.3). A Phase I NPDES permit for construction would be required for all projects that would disturb more than 5 acres. A Phase II NPDES permit would be required for disturbances between 1 and 5 acres. Under the All New Tower Builds Alternative, no NPDES permit would be required for construction of the tower and equipment building and up to 0.35 miles of roads and utilities trenching. A Phase II NPDES permit would be required for construction of the tower and equipment building and up to approximately 2 miles of road and utilities trenching. A Phase I NPDES permit would be required for construction of the tower and equipment

building and any length of road and utilities trenching greater than 2 miles. It is not anticipated that more than 2 miles of road and utilities would be required at any one site. Compliance with either a Phase I or II NPDES permit would include (1) developing site-specific best management practices (BMPs), (2) implementing BMPs, and (3) satisfying reporting and recordkeeping requirements. The permit would also require the development of a site-specific Storm Water Pollution Prevention Plan (SWPPP) to ensure that storm water runoff from the construction site was minimized. Management of storm water on the construction sites would minimize the potential for increased soil erosion associated with runoff from the site.

Soil characteristics (e.g., excessive erodibility, instability, shrink swell clays) could limit the suitability of a site for development. In most cases, it is expected that project design and engineering practices could be implemented to mitigate soil-related limitations to site development.

Long-term negligible adverse impacts on natural microtopography could occur on previously undisturbed sites as a result of excavation, grading, or filling necessary to accommodate tower, access road, and utility line development. Topography could limit the suitability of a site for tower placement in areas where there are high variations in relief which could limit the line of site to the tower.

Negligible impacts on prime or unique farmland would be expected at locations where it was determined to occur. Determination of the occurrence of prime farmland would be based on the presence of prime farmland soils in combination with other site-specific characteristics. The placement of a tower, access road, and utility line on a site designated as prime or unique farmland would not be expected to limit the future use of the site as farmland.

The USCG has some flexibility in the siting of the new towers and would seek to minimize potential adverse impacts on earth resources. In addition, the USCG will coordinate with the applicable agencies to obtain any permits determined to be necessary based on the final tower and access road locations. Site-specific tiered NEPA analysis will be conducted, as determined to be necessary, at new tower sites once the location of the site is determined.

#### **4.4.3 Combination of Collocations and New Tower Builds Alternative**

Short-term negligible to minor adverse impacts on earth resources would be expected. Negligible impacts on earth resources would be expected at sites where towers are collocated, and negligible to minor for sites where new towers are built. Impacts on earth resources discussed under the All New Tower Builds Alternative would be expected at locations where new towers are built. The USCG would have some flexibility in the exact siting of NAIS towers and would seek to avoid impacts on earth resources to the greatest extent possible.

Short-term negligible adverse impacts on soils could occur as a result of ground disturbance that might be required to grade a site for the placement of the 96-ft<sup>2</sup> prefabricated utility building. The prefabricated buildings would be placed under the existing towers where possible. In most cases, it is expected that the prefabricated structure could be leveled without a need for ground disturbance. Properly designed erosion and sediment control and storm water management practices would be implemented, consistent with state and USCG requirements and guidelines, to minimize potential adverse impacts at locations where ground disturbance was determined to be necessary. Site-specific tiered NEPA analysis will be conducted, as determined to be necessary, at each new and collocation tower site once the location of the site is determined.

#### 4.4.4 All Collocations Alternative

Negligible adverse impacts on earth resources would be expected as a result of implementing the All Collocations Alternative. Impacts on earth resources discussed under the collocation scenario in the Combination of Collocations and New Tower Builds Alternative would be expected. Additional tiered NEPA analysis would be conducted, as necessary, once the sites for collocation were determined and prior to project implementation.

### 4.5 Water Resources

Evaluation criteria for impacts on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. A proposed action would result in adverse impacts on water resources if it does one or more of the following:

- Violates a Federal, state, or local law or regulation adopted to protect water resources (major)
- Causes irreparable harm to human health, aquatic life, or beneficial uses of aquatic ecosystems (major)
- Degrades surface water or groundwater quality (minor to major depending on extent of degradation)
- Alters surface runoff resulting in flooding, or places a structure within a 100-year floodplain (minor to major depending on extent of change)
- Reduces water availability or supply to existing users (minor to major depending on extent of change).

#### 4.5.1 No Action Alternative

Under the No Action Alternative, the USCG would not implement the NAIS project. No impacts on water resources would be expected.

#### 4.5.2 All New Tower Builds Alternative

***Surface Water and Groundwater.*** Short-term and long-term negligible to minor adverse impacts on surface water and groundwater resources would be expected. The USCG would have some flexibility in the exact siting of NAIS towers and would seek to avoid impacts on water resources to the greatest extent possible. The USCG would obtain any necessary permits in accordance with the CWA and state regulations.

***Construction-Related Impacts.*** The All New Tower Builds Alternative would be expected to result in short-term negligible to minor adverse impacts on surface water resources and negligible to minor adverse impacts on groundwater resources as a result of construction activities. Construction activities would directly result in increased sediment runoff into drainage streams, lakes, estuaries, or the ocean. Increased sediment loads increase water turbidity and temperature, and decrease the overall habitat quality for aquatic life.

The magnitude of adverse impacts would depend on the specific location and the construction requirements of that location. If roads and necessary utilities exist at a specific site, then only the tower and prefabricated equipment building would be constructed; construction of the tower and equipment building would result in the approximate disturbance of 6,400 ft<sup>2</sup> (0.15 acres). As presented in **Section 4.1.2**, up to 2 miles of road and utilities might also be required. The total disturbance would be

approximately 5 acres. Therefore, the range of anticipated disturbance at any particular site would be between 0.15 acres and 5 acres.

Construction of the tower and equipment building would be expected to result in negligible adverse impacts from construction activities alone, but the additional roads and utilities that might be required could result in minor to moderate adverse impacts depending on site-specific soil conditions, topography (see **Section 4.4.2** for discussion of geologic conditions), and surface waterbodies at any given location. For example, in areas where there are many small tributaries, construction of the road and installation of the utilities would be likely to result in more moderate adverse impacts on those streams than construction of a tower alone.

The USCG would preferentially choose sites to minimize adverse construction impacts to the greatest extent possible. The USCG would ensure that the construction contractor has coordinated with the state or USEPA to obtain the appropriate NPDES construction permit in accordance with the CWA and COMDTPUB 11300.3 (Phase I and Phase II), *Storm Water Management Guide*. A Phase I NPDES permit for construction is required for all projects that would disturb 5 acres or more. A Phase II NPDES permit for construction is required for all construction projects that would disturb between 1 and 5 acres. Under the All New Tower Builds Alternative, no NPDES permit would be required for construction of the tower and equipment building and less than 0.35 miles of roads and utilities trenching. A Phase II NPDES permit would be required for construction of the tower and equipment building and up to approximately 2 miles of road and utilities trenching. A Phase I NPDES permit would be required for construction of the tower and equipment building and any length of road and utilities trenching greater than 2 miles, though it is not anticipated that more than 2 miles of road and utilities would be required at any one site. Basic compliance with either a Phase I or II NPDES permit would include (1) developing site-specific BMPs, (2) implementing BMPs, and (3) satisfying reporting and recordkeeping requirements. The construction contractor would also be required to develop a site-specific SWPPP to ensure that storm water runoff from the construction site is minimized. If a Phase I or II NPDES permit is not required, the USCG would still develop and implement a SWPPP that identifies BMPs to minimize any potentially adverse impacts as a result of construction.

There is a minor potential for spills or leaks from construction equipment. Spills or leaks would likely result in negligible to minor adverse impacts on surface water or groundwater resources. Surface water or areas that have karst terrain would be more susceptible to adverse impacts in the event of a spill or leak. Construction contractors would be responsible for ensuring that equipment is in good operating order to reduce the potential for leaks, and would develop a Spill Prevention, Control, and Countermeasure (SPCC) Plan to ensure that the potential for a dangerous chemical spill is minimized by providing appropriate procedures to contain and clean up spills if they occur. The construction contractor would also be expected to practice good housekeeping measures to reduce the quantity of potentially hazardous chemicals needed, and ensure they are handled and used properly. In the event that a spill occurs, it would not be likely to have a significant impact on surface water quality or groundwater quality.

The use of staging areas would result in short-term negligible adverse impacts. It is not expected that staging areas would be cleared, graded, or permanently altered, though minor soil disturbance could occur as a result of vehicle traffic. Vehicles also have the potential for fuel leaks, but contractors would be required to practice good housekeeping practices. Overall, short-term adverse impacts as a result of using staging areas would be negligible.

The USCG would preferentially choose tower locations to minimize adverse impacts on water resources to the greatest extent possible. The USCG would obtain any construction-related permits required by the CWA and other state laws and regulations. Construction activities would not be likely to result in violations of other Federal regulations, such as the SDWA.

*Operations-Related Impacts.* This alternative would be expected to result in long-term negligible to minor adverse impacts on surface water and groundwater resources. The USCG would have some flexibility in the exact siting of NAIS towers and would seek to avoid impacts on water resources to the greatest extent possible. The USCG would obtain any necessary permits in the accordance with the CWA and state regulations.

The construction of new shore-based RF towers would result in the creation of permanent impervious surfaces. The creation of impervious surfaces could increase the quantity of storm water runoff, decrease storm water quality, and reduce the amount of groundwater that infiltrates underlying aquifers. Most towers would likely only require the tower and equipment building to be permanently impervious (0.15 acres), which would have a negligible adverse impact. It is anticipated that gravel roads would be used when road construction is required under the All New Tower Builds Alternative. The length of road needed at any one site is also variable. The construction of 2 miles of road would create approximately 5 acres of semipervious surface, depending on the material used. The impact magnitude of this amount of semipervious surface would be negligible to minor, depending on the site-specific location. For example, construction of 2 miles of road adjacent to a stream or over karst terrain would have the potential to introduce contaminants directly into surface water or groundwater resources, as well as increase the potential for flash flooding downstream. At most sites, these kinds of impacts would be negligible.

At some locations, the creation of roads could result in minor hydromodification of stream channels, such as culverting or hardened stream crossing. These kinds of modification could result in minor to moderate adverse impacts, such as increased potential for flooding. The magnitude of the impact would depend on the site-specific location. The USCG would avoid hydromodification to the greatest extent possible. If hydromodification is required, the USCG would coordinate and obtain permits with USACE or other applicable Federal or state agencies.

Each new shore-based RF tower site would require a backup generator, most likely powered by diesel or liquid propane. Storage of fuels on site has the potential to introduce contamination into surface water or groundwater. The 500-gallon tank would be above ground, and have appropriate spill-containment to protect surface water and groundwater resources in the event of a spill. Overall, the potential that a spill or leak would occur is minor, and the amount of fuel onsite would not be sufficient to cause widespread contamination.

No long-term impacts would be expected as a result of utilities trenching. If trenching would be required, disturbed areas would be revegetated with appropriate vegetation to reduce soil erosion and potential transport into waterbodies.

The All New Tower Builds Alternative would not increase the demand for potable water, so there would be no impact on water availability or supply from surface water or groundwater resources. Operations activities would not be likely to result in violations of other Federal regulations, such as the SDWA.

*Floodplains.* The USCG would avoid siting new towers in the 100-year floodplain in accordance with EO 11988 and COMDTINST M16475.ID. If the 100-year floodplain cannot be avoided, it is USCG policy to modify proposals to (1) reduce the hazard and the risk of floodplain loss; (2) minimize the impact of floods on human safety, health, and welfare; and (3) restore and preserve the natural and beneficial floodplain values (COMDTINST M16475.ID). If any part of a new tower build were to be sited within the 100-year floodplain, the USCG would initiate public and agency involvement during the site-specific NEPA process prior to any actions occurring.

### 4.5.3 Combination of Collocations and New Tower Builds Alternative

***Surface Water and Groundwater.*** Short-term and long-term negligible to minor adverse impacts on surface water and groundwater resources would be expected. The magnitude of impacts would be negligible to minor for sites where towers are collocated, and negligible to moderate for sites where new towers are built. The USCG would preferentially choose sites for collocation over new tower builds. However, if a new tower is required, the USCG would have some flexibility in the exact siting of the NAIS tower and would seek to avoid impacts on water resources to the greatest extent possible. The USCG would obtain any necessary permits in the accordance with the CWA and state regulations.

***Construction-Related Impacts.*** Refer to **Section 4.5.2** for a detailed discussion of potential impacts for those sites requiring a new tower build. Overall, construction of a new tower would be likely to result in short-term negligible to moderate adverse impacts. The magnitude of potential impacts would vary depending on if a new road and utilities would be required, and how many miles of new road and utilities would be required.

For collocated towers, short-term negligible to minor adverse impacts would be expected as a result of construction activities. A prefabricated equipment building might be required for collocated towers, which would result in disturbance of approximately 96 ft<sup>2</sup>. The equipment building would likely be constructed in previously disturbed areas. Overall soil disturbance that could cause storm water runoff into surface waterbodies would be negligible to minor. A NPDES permit would not be required if the area disturbed area is less than 1 acre in size. However, the USCG would implement BMPs to minimize potential impacts.

There is a minor potential for spills or leaks from construction equipment. Spills or leaks would likely result in negligible to minor adverse impacts on surface water or groundwater resources. Surface water or areas that have karst terrain would be more susceptible to adverse impacts in the event of a spill or leak. Construction contractors would be responsible for ensuring that equipment is in good operating order to reduce the potential for leaks, and would develop an SPCC Plan to ensure that the potential for a dangerous chemical spill is minimized by providing appropriate procedures to contain and clean up spills if they occur. The construction contractor would also be expected to practice good housekeeping measures to reduce the quantity of potentially hazardous chemicals needed, and ensure they are handled and used properly.

Collocating NAIS equipment with existing towers or structures would not be expected to result in road construction, utility trenching, or the use of construction staging areas. The USCG would preferentially choose tower collocations to minimize adverse impacts on water resources. The USCG would obtain any permits required by the CWA and other state laws and regulations for construction related to new towers. Construction activities would not be likely to result in violations of other Federal regulations, such as the SDWA.

***Operations-Related Impacts.*** Refer to **Section 4.5.2** for a detailed discussion of potential impacts for those sites requiring a new tower build. Overall, a new tower would be likely to result in long-term negligible to minor adverse impacts. The magnitude of potential impacts would vary depending on if a new road and utilities would be required, and how many miles of new road and utilities would be required.

For collocated towers, long-term negligible adverse impacts would be expected from the increase of 96 ft<sup>2</sup> of impervious surface from the equipment building, if required. The loss of 96 ft<sup>2</sup> of drainage or infiltration area would be imperceptible.

Collocated towers might require a backup generator, most likely powered by diesel or liquid propane. Storage of fuels onsite has the potential to introduce contamination into surface water or groundwater. The 500-gallon tank would be above ground, and have appropriate spill-containment to protect surface water and groundwater resources in the event of a spill. Overall, the potential that a spill or leak would occur is minor, and the amount of fuel onsite would not be sufficient to cause widespread contamination.

It is possible that NAIS equipment could be collocated with towers in areas that operate under an existing industrial Phase I and Phase II group or general NPDES permit. The USCG would be required to conform to any existing NPDES permits. However, it is not expected that the quality of point-source discharged effluent would be degraded as a result of tower collocation, so permit violations would not be expected.

The Combination of Collocations and New Tower Builds Alternative would not increase the demand for potable water, so there would be no impact on water availability or supply from surface water or groundwater resources.

Collocating NAIS equipment with existing towers or structures would not be expected to result in road construction. The USCG would preferentially choose tower collocations to minimize adverse impacts on water resources. The USCG would obtain any permits required by the CWA and other state laws and regulations. Operations activities would not be likely to result in violations of other Federal regulations, such as the SDWA.

**Floodplains.** As indicated in **Section 4.5.2**, the USCG would avoid siting new towers in the 100-year floodplain in accordance with EO 11988 and COMDTINST M16475.ID. However, if there is no practicable alternative to siting new towers in the 100-year floodplain, the USCG would accomplish the requirements identified in **Section 4.5.2**.

Collocation with existing towers or structures already in the floodplain would not have additional impacts on the floodplain. The USCG would avoid siting the prefabricated equipment building in the floodplain. However, if there was no practicable alternative to siting the prefabricated equipment building in the floodplain, the USCG would accomplish the requirements identified in **Section 4.5.2** in accordance with COMDTINST M16475.ID.

#### **4.5.4 All Collocations Alternative**

**Surface Water and Groundwater.** Short-term and long-term, negligible to minor adverse impacts would be expected. Refer to **Section 4.5.3** for a detailed discussion of potential impacts associated with collocating NAIS equipment with existing towers or structures. Short-term impacts from the placement of the 96-ft<sup>2</sup> equipment building would be negligible to minor. Long-term impacts from the increase of 96 ft<sup>2</sup> of impervious surface would be negligible. The long-term potential exists that a fuel leak could occur; anticipated impacts on surface water and groundwater would be minor. The USCG would preferentially choose tower collocations to minimize adverse impacts on water resources. The USCG would obtain any construction-related permits required by the CWA and other state laws and regulations.

The All Collocations Alternative would not increase the demand for potable water, so there would be no impact on water availability or supply from surface water or groundwater resources. Construction or operations activities would not be likely to result in violations of other Federal regulations, such as the SDWA.

**Floodplains.** The All Collocations Alternative would have minimal potential to result in adverse impacts associated with the 100-year floodplain. The USCG would avoid siting the prefabricated equipment

building in the floodplain. However, if there was no practicable alternative to siting the prefabricated equipment building in the floodplain, the USCG would accomplish the requirements identified in **Section 4.5.2** in accordance with COMDTINST M16475.ID.

## 4.6 Biological Resources

The following evaluation criteria were used to determine the magnitude of impacts on vegetation, wildlife, wildlife habitat, and wetlands with separate criteria being used to evaluate impacts on threatened and endangered species:

- Negligible adverse impacts would result if there were no observable or measurable impacts on native vegetation or wildlife, or sensitive or unique wildlife habitats. Impacts would be of short duration and well within natural fluctuations. Impacts on wetlands would not be detectable. Impacts would result in no measurable or perceptible changes in wetland plant community size, integrity, or continuity.
- Minor adverse impacts would be detectable, but they would not be expected to be outside the natural range of variability. Impacts on native plants would be measurable or perceptible, but would affect a small area. The viability of the plant community would not be affected and the community, if left alone, would recover. Population numbers, population structure, genetic variability, and other demographic factors for wildlife species might have small, short-term changes, but long-term characteristics would remain stable and viable. Occasional responses to disturbance by some individuals could be expected, but without interference to feeding, reproduction, or other factors affecting population levels. Key ecosystem processes might have short-term disruptions that would be within natural variation. Sufficient habitat would remain functional to maintain the system and viability of all species. Impacts on wetlands would be measurable or perceptible but localized within a small area. The overall viability of the wetland plant community would not be affected and, if left alone, would recover.
- Moderate adverse impacts on vegetation would result if a change would occur over a relatively large area in the native plant community that would be readily measurable in terms of abundance, distribution, quantity, or quality. Impacts on native wildlife species, their habitats, or the natural processes sustaining them would be detectable, and they could be outside the natural range of variability for short periods of time. Population numbers, population structure, genetic variability, and other demographic factors for species might have short-term changes, but would be expected to rebound to pre-impact numbers and to remain stable and viable in the long term. Frequent responses to disturbance by some individuals could be expected, with some negative impacts on feeding, reproduction, or other factors affecting short-term population levels. Key ecosystem processes might have short-term disruptions that would be outside natural variation. Sufficient habitat would remain functional to maintain viability of all native species. Impacts on wetlands would be measurable or perceptible and would result in a loss of wetland habitat. Impacts would cause a change in the plant community (e.g., abundance, distribution, quantity, or quality); however, the impact would remain localized.
- Significant adverse impacts on native plant communities would be readily apparent, and would substantially change vegetation community types over a large area. Adverse impacts on native species, their habitats, or the natural processes sustaining them would be detectable, and they would be expected to be outside the natural range of variability for long periods of time, or be permanent. Population numbers, population structure, genetic variability, and other demographic factors for species might have large, short-term declines, with long-term population numbers significantly depressed. Frequent responses to disturbance by some individuals would be expected, with negative impacts on feeding, reproduction, or other factors resulting in a long-term decrease in population levels. Breeding colonies of native species might relocate to other areas.



Key ecosystem processes might be disrupted in the long term or permanently. Loss of habitat might affect the viability of the ecosystem for some native species. Impacts on wetlands would be substantial and permanent and would result in complete alteration of wetland habitats. Impacts on the plant community would be substantial, highly noticeable, and permanent. Mitigation would be required to offset impacts.

Impacts on threatened and endangered species were classified using the following terminology, as defined under the ESA:

- No effect – would be determined if a proposed action would not affect a listed species or designated critical habitat.
- May affect/not likely to adversely affect – would be determined if impacts on special status species are discountable (i.e., extremely unlikely to occur and not able to be meaningfully measured, detected, or evaluated) or completely beneficial.
- May affect/likely to adversely affect – would be determined when an adverse effect on a listed species occurs as a direct or indirect result of proposed actions and the effect is either not discountable or completely beneficial.
- Likely to jeopardize proposed species/adversely modify proposed critical habitat – would be determined if the USCG or USFWS identified situations in which actions could jeopardize the continued existence of a proposed species or adversely modify critical habitat to a species within or outside of the project area.

#### **4.6.1 No Action Alternative**

Under the No Action Alternative, the USCG would not implement the NAIS project. No collocated or newly built shore-based RF sites would be established. No impacts on vegetation, wildlife, threatened or endangered species, or wetlands would be expected.

#### **4.6.2 All New Tower Builds Alternative**

Short-term and long-term, negligible to moderate adverse impacts would be expected. The following discussion describes potential impacts on vegetation, wildlife, threatened and endangered species, and wetlands.

**Vegetation.** Short-term and long-term, minor to moderate adverse impacts on vegetation would be expected. Up to 450 new RF towers would be constructed to accommodate NAIS requirements under the alternative. Construction of each shore-based RF tower could result in the disturbance of approximately 0.15 acre to accommodate the tower and the prefabricated utility building, and up to 6.5 acres for access road and utility line development. Potential adverse impacts on vegetation associated with site development would vary depending on the characteristics of the tower location and would result from direct long-term impacts associated with removal, or indirect short- and long-term impacts associated with damage to species during, or as a result of, site development. Placement of a tower in an urbanized environment would be expected to have less potential for adverse impacts on native vegetation than placement in an undeveloped naturally vegetated area. Development in active agricultural plots would result in minimal impacts on natural vegetation. Development in fields, successional habitats, or fallow agricultural land would be expected to impact vegetation characterized by herbaceous species, shrubs and young tree species. Development in forested habitats would result in direct removal of trees and associated understory vegetation necessary to accommodate the development footprint. Indirect damage to trees and understory vegetation would also be expected to occur as a result of damage to root systems, soil compaction, and landscape modification associated with site development.

Removal and disturbance of vegetation to accommodate site development has the potential to introduce and spread exotic invasive species. Spread of exotic invasive species in the area of tower development could result from disturbance which could allow aggressive invasives to become established from seed stock on the site or in adjacent habitats. Invasive species could also be introduced on construction equipment brought to the site from other locations. Likewise exotic invasive species occurring at a new tower location could be spread to offsite locations if equipment was not properly cleaned before leaving the site. The establishment and spread of *Phragmites australis* is of particular concern in coastal areas where it can aggressively take over areas previously characterized by native vegetation following disturbance. EO 13112, *Invasive Species*, directs all government agencies to review projects to ensure that no increase in the spread of invasive plant species occurs from construction activities. The USCG would comply with the guidelines in the EO to minimize potential for the spread of exotic invasive species associated with the proposed development of new tower sites.

Short-term and long-term minor adverse impacts on wetland or aquatic vegetation in proximity to tower or access road locations could occur if water quality was degraded as a result of erosion and sedimentation and storm water runoff from the tower site or access road during construction. Erosion and sediment control and storm water management practices consistent with USGC guidelines and state requirements would be implemented both during construction and for operations of the new tower sites to minimize potential adverse impacts on wetland and aquatic vegetation. Spill contingency plans and management practices would be developed and, when necessary, implemented to minimize potential impacts on aquatic resources resulting from leakage of equipment and potential chemical or fuel spills during site development.

The USCG has some flexibility in the siting of the new towers and would seek to avoid sensitive and unique habitats and vegetation. In addition, the USCG will coordinate with the applicable agencies to obtain Special Use Permits or other permits determined to be necessary based on the final tower and access road locations. Site-specific tiered NEPA analysis will be conducted, as necessary, at new tower sites once the location of the site is determined.

**Wildlife.** Short-term and long-term minor adverse impacts on wildlife would be expected. Up to 450 new RF towers would be constructed to accommodate NAIS requirements under the alternative. As discussed above, tower development could result in the disturbance of up to 6.5 acres to accommodate tower, access road, and utility line development at each new tower location. Potential adverse impacts on wildlife associated with site development would vary depending on the characteristics of the tower location. Placement of a tower in an urbanized environment would be expected to have less potential for adverse impacts on wildlife than placement in an undeveloped area. Placement of a tower in a forested habitat or in proximity to wetlands or other sensitive habitats would be expected to have a greater potential for short-term and long-term adverse impacts on wildlife that might utilize the habitats. Up to 6.5 acres of wildlife habitat could be permanently lost as a result of site development and road construction associated with the construction and operation of new towers. Construction activities would likely result in mortality of some less mobile fauna such as reptiles, amphibians, and small mammals. Most wildlife would be expected to relocate from areas within or immediately surrounding the construction area. Ability to relocate would be affected by availability of suitable adjacent habitats and connectedness to these habitats. Some species would be expected to move back into the area following the completion of construction. Mortality of some species would be expected over time as a result of collision with vehicles following the completion of development.

Following the completion of site development, adverse impacts on species sensitive to disturbance could result from temporary noise generated by climate control (heating and air conditioning) equipment associated with the towers. This reoccurring temporary noise disturbance would be minor and species

sensitive to the disturbance would be expected to move away from the immediate location of the tower and associated equipment.

Short-term and long-term, minor to moderate adverse impacts on aquatic species and their habitats could occur if water quality was degraded as a result of erosion and sedimentation and increased storm water runoff during the development and operation of the new towers. Erosion and sediment control and storm water management practices consistent with USGC guidelines and state requirements would be implemented both during construction and for operations of the new tower sites to minimize potential adverse impacts on aquatic resources. Spill contingency plans and management practices would be developed and, when necessary, implemented to minimize potential impacts on aquatic resources resulting from leakage of equipment and potential chemical or fuel spills during site development.

The USCG has some flexibility in the siting of the new towers and would seek to avoid sensitive and protected wildlife areas such as National Wildlife Preserves and wetland habitats. In addition, the USCG will coordinate with the applicable agencies to obtain Special Use Permits or other permits determined to be necessary based on the final tower and access road locations. Site-specific tiered NEPA analysis will be conducted as necessary at new tower sites once the location of the site is determined.

***Migratory Birds.*** Long-term minor to moderate adverse impacts on migratory birds would be expected. Up to 450 new RF towers would be constructed to accommodate NAIS requirements under the alternative. Impacts on migratory birds would be expected as a result of collision and exhaustion associated with the operation of new towers under the All New Tower Builds Alternative. Some adverse impacts on bird navigation could also occur in association with poor visibility and tower lighting. The probability of collision is difficult to determine because of the range of variables that affect the potential for collision, and the lack of conclusive data regarding the causes of collision. There are several factors that could increase or decrease the risk of adverse impacts at tower locations.

Migratory bird impacts are possible due in part to the need to construct towers along coastlines, some rivers, and other navigable waters such as the Great Lakes. Many of the major migratory routes are concentrated along the coastlines and major rivers and lakes. As a result, large concentrations of birds pass through the areas where new towers would be located during their spring and fall migrations, increasing the potential for collision with the structures.

Most migratory birds fly at a height of about 2,000 to 3,000 feet above sea level, with some species flying at levels down to about 500 feet above sea level. Birds also might fly at lower altitudes during inclement weather or low visibility conditions (URS 2004). Based on the altitudes known for migrating birds, most fly at elevations well above the height of the proposed new towers. These flight elevations do not account for birds landing or taking off from breeding and feeding habitat when there would be an increased potential for injury or mortality due to collision with tower structures.

Studies indicate that most adverse impacts on birds resulting from collision occur during foggy or low cloud conditions at lighted towers. Towers using guy wires likely increase potential for adverse impacts under these conditions. New towers that would be constructed would be 200 feet or less in height and would not use guy wires for support. Towers less than 200 feet in overall height, in most cases, would not require lighting. Potential impacts on birds would be expected to be greater during foggy or low cloud conditions at towers that require lighting. Impacts on birds associated with collisions with guy wires would not be a factor at any new tower locations because they would not be utilized for support.

There are numerous variables including tower height and design, lighting, seasons, adjacent land features, and migration patterns that affect the potential for adverse impacts on migratory birds at new tower locations. These variables are key factors affecting avian navigation and the potential for tower

collisions. The degree and mechanisms of influence either alone or in combination are not clear. Site-specific characteristics would also be expected to affect the potential for, and level of, adverse impacts. Site-specific characterization of potential impacts would be determined based on the individual tower locations.

EO 13186 requires Federal agencies taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement a MOU with the USFWS to promote the conservation of migratory bird populations. The USCG currently has a MOU with USFWS that addresses new tower locations associated with the National Distress and Response System Modernization Project (NDRSMP), also known as Rescue 21. The MOU addresses site- and structure-specific issues that could affect migratory birds. The USCG is currently corresponding with the USFWS regarding the development of a new MOU, or the modification of the existing MOU for Rescue 21, to address towers associated with implementation of the NAIS project. In addition, the USCG, to the extent practicable, will implement guidelines and best management practices established in the Service Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation, and Decommission (USFWS 2000) to reduce potential for adverse impacts on birds at new tower locations.

**Threatened or Endangered Species.** A determination of whether the proposed construction or operation of a new tower is likely to adversely affect a federally listed threatened or endangered species will be determined based on correspondence with USFWS on a site-specific basis, once proposed tower locations are determined. The determination of potential adverse impacts on state-listed species will also be determined on a site-specific basis. Correspondence with the USFWS regarding the NAIS project was initiated through the NOI published in the *Federal Register* on November 23, 2005. The agency responded to the NOI in a letter stating that they will provide input and information when the locations of projects are determined and site-specific NEPA documentation is prepared (see **Appendix B**). As stated in **Section 3.6**, the USFWS currently lists 937 vertebrates, 192 invertebrates, 715 flowering plants, and 33 nonflowering plants as threatened or endangered in the United States and its territories (USFWS 2006a). Additional species are protected at the state level. Determination of the potential for the occurrence of a Federal- or state-listed species in the area of a proposed tower location will be determined based on the proposed location of the tower and associated access road, correspondence with USFWS or applicable state agency(s), and the conduct of surveys where determined to be necessary. If it is determined that there is potential for adverse impacts on a threatened or endangered species, the USCG will coordinate with the USFWS or the applicable state agency(s) to ensure minimization of any potential adverse impacts.

**Wetlands.** Short-term and long-term negligible to minor adverse impacts on wetlands would be expected. Construction of each shore-based RF tower could result in the disturbance of approximately 0.15 acre to accommodate the tower and the prefabricated utility building, and up to 6.5 acres for access road and utility line development. Impacts on wetland habitats associated with tower placement and the development of up to 2 miles of access road and utility lines would be avoided and minimized to the maximum extent practicable. It is the goal and intent of the USCG, consistent with EO 11990, to avoid adverse impacts on wetlands and to proactively manage for wetlands during the environmental planning process to mitigate potential impacts through avoidance. If it was determined that possible encroachment might occur and could not be avoided, correspondence with the USACE and applicable state agencies would be conducted to determine if jurisdictional wetlands would be impacted, and to establish appropriate mitigation to minimize adverse impacts.

Short-term and long-term minor adverse impacts on wetland habitats occurring in proximity to tower or access road locations could occur if water quality was degraded as a result of erosion and sedimentation and storm water runoff from the tower site, access road, or utility line alignments during construction. Erosion and sediment control and storm water management practices consistent with USGC guidelines

and state requirements would be implemented to minimize potential adverse impacts on wetland habitats. Spill contingency plans and management practices would be developed and, when necessary, implemented to minimize potential impacts on wetland habitats resulting from leakage of equipment and potential chemical or fuel spills during site development.

The locations of the new towers or associated access roads and utility lines have not been determined. Additional tiered NEPA analysis will be conducted as necessary once the proposed location of each tower is determined and prior to initial planning and design. The analysis will further evaluate potential impacts on wetlands based on specific project design and location.

### 4.6.3 Combination of Collocations and New Tower Builds Alternative

Short-term and long-term, negligible to moderate adverse impacts would be expected. The magnitude of impacts would be negligible to minor for sites where towers are collocated, and negligible to moderate for sites where new towers are built. The USCG would preferentially choose sites for collocation over new tower builds. However, if a new tower is required, the USCG would preferentially choose tower locations to minimize adverse impacts on biological resources to the greatest extent possible.

The following discussion describes potential impacts on vegetation, wildlife, threatened and endangered species, and wetlands.

**Vegetation.** Minor to moderate short- and long-term adverse impacts on vegetation would be expected at locations where it was determined that new tower construction would be necessary. Impacts on vegetation would be expected at locations where new towers are built under this alternative. Short-term and long-term negligible to minor adverse impacts on vegetation would be expected at sites where towers are collocated. Under this scenario, impacts would be expected to occur as a result of clearing for the 96-ft<sup>2</sup> prefabricated utility building in cases where it could not be placed under the existing tower. Long-term adverse impacts would occur as a result of clearing of vegetation within the footprint of the building, and as a result of any clearing necessary to access the building location. Short-term adverse impacts on vegetation could occur as a result of trimming necessary to access the site. In all cases the USCG would place the building in a location that would minimize potential adverse impacts to the maximum extent practicable.

Clearing to accommodate the prefabricated utility building has the potential to introduce and spread exotic invasive species. Spread of exotic invasive species in the area of clearing for the building could result from ground disturbance which could allow aggressive invasives to become established from seed stock on the site or in adjacent habitats. Invasive species could also be introduced on construction equipment brought to the site from other locations. Likewise exotic invasive species occurring at the collocation site could be spread to offsite locations, if equipment was not properly cleaned before leaving the site. The establishment and spread of *Phragmites australis* is of particular concern in coastal areas where it can aggressively take over areas previously characterized by native vegetation. EO 13112, *Invasive Species*, directs all government agencies to review projects to ensure that no increase in the spread of invasive plant species occurs from construction activities. The USCG would comply with the guidelines in the EO to minimize potential for the spread of exotic invasive species associated with disturbance necessary to accommodate the prefabricated utility building at collocation sites.

Short-term and long-term minor adverse impacts on wetland or aquatic vegetation in proximity to collocation tower sites could occur if water quality was degraded as a result of erosion and sedimentation and storm water runoff from the prefabricated building site during preparation of the site. Erosion and sediment control and storm water management practices consistent with USGC guidelines and state

requirements would be implemented to minimize potential adverse impacts on wetland and aquatic vegetation.

The USCG has some flexibility in the siting of new towers where they are determined to be necessary, and in the case of collocations, the location of the prefabricated utility building, and would seek to avoid sensitive and unique habitats and vegetation. In addition, the USCG will coordinate with the applicable agencies to obtain Special Use Permits or other permits determined to be necessary based on new tower site locations. Site-specific tiered NEPA analysis will be conducted at new tower or collocation sites once the location of the site is determined.

**Wildlife.** Short-term and long-term minor adverse impacts on wildlife would be expected at locations where it was determined that new tower construction would be necessary. Impacts on vegetation discussed in **Section 4.6.2** would be expected at locations where new towers are built under this alternative. Negligible adverse impacts on wildlife would be expected at sites where towers were collocated. Under this scenario, impacts would be expected to occur as a result of noise and disturbance during site preparation for the prefabricated utility building. Wildlife disturbed during site preparation would be expected to return to the area following placement of the structure. Negligible adverse impacts on wildlife species sensitive to disturbance could result from temporary noise generated by climate control (heating and air conditioning) equipment associated with the prefabricated utility buildings. This reoccurring temporary noise disturbance would be negligible and species sensitive to the disturbance would be expected to move away from the immediate location of the tower and associated equipment. Equipment associated with the existing tower would also be expected to generate noise, so species sensitive to the noise would not be expected to occur in the vicinity of the existing towers.

The USCG has some flexibility in the siting of new towers, and in the case of collocations, the location of the prefabricated utility building, and will seek to avoid sensitive and protected wildlife areas such as National Wildlife Preserves and wetland habitats. In addition, the USCG will coordinate with the applicable agencies to obtain Special Use Permits or other permits determined to be necessary based on the final new tower or prefabricated building locations. Site-specific tiered NEPA analysis will be conducted as necessary at new tower or collocation sites once the location of the site is determined.

**Migratory Birds.** Long-term minor to moderate adverse impacts on migratory birds would be expected at locations where it was determined that new tower construction would be necessary. Impacts on migratory birds would be expected at locations where new towers are built under this alternative. Negligible new adverse impacts would be expected to migratory birds at collocation sites.

EO 13186 requires Federal agencies taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement an MOU with the USFWS to promote the conservation of migratory bird populations. The USCG currently has an MOU with USFWS that addresses new tower locations associated with Rescue 21. The MOU addresses site- and structure-specific issues that could affect migratory birds. The USCG is currently corresponding with the USFWS regarding the development of a new MOU, or the modification of the existing MOU for Rescue 21, to address new towers associated with implementation of the NAIS project. In addition, the USCG, to the extent practicable, will implement guidelines and best management practices established in the Service Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation, and Decommission to reduce potential for adverse impacts on birds at new tower locations (USFWS 2000).

**Threatened or Endangered Species.** A determination of whether the proposed construction or operation of a new tower or collocation on an existing tower or other structure is likely to adversely affect a federally listed threatened or endangered species will be determined based on correspondence with the

USFWS on a site-specific basis, once proposed new tower locations and collocation sites are determined. The determination of potential adverse impacts on state-listed species will also be determined on a site-specific basis. Correspondence with the USFWS regarding the NAIS project was initiated through the NOI published in the *Federal Register* on November 23, 2005. The agency responded to the NOI in a letter stating that they will provide input and information when the locations of projects are determined and site-specific NEPA documentation is prepared (see **Appendix B**). As stated in **Section 3.6**, the USFWS currently lists 937 vertebrates, 192 invertebrates, 715 flowering plants, and 33 nonflowering plants as threatened or endangered in the United States and its territories (USFWS 2000). Additional species are protected at the state level. Determination of the potential for the occurrence of a Federal- or state-listed species in the area of a proposed new tower location or collocation site will be determined based on the current or proposed location of the tower and associated access road, correspondence with USFWS or applicable state agency(s), and the conduct of surveys where determined to be necessary. If it is determined that there is potential for adverse impacts on a threatened or endangered species, the USCG will coordinate with the USFWS or the applicable state agency(s) to ensure minimization of any potential adverse impacts.

**Wetlands.** Short-term and long-term, negligible to minor adverse impacts on wetlands would be expected at locations where new tower construction would be necessary. Impacts on wetlands would be expected at locations where new towers are built. Negligible adverse impacts on wetlands would be expected at collocation sites. The prefabricated utility building would be located to avoid any direct impacts on wetlands.

Short-term and long-term, minor adverse impacts on wetlands in proximity to collocation tower sites could occur if water quality was degraded as a result of erosion and sedimentation and storm water runoff from the prefabricated building site during preparation of the site. Erosion and sediment control and storm water management practices consistent with USCG guidelines and state requirements would be implemented during site preparation to minimize potential adverse impacts on wetland and aquatic vegetation.

The USCG has some flexibility in the siting of new towers, and in the case of collocations, the location of the prefabricated utility building, and would seek to avoid and minimize any adverse impacts on wetland habitats. Additional tiered NEPA analysis will be conducted, as necessary, once the proposed location of a required new tower is determined and prior to initial planning and design. The analysis would further evaluate potential impacts on wetlands based on specific project design and location.

#### **4.6.4 All Collocations Alternative**

Short-term and long-term, negligible to minor adverse impacts would be expected. The following discussions describe potential impacts on vegetation, wildlife, threatened and endangered species, and wetlands.

**Vegetation.** Short-term and long-term, negligible to minor adverse impacts on vegetation would be expected. Impacts on vegetation discussed under the collocation scenario in **Section 4.6.3** would be expected. Additional tiered NEPA analysis would be conducted as necessary once the sites for collocation were determined and prior to project implementation.

**Wildlife.** Negligible adverse impacts on wildlife would be expected. Impacts on wildlife discussed under the collocation scenario in **Section 4.6.3** would be expected. Additional tiered NEPA analysis would be conducted as necessary once the sites for collocation were determined and prior to project implementation.

**Migratory Birds.** Negligible new adverse impacts would be expected. Impacts on migratory birds discussed under the collocation scenario in **Section 4.6.3** would be expected. Additional tiered NEPA analysis would be conducted as necessary once the sites for collocation were determined and prior to project implementation.

**Threatened or Endangered Species.** A determination of whether collocation on an existing tower or other structure is likely to adversely affect a federally listed threatened or endangered species will be based on correspondence with USFWS on a site-specific basis, once proposed collocation sites are determined. The determination of potential adverse impacts on state-listed species will also be determined on a site-specific basis. Correspondence with the USFWS regarding the NAIS project was initiated through the NOI published in the Federal Register on November 23, 2005. The agency responded to the NOI in a letter stating that they will provide input and information as the locations of projects are determined and site-specific NEPA documentation is prepared (see **Appendix B**). As stated in **Section 3.6**, the USFWS currently lists 937 vertebrates, 192 invertebrates, 715 flowering plants, and 33 nonflowering plants as threatened or endangered in the United States and its territories (USFWS 2006a). Additional species are protected at the state level. Determination of the potential for the occurrence of a Federal- or state-listed species in the area of a proposed collocation site is based on the location of the collocation site, correspondence with USFWS or applicable state agency(s), and the conduct of surveys where determined to be necessary. If it is determined that there is potential for adverse impacts on a threatened or endangered species, the USCG will coordinate with the USFWS or the applicable state agency(s) to ensure minimization of any potential adverse impacts.

**Wetlands.** Negligible adverse impacts on wetlands would be expected. Impacts on wetlands discussed under the collocation scenario in **Section 4.6.3** would be expected. Additional tiered NEPA analysis would be conducted, as necessary, once the sites for collocation were determined and prior to project implementation.

## 4.7 Cultural Resources

As noted in the discussion of legal authorities in **Section 3.7.3**, Federal agencies are required to consider the impacts of their actions on cultural resources under a variety of laws, depending on the nature of the resource being impacted. NEPA requires that Federal agencies determine whether their proposed actions will have significant impact on the human environment, including a range of cultural resources. Review of Federal actions under the NHPA, which should be conducted concurrent with NEPA review, requires Federal agencies to take into account the impacts of their actions or undertakings on historic properties. NAGPRA and the ARPA provide guidance on how to conduct resource identification efforts on Federal lands and how to consult with American Indian, Native Hawaiian, or Native Alaskan stakeholders in the event that Federal actions result in the discovery of human remains or items of cultural patrimony.

In general, an impact could be considered significant to cultural resources if project activities result in

- Destruction or alteration of all or a contributing part of any NRHP-eligible resource without mitigation of the adverse effect through prior consultation with the SHPO/THPO or affected American Indian tribe, or Native Hawaiian or Native Alaskan organization
- Isolation of an eligible or listed resource from its surrounding environment
- Introduction of a visual, audible, or atmospheric element that is out of character with an eligible or listed resource, or would alter its setting
- Neglect and subsequent deterioration of an NRHP-eligible or listed resource
- Disturbance of properties with traditional, cultural, or religious significance to American Indian tribes, or Native Hawaiian or Native Alaskan organizations.



### 4.7.1 No Action Alternative

Under the No Action Alternative, the USCG would not implement the NAIS project. No collocated or newly built shore-based RF sites would be established. Therefore, no impacts on archaeological resources, historic buildings and structures, or TCPs would be expected.

### 4.7.2 All New Tower Builds Alternative

Under this alternative, the USCG would implement the NAIS project using entirely new shore-based RF sites. Shore-based RF sites would consist of AIS equipment mounted on tower structures. It is also assumed that, while access roads and equipment would require regular maintenance, maintenance actions would have no impacts on cultural resources.

**Archaeological Resources.** Depending on the location of the tower, short-term and long-term negligible to major adverse impacts would be expected. Because construction of new RF sites can involve substantial ground disturbance (grading and excavation), implementation of this alternative has the potential to impact either previously recorded or unrecorded archaeological resources within the RF site footprint, the access road, and any staging areas used for construction. Impacts can range from no impact, if archaeological resources are absent within the areas being disturbed; to short-term minor adverse if the archaeological resources present within the areas being disturbed are either ephemeral in nature or have been previously disturbed; to long-term major and adverse if significant archaeological resources are present. Mitigation measures such as avoidance of archaeological resources, or archaeological monitoring during construction could reduce the level of adverse impacts on archaeological resources. Data recovery of archaeological resource information can mitigate the long-term impact of an action under NEPA; however, data recovery excavations have been determined to represent an adverse effect on historic properties under Section 106 of the NHPA because excavation inherently destroys the resource.

Once specific RF site locations have been selected, the USCG would consult with the appropriate SHPO/THPO or affected American Indian, Native Hawaiian, or Native Alaskan groups in advance of construction to determine whether previously recorded archaeological resources exist within the construction APE or, if the construction APE has not been previously surveyed for archaeological resources, whether such a survey could be required in advance of construction.

**Historic Buildings and Structures.** Depending on the location of the tower, long-term negligible to major indirect adverse impacts would be expected. Because it would not involve changes to existing buildings or structures, construction of new RF sites would not have a direct impact on historic buildings or structures. Construction of a new RF site within the viewshed of a historic building, structure, or district could have an indirect impact, as the tower would visually affect the historic resource and its setting. For example, a tower constructed in a location where no physical features taller than the tower (e.g., mature trees or existing structures like water towers) are present would result in the introduction of an element not already present in the setting of the historic building, structure, or district. The degree to which the new RF site would have a visual effect on historic buildings, structures, or districts would depend upon the type of historic setting, existing visual clutter, height of the tower in relation to the height of existing features, topography, and vegetation.

As part of the process used to select new RF sites, the USCG would consult with the SHPO and local historic commissions, as appropriate, to determine whether the proposed RF site lies within the viewshed of any previously recorded or potential historic building, structure, or district. Where possible, impacts could be avoided by selecting a new RF site that is not within the viewshed of a historic building, structure, or district. If visual impacts cannot be avoided, the USCG can consult with the SHPO and local historic commissions to discuss ways to mitigate the impacts. Mitigation options might include

emplacing vegetation between the RF site and the historic building, structure, or district to help provide a visual screen; documentation of the historic building, structure, or district per the standards outlined by the Historic American Building Survey (HABS), or reconfiguring the height or style of the tower to limit the visual impact.

***Traditional Cultural Properties.*** Depending on the location of the tower, long-term negligible to major direct and indirect adverse impacts would be expected. Because construction of new RF sites can involve substantial ground disturbance (grading and excavation), implementation of this alternative has the potential to both directly and indirectly impact TCPs. Direct impacts would occur if construction activity destroyed or damaged resources. Indirect impacts would occur if the construction of new RF sites intruded into the viewshed of this type of resource, or resulted in restricted access to significant resources.

As part of the process used to select new RF sites, the USCG would communicate with the appropriate SHPO/THPO, American Indian tribes, Native Hawaiian or Native Alaskan organizations, and other interested parties to determine whether the proposed RF site intersects or lies within the viewshed of any resource considered to have traditional, cultural, or religious significance to a particular group. Where possible, impacts could be avoided by selecting a new RF site that does not intersect or lie near this category of resource. If impacts cannot be avoided, the USCG can consult with the SHPO/THPO, American Indian tribes, Native Hawaiian or Native Alaskan organizations, and other interested parties to discuss ways to mitigate the impacts. Mitigation options to reduce the adverse visual impacts could include the range of options presented for mitigation of visual impacts on historic buildings, structures, or districts described above.

#### **4.7.3 Combination of Collocations and New Tower Builds Alternative**

***Archaeological Resources.*** Depending on the location of the tower, short-term and long-term, negligible to major adverse impacts would be expected. Because construction of new RF sites can involve substantial ground disturbance (grading and excavation), implementation of this alternative has the potential to impact either previously recorded or unrecorded archaeological resources within the RF site footprint, the access road, and any staging areas used for construction. Impacts can range from no impact, if archaeological resources are absent within the areas being disturbed; to short-term minor adverse, if the archaeological resources present within the areas being disturbed are either ephemeral in nature or have been previously disturbed; to long-term major adverse, if significant archaeological resources are present. Mitigation measures such as avoidance of archaeological resources, or archaeological monitoring during construction could reduce the level of adverse impacts on archaeological resources. Data recovery of archaeological resource information can mitigate the long-term impact of an action under NEPA; however, data recovery excavations have been determined to represent an adverse effect on historic properties under Section 106 of the NHPA because excavation inherently destroys the resource.

Once specific locations have been selected for the 50 new RF sites, the USCG will need to consult with the appropriate SHPO/THPO; regional information center; or affected American Indian, Native Hawaiian, or Native Alaskan groups in advance of construction to determine whether previously recorded archaeological resources exist within the construction APE or, if the construction APE has not been previously surveyed for archaeological resources, whether such a survey might be required in advance of construction.

Collocation of RF sites with existing towers, buildings, bridges, or other structures is not anticipated to involve ground disturbance except in previously disturbed land areas or existing utility easements. Therefore, no impacts on archaeological resources are anticipated at collocation sites, and no mitigation is warranted.

**Historic Buildings and Structures.** Depending on the location of the tower, long-term negligible to major adverse impacts would be expected. Placement of AIS equipment on existing buildings, bridges, or structures that are eligible for or listed on the NRHP has the potential to adversely impact this type of resource, either by damaging character-defining features of the property, or causing sufficient alteration to reduce the property's integrity. Impacts would range from minor to major, depending on the degree of damage or alteration, and would be long-term and adverse. If buildings, bridges, or structures that are eligible for or listed on the NRHP cannot be avoided, mitigation options to reduce adverse impacts include photo documentation of the affected property to HABS standards, or consultation with a historic architect and the SHPO to identify a means of attaching the AIS equipment that would limit damage to character-defining features or alterations to the property.

As noted in **Section 4.7.2**, construction of new RF sites would not have a direct impact on historic buildings, structures, or districts. Construction of a new RF site within the viewshed of a historic building, structure, or district could have an indirect impact, as the tower would visually affect the historic resource and its setting. For example, a tower constructed in a location where no physical features taller than the tower (e.g., mature trees or existing structures like water towers) are present would result in the introduction of an element not already present in the setting of the historic building, structure, or district. The degree to which the new RF site would have a visual effect on historic buildings, structures, or districts would depend upon the height of the tower in relation to the height of existing features, topography, vegetation, and existing visual clutter.

As part of the process used to select new RF sites, the USCG would consult with the SHPO and local historic commissions to determine whether the proposed RF site lies within the viewshed of any previously recorded or potential historic building, structure, or district. Where possible, impacts could be avoided by selecting a new RF site that is not within the viewshed of a historic building, structure, or district. If visual impacts cannot be avoided, the USCG can consult with the SHPO and local historic commissions to discuss ways to mitigate the impacts. Mitigation options might include emplacing vegetation between the RF site and the historic building, structure, or district to help provide a visual screen; documentation of the historic building, structure, or district per the standards outlined by the HABS; or reconfiguring the height or style of the tower to limit the visual impact.

**Traditional Cultural Properties.** Depending on the location of the tower, long-term negligible to major direct and indirect adverse impacts would be expected. As previously noted, construction of new RF sites has the potential to both directly and indirectly impact TCPs. Direct impacts would occur if construction activity destroyed or damaged resources within the construction APE. Indirect impacts would occur if the construction of new RF sites intruded into the viewshed of this type of resource, or resulted in restricted access to significant resources.

Collocation of AIS equipment on existing towers, buildings, bridges, or other structures would not have a visual impact on TCPs unless the building, bridge, or structure has no previous antenna equipment mounted on it. If the AIS equipment represents a new type of element in the viewshed, implementation of this alternative would have potential visual impacts on any TCPs in the vicinity of the collocated RF site.

As part of the process used to select new RF sites, the USCG would consult with the appropriate SHPO/THPO, American Indian tribes, Native Hawaiian or Native Alaskan organizations, and other interested parties, as appropriate, to determine whether the proposed RF site intersects or lies within the viewshed of any resource considered to have traditional, cultural, or religious significance to a particular group. Where possible, impacts could be avoided by selecting a new RF site that does not intersect or lie near this category of resource. If impacts cannot be avoided, the USCG can consult with the SHPO/THPO, American Indian tribes, Native Hawaiian or Native Alaskan organizations, and other interested parties discuss ways to mitigate the impacts. Mitigation options to reduce the adverse visual

impacts could include the range of options presented for mitigation of visual impacts on historic buildings, structures, or districts in **Section 4.7.2**.

#### **4.7.4 All Collocations Alternative**

**Archaeological Resources.** No impacts on archaeological resources would be expected at collocation sites, and no mitigation is warranted. Collocation of RF sites with existing towers, buildings, bridges, or other structures is not anticipated to involve ground disturbance except in previously disturbed land areas or existing utility easements.

**Historic Buildings and Structures.** Long-term negligible to moderate adverse impacts would be expected. Placement of AIS equipment on existing buildings, bridges, or structures that are eligible for or listed on the NRHP has the potential to adversely impact this type of resource, either by damaging character-defining features of the property, or causing sufficient alteration to reduce the property's integrity. Impacts would range from negligible to moderate, depending on the degree of damage or alteration, and would be long-term and adverse. If buildings, bridges, or structures that are eligible for or listed on the NRHP cannot be avoided, mitigation options to reduce adverse impacts include photo documentation of the affected property to HABS standards, or consultation with a historic architect and the SHPO to identify a means of attaching the AIS equipment that would limit damage to character-defining features or alterations to the property.

If the collocation involves mounting of AIS equipment on buildings or structures that have not previously hosted similar equipment, such that the AIS equipment represents a new visual element in the setting, implementation of this alternative could have impacts on the viewsheds of historic buildings, structures, or districts. If visual impacts cannot be avoided, the USCG can consult with the SHPO and local historic commissions to mitigate the impacts. Mitigation options might include planting vegetation between the RF site and the historic building, structure, or district to help provide a visual screen; documentation of the historic building, structure, or district per the standards outlined by the HABS; or reconfiguring the height or style of the tower to limit the visual impact.

**Traditional Cultural Properties.** Long-term negligible to minor indirect impacts would be expected. Collocation of AIS equipment on existing towers, buildings, bridges or other structures should not have a visual impact on this category of resource unless the building, bridge, or structure has no previous antenna equipment mounted on it. If the AIS equipment represents a new type of element in the viewshed, implementation of this alternative would have potential visual impacts on any TCPs in the vicinity of the collocated RF site.

As part of the process used to select new and collocated RF sites, the USCG would consult with the appropriate SHPO/THPO, American Indian tribes, Native Hawaiian or Native Alaskan organizations, and other interested parties, as appropriate, to determine whether the proposed RF site intersects or lies within the viewshed of any resource considered to have traditional, cultural, or religious significance to a particular group. Where possible, impacts could be avoided by selecting a new RF site that does not intersect or lie near this category of resource. If impacts cannot be avoided, the USCG can consult with the SHPO/THPO, American Indian tribes, Native Hawaiian or Native Alaskan organizations, and other interested parties to discuss ways to mitigate the impacts.

### **4.8 Visual Resources**

Depending on the alternative selected, shore-based RF sites could be placed within a variety of settings, including recreation areas; parks and preserves; commercial areas; or urban, suburban, or rural residential areas. The potential for impacts from collocation or construction of new RF sites is greater for some of

these types of settings than others, with the nature and extent of site-specific impacts being related to the degree to which the structures associated with the proposed action contrast with the features in the existing landscape. In general, because of the nature of the features at a typical RF site, the impacts on visual resources are likely to be greater in rural or natural settings than suburban, urban, or commercial settings, where towers and antennas are more common. The degree of impact might also be greater at a specific time of day. Features are generally more visible during the day, thereby causing greater impacts; however, if the RF tower has additional lighting at night to warn aircraft about the presence of the towers, impacts could be significant during nighttime hours as well.

Impacts on visual resources can also be short-term or long-term, depending on whether the impact is related to the construction activity rather than the feature being constructed. The Bureau of Land Management (BLM) has developed a set of thresholds to assess the significance of impacts on visual resources. While most RF sites would not be placed on land managed by the BLM, the thresholds provide useful criteria for this discussion (see **Table 4-3**).

**Table 4-3. Thresholds for Impacts on Visual Resources**

Description of Change	Impact
The Proposed Action would not change the existing environment.	No impact
The change to the existing environment would generally be overlooked by an observer.	Minor, not adverse
The change to the existing environment would not attract the attention of a casual observer; however, the change would be noticed if pointed out by another observer.	Minor, adverse
The change to the existing environment demands the attention of the casual observer or dominates the view such that it becomes the primary focus of the observer.	Significant, adverse

#### 4.8.1 No Action Alternative

Under the No Action Alternative, the USCG would not implement the NAIS project. No impacts on visual resources would be expected.

#### 4.8.2 All New Tower Builds Alternative

Short-term and long-term, minor to moderate impacts would be expected. There are several potential sources of impacts on visual resources under this alternative, including the clearing and grading of land for the RF site footprint, the construction of infrastructure necessary to install and operate the RF site (access road, utility corridor, and staging areas), and the construction of the RF site features (tower and equipment building). Permanent features that might create a permanent contrast with the existing environment would include the 150- to 200-foot tall tower, the access road, the fenced perimeter of the RF site, and the building housing the generator and electronics. If overhead transmission lines are required for power or communication (as opposed to buried lines), these lines would also represent a permanent feature.

As noted in the discussion of thresholds for impacts on visual resources, the short-term impacts on visual resources resulting from construction activities and the long-term impacts resulting from the placement of potentially contrasting visual features into the existing landscape can range from minor to major, and from nonadverse to adverse depending on the degree of contrast that the change represents relative to the

existing landscape. The USCG can avoid or minimize impacts on visual resources through selection of new RF sites that lie in areas with substantial existing visual clutter (such as commercial areas) and that have existing roads and utility corridors that could be used to service the site. Other methods of mitigation might include use of vegetation screening or differences in topography to reduce the visual contrast of the permanent features at the RF site. The locations of new RF sites could also be consolidated with other contrasting visual elements (e.g., existing utility towers, water towers, cell phone towers) to reduce visual sprawl and disturbance related to nighttime lighting, or designing the features of the towers to blend more effectively with the forms and lines found in the existing landscape (for example, painting towers, fences, or concrete foundations with earth-tone paint or stain to reduce contrasts, or using rustic designs and native materials).

### **4.8.3 Combination of Collocations and New Tower Builds Alternative**

Short-term and long-term, minor to moderate impacts would be expected. Under this alternative, impacts on visual resources can range from short-term minor impacts related to construction of new RF sites to long-term minor to moderate impacts related to the placement of new permanent features within the existing landscape. The impacts on visual resources resulting from collocations are more likely to be minor, particularly if the AIS equipment is mounted on an existing tower, as the AIS equipment would be placed on an existing feature in the landscape. Placement of AIS equipment on other buildings or structures might be more intrusive, with impacts ranging from minor and nonadverse if the building or structure already hosts similar antenna equipment, to minor and adverse if the building has no previous antennas.

The potential impacts on visual resources resulting from construction of new RF sites are presented in **Section 4.8.2**. The short-term impacts on visual resources resulting from construction activities and the long-term impacts resulting from the placement of potentially contrasting visual features into the existing landscape can range from minor to major, and from nonadverse to adverse depending on the degree of contrast that the change represents relative to the existing landscape. The USCG can avoid or minimize impacts on visual resources through selection of new RF sites that lie in areas with substantial existing visual clutter (such as commercial areas) and that have existing roads and utility corridors that could be used to service the site. Other methods of mitigation might include use of vegetation screening or differences in topography to reduce the visual contrast of the permanent features at the RF site. The locations of new RF sites could also be consolidated with other contrasting visual elements (e.g., existing utility towers, water towers, cell phone towers) to reduce visual sprawl and disturbance related to nighttime lighting, or designing the features of the towers to blend more effectively with the forms and lines found in the existing landscape (for example, painting towers, fences, or concrete foundations with earth-tone paint or stain to reduce contrasts, or using rustic designs and native materials).

### **4.8.4 All Collocations Alternative**

Long-term negligible to minor adverse impacts would be expected. Under this alternative, impacts on visual resources would be the same as those discussed in **Section 4.8.3** for the 300 collocated RF sites. The impacts on visual resources resulting from collocation are likely to be negligible, particularly if the AIS equipment is mounted on an existing tower, as the AIS equipment would be placed on an existing feature in the landscape. Placement of AIS equipment on other buildings or structures might be more intrusive, with impacts ranging from minor and nonadverse if the building or structure already hosts similar antenna equipment, to minor and adverse if the building has no previous antennas. Mitigation to reduce impacts would involve avoidance of collocation sites that do not have previous antenna arrays, or selection of collocation sites that are in areas with substantial previous visual clutter.

## 4.9 Land Use

The significance of potential land use impacts is based on the level of land use sensitivity in areas affected by a proposed action and compatibility of proposed actions with existing conditions. As discussed in **Section 3.10**, this PEIS evaluates general land use categories that include agricultural lands, low-density residential areas, medium- to high-density residential areas, commercial and industrial areas, and military installations. Land use categories of particular concern in this assessment include recreation, CZM-sensitive areas, and coastal barriers. Due to the potential for impacts associated with tower structures they are assessed as separate subcategories.

**General Land Use Categories.** In general, a land use impact would be significant if it were to

- Be inconsistent or not compliant with existing land use plans or policies
- Preclude the viability of existing land use
- Preclude continued use or occupation of an area
- Be incompatible with adjacent land use to the extent that public health or safety is threatened, or would lead to the violation of a Federal law or regulation
- Conflict with planning criteria established to ensure the safety and protection of human life, property, or resources.

The potential impacts on general land use categories would depend on the context and intensity of disturbance. The potential of impacts to residential, commercial, and industrial land use types would vary based on the level of disturbances to adjacent areas and compliance with local zoning laws and ordinances.

**Recreation.** A proposed action would result in significant impacts on recreation if it does one or more of the following:

- Interferes with access to coastal recreational shorelines or waterways
- Leads to substantial loss or displacement of an important recreational resource, such as impairment of recreational fishing activities and other water-dependent uses
- Leads to substantial degradation of recreational values
- Alters or impairs scenic quality, or aesthetic value not consistent with applicable zoning laws or regulations associated with recreation resources.

**Coastal Zone Management.** Activities conducted within the coastal zone are required to be consistent with the enforceable policies and mechanisms of the state or U.S. territory CZM program. Section 307 of the CZMA, as amended, requires that proposed Federal activities affecting a state or territory's coastal zone be consistent, to the maximum extent practicable, with the federally approved CZM program. Compliance with relevant state and Federal regulatory programs constitutes consistency with the policies of a state or territory CZM program. A proposed action would result in significant impacts on CZM if it is found to be inconsistent with a state or U.S. territory CZM program and potential adverse impacts could not be mitigated through coordination with the state or U.S. territory CZM program.

**Coastal Barriers.** A proposed action would result in significant impacts on coastal barriers if it is located within a CBRIS unit and potential adverse impacts could not be mitigated through coordination with the USFWS.

### 4.9.1 No Action Alternative

Under the No Action Alternative, the USCG would not implement the NAIS project. There would be no changes in land use under the No Action Alternative and therefore no impacts on land use in general, or on recreation, CZM, or coastal barriers.

### 4.9.2 All New Tower Builds Alternative

**General Land Use Categories.** Under this alternative, placement of a RF tower could require the USCG to obtain a permit or zoning variance based on local height restrictions and ordinances. Short-term adverse impacts would occur from construction and use of staging areas during the 6-week construction period for each new RF tower. Impacts on land use would vary depending on the length of time the tower would exist and the land use of adjacent properties.

Short-term minor adverse impacts on agricultural lands and low-density residential areas would be expected. Prime farmlands and potential impacts are discussed in **Section 4.4**. The severity of the impact would vary depending on the need for rezoning to accommodate the tower. Location of an RF tower in agricultural areas could also require a service road which would have short-term and long-term minor adverse impacts on land use from construction and creation of the road. Rural communities are beginning to resist communication towers as more are being constructed (USCG 1998). It should be noted that proliferation of cell phone towers and antennae have prompted rural locations to make more restrictions governing the installation of communication towers (USCG 1998). On the other hand, agricultural and low-density residential lands typically have less governing restrictions for growth and development.

Long-term minor adverse impacts on medium- to high-density residential areas would be expected if the towers are not compatible with existing and future land use zoning. USCG-owned property is exempted from local zoning laws. However, to maintain compatibility with existing zoning laws, the USCG would adhere to local zoning laws and ordinances to lessen impacts on land use conditions of areas affected. Impacts on residential areas could include incompatibility between adjacent land uses and conflicts with existing land use laws. Areas of medium to high density will have the most restrictions governing growth and placement of an RF tower. For example, height restrictions in an area could limit the placement of an RF tower in a particular medium- to high-density area. Future development of land use plans and changes in land use laws that govern an area could be incompatible with actual existing land uses and, therefore, could lead to adverse impacts on land use.

Long-term negligible adverse impacts would be expected on commercial and industrial lands. The impacts would be negligible because towers are generally compatible with commercial and industrial structures, the density of development, and local zoning for these types of lands.

Short-term and long-term minor adverse impacts would be expected on military lands. The placement of an RF tower on an installation could have minor long-term impacts on the installation if land use was altered to accommodate a new RF tower. Impacts would vary based on the location of the tower.

**Recreation.** There are several potential sources of long-term minor adverse impacts on recreational areas under this alternative, including the clearing and grading of land for the RF site footprint, the construction of infrastructure necessary to install and operate the RF site (access road, utility corridor, and staging areas), and the construction of the RF site features (tower and equipment building). The USCG can avoid or minimize impacts on recreation through selection of new RF sites that are not used for recreational areas or are not located near recreational areas. The USCG would avoid, to the extent practicable, public parks, recreation lands, or wildlife and waterfowl refuges.



**Coastal Zone Management.** Long-term minor adverse impacts would be expected. In accordance with the CZMA and COMDTINST M16475.1D, the USCG is required to carry out a proposed project in accordance with a state or U.S. territory's approved CZM plan if a project is within a designated CZM area. The USCG will need to determine if each NAIS shore-based RF equipment site is within the jurisdiction of a state or U.S. territory CZM program as the USCG determines where such equipment would be located. Proper coordination with the applicable state or U.S. territory CZM program will occur at that time. Depending on the specific CZM plan, the installation of a new shore-based RF tower would most likely require a consistency determination to ensure that the proposed activity would be consistent with the CZM plan. Each site-specific NEPA document will include information concerning the CZM plan consistency of the new shore-based RF tower and mitigation measures, as appropriate.

**Coastal Barriers.** Long-term minor adverse impacts would be expected. The likelihood exists that siting of NAIS shore-based RF equipment would be within the CBRS. Although CBRA prohibits most Federal spending in designated CBRS units, the construction, operation, maintenance, and rehabilitation of USCG facilities is exempt from this provision under 16 U.S.C. 3505. This exempted status is not applicable to the acquisition of land within the CBRS. Once the USCG determines where the proposed NAIS shore-based RF equipment sites would be located, proper coordination with the USFWS will be conducted, as necessary, to determine if the sites are within CBRS units and to take the necessary actions to comply with the CBRA.

### 4.9.3 Combination of Collocations and New Tower Builds Alternative

**General Land Use Categories.** Collocating AIS equipment on existing structures allows land uses to remain the same and compatible with existing zoning laws. This alternative offers fewer impacts on land use by helping to avoid sensitive land use areas that could otherwise be used under the All New Tower Builds Alternative.

There would be negligible impacts associated with this alternative on agricultural and residential land from collocation. However newly sited RF towers under this alternative have associated long-term adverse impacts.

Commercial and industrial areas are optimal sites for newly sited RF towers and collocation. No long-term impacts are associated with collocation or new RF towers for these types of land use categories. Commercial and industrial areas are zoned for these types of use and land use would not change through collocation.

Short-term and long-term minor adverse impacts would be expected on military lands. The placement of an RF tower on an installation could have minor long-term impacts on the installation if land use was altered to accommodate a new RF tower. Impacts would vary based on the location of the tower. No impacts would be expected from collocations on military lands.

**Recreation.** Under this alternative, impacts on recreational areas could range from short-term minor impacts related to construction of new RF sites to long-term minor impacts related to the placement of new permanent features within recreational areas. The impacts on recreation resulting from collocations are more likely to be minor, particularly if the AIS equipment is mounted on an existing tower, which would require no additional land area. The short-term impacts on recreational areas resulting from construction activities and the long-term impacts resulting from the placement of RF sites in recreational areas are discussed in **Section 4.8.2**.

**Coastal Zone Management.** Long-term minor adverse impacts might be expected for new tower builds as described in **Section 4.8.2**. No impacts would be expected for collocations.

**Coastal Barriers.** Long-term minor adverse impacts might be expected for new tower builds as described in **Section 4.8.2**. No impacts would be expected for collocations.

#### **4.9.4 All Collocations Alternative**

**General Land Use Categories.** Under this alternative all the RF sites would be collocated on existing structures. AIS equipment would be mounted on existing towers, bridges, or buildings. Although the extent of renovations required to implement this alternative would vary depending upon the suitability of the existing site and the extent of modifications needed, no additional land would be required to implement this alternative.

**Recreation.** Since the area of land available for recreational purposes would be unaffected, collocating the 450 RF sites would have no long-term impact on recreation resources and no mitigation would be warranted.

**Coastal Zone Management.** No impacts would be expected.

**Coastal Barriers.** No impacts would be expected.

#### **4.10 Infrastructure**

Impacts on infrastructure are evaluated based on their potential for disruption or improvement of existing levels of service and additional needs for energy consumption and transportation patterns and circulation. Impacts might arise from physical changes to circulation, construction activities, introduction of construction-related traffic on local roads or changes in daily or peak-hour traffic volumes, and energy needs created by either direct or indirect workforce and population changes related to implementation activities. In considering the basis for evaluating the significance of impacts on solid waste, several items are considered. These items include evaluating the degree to which the proposed implementation of the NAIS project could affect the existing solid waste management and capacity landfill. An effect might be considered adverse if a proposed action exceeded the capacity of a utility.

##### **4.10.1 No Action Alternative**

Under the No Action Alternative, the USCG would not implement the NAIS project. No collocated or newly built shore-based RF sites would be established. No impacts on infrastructure would be expected.

##### **4.10.2 All New Tower Builds Alternative**

**Utilities.** For those areas in undeveloped settings proposed for construction of a new NAIS shore-based RF tower, more extensive construction activities could be required to access available electric and communication services. For the purpose of this analysis, it is assumed that each site could require up to 2 miles of trenching to access required utilities.

Short-term minor adverse impacts on utility quality and availability is anticipated unless construction, excavation, or maintenance activities result in actual damage to a utility system or installation of a utility requires an interruption of surrounding service. Care would be taken to avoid existing utility lines and the USCG would coordinate with local and regional utility service providers to avoid unnecessary damage or interruptions.

**Solid Waste.** No impacts would be expected. Normal operation of an RF site requires no solid waste collection and disposal services. However, it is probable that some amount of waste would be generated

during construction activities that would require disposal. Short-term minor adverse impacts would result from C&D waste produced during construction. Solid waste generated from the proposed construction activities would consist of building materials such as solid pieces of concrete, metals (conduit, piping, and wiring), and lumber. Contractors would be required to recycle C&D waste to the greatest extent possible as part of USCG policy, and any recycled C&D waste would be diverted from landfills. Normal operations of the shore-based RF sites would not require solid waste collection and disposal services. The amount of waste generated would not cause a significant impact on local or regional solid waste management resources.

**Transportation Network.** Construction of facilities and access roads could result in short-term impacts on local or regional roadway traffic. Such impacts might include road closures or delays resulting from the movement of construction equipment and vehicles. In the event there is the potential for adverse impacts that significantly affect the environment, the USCG would endeavor to eliminate or reduce impacts by implementing the following measures: storing construction vehicles and equipment onsite during construction, posting appropriate signage on affected roadways, and providing timely notification of potential roadway closures to area residents.

Generally, traffic levels on rural roads are relatively low (i.e., little or no congestion). Since RF sites are not continually occupied and maintenance-related visits are infrequent and involve a small number of people, vehicular traffic into and out of any existing site associated with this project would be minimal. Minimal traffic would also be expected at potential unused or undeveloped sites. It is anticipated that the operation and maintenance of the RF sites would not result in significant impacts on transportation and circulation. In addition, BMPs such as dust suppression, erosion control, and soil compaction would be used during new road construction activities to reduce any potential impacts.

#### **4.10.3 Combination of Collocations and New Tower Builds Alternative**

**Utilities.** Short-term minor adverse impacts would be expected for new tower builds as described in **Section 4.11.2**. No impacts would be expected for collocations.

**Solid Waste.** The Combination of Collocations and New Tower Builds Alternative would have similar impacts on solid waste as those described in **Section 4.11.2**.

**Transportation Network.** The Combination of Collocations and New Tower Builds Alternative would have similar impacts on transportation as those described in **Section 4.11.2**. However, for those areas where collocation would occur, existing transportation networks would already be in place and little to no new access road would be needed.

#### **4.10.4 All Collocations Alternative**

**Utilities.** No impacts would be expected under this alternative.

**Solid Waste.** The All Collocations Alternative would have similar impacts on solid waste as those described in **Section 4.11.2**.

**Transportation Network.** The All Collocations Alternative would have similar impacts on transportation as those described in **Section 4.11.2**. However, existing transportation networks would already be in place and little to no new access road would be needed.

## 4.11 Hazardous Substances

Impacts on hazardous materials and waste management would be considered significant if a Federal action resulted in noncompliance with applicable Federal and USCG regulations, or increased the amounts generated or procured beyond current USCG waste management procedures and capacities. Impacts on pollution prevention would be considered significant if the Federal action resulted in worker, resident, or visitor exposure to these materials, or if the action generated quantities of these materials beyond the capability of current management procedures.

### 4.11.1 No Action Alternative

Under the No Action Alternative, the USCG would not implement the NAIS project. No collocated or newly built shore-based RF sites would be established. No impacts would be expected.

### 4.11.2 All New Towers Build Alternative

No adverse impacts would be expected. It is anticipated that the All New Towers Build Alternative would not generate a substantial amount of hazardous materials and waste as a result of construction activities and operation of the NAIS complex.

**Hazardous Materials.** Relevant hazardous materials would include batteries, paint, diesel fuel, and oil. Products containing hazardous materials would be procured and used during the proposed construction. It is anticipated that the quantity of products containing hazardous materials used during construction would be minimal and their use would be of short duration. Contractors would be responsible for the management of hazardous materials, which would be handled in accordance with Federal and state regulations. Therefore, no adverse impacts from hazardous materials usage would be expected.

**Hazardous Waste.** It is anticipated that the quantity of hazardous wastes generated from proposed construction and operational activities would be negligible. During the operation of the NAIS complexes, standard maintenance would occur. This would include routine maintenance and upkeep of the site (e.g., repairing and replacement of system components) so that mission and operational requirements are met. Routine maintenance would include servicing, cleaning, and repairing electronic equipment within the prefabricated shelter or on the tower itself. In addition, regular maintenance of the backup generators would require changing oil and filters. Contractors would be responsible for the transportation and disposal of hazardous wastes, which would be handled in accordance with Federal and state regulations. Therefore, no adverse impacts from transport, storage, and disposal of hazardous wastes would be expected.

**Asbestos and Lead-Based Paint.** Specifications for the proposed construction activities and USCG regulations prohibit the use of ACM and LBP for new construction. Therefore, no ACM or LBP would be encountered and no adverse impacts would be expected.

### 4.11.3 Combination of Collocations and New Tower Builds Alternative

No adverse impacts would be expected. The Combination of Collocations and New Tower Builds Alternative would have similar impacts as those described in **Section 4.12.2**. However, under the Combination of Collocations and New Tower Builds Alternative, structures scheduled for renovation to add NAIS components could contain ACM and LBP. Therefore, these facilities will need to be surveyed by the contractor for LBP and ACM prior to commencing these activities. Sampling for ACM and LBP

would occur prior to renovation activities and would be handled in accordance with USEPA and USCG policies.

#### **4.11.4 All Collocations Alternative**

No adverse impacts would be expected. The All Collocations Alternative would have similar impacts as those described in **Section 4.12.2**. However, under the All Collocations Alternative, structures scheduled for renovation to add NAIS components could contain ACM and LBP. Therefore, these facilities will need to be surveyed by the contractor for LBP and ACM prior to commencing these activities. Sampling for ACM and LBP would occur prior to renovation activities and would be handled in accordance with the USEPA and USCG policies.

### **4.12 Socioeconomics and Environmental Justice**

Construction expenditure impacts are assessed in terms of direct impacts on the local economy (i.e., hiring of construction workers) and indirect impacts (i.e., purchase of goods and services, personal spending by construction workers). The magnitude of potential impacts can vary greatly, depending on the location of a proposed action. For example, implementation of an action that creates 10 employment positions might go unnoticed in an urban area, but could have considerable impacts in a rural region. The Proposed Action could have a significant effect with respect to the socioeconomic conditions in the surrounding area if it were to

- Change the local business volume, employment, personal income, or population that exceeds the areas's historical annual change
- Adversely affect social services or social conditions, including property values, school enrollment, county or municipal expenditures, or crime rates
- Disproportionately impact minority populations or low-income populations.

#### **4.12.1 No Action Alternative**

Under the No Action Alternative, the USCG would not implement the NAIS project. No collocated or newly built shore-based RF sites would be established. No impacts on socioeconomics or environmental justice would be expected.

#### **4.12.2 All New Tower Builds Alternative**

**Socioeconomics.** Long-term negligible to minor adverse impacts would be expected. Under the All New Tower Builds Alternative, no significant impacts on socioeconomic resources would be anticipated. Under this alternative, new construction expenditures for the shore-based RF sites would have up-front costs of an estimated \$805,000 per site. While these costs are significant on a nationwide, programmatic level, the construction of new towers is expected to be dispersed around the country so no single area would see the construction of multiple towers. Construction costs from tower construction would be slightly higher in rural areas because construction workers and material would have to travel farther, and might have higher indirect costs (e.g., temporary housing). Overall, the impacts on local economics would be negligible because of low cumulative construction costs and the short, 6-week construction timeline. These costs would have minimal impacts on local employment and the local economy. Placement of a tower is unlikely to change an area's population or population trends.

Construction of towers in medium- to high-density residential areas might have long-term minor adverse impacts based on reduced property values and reduced public safety from accidents associated with the

individual tower. Concerns over property value and safety in residential areas should be anticipated under this alternative. However, the USCG would have some flexibility in the exact siting of NAIS towers.

**Environmental Justice.** No impacts would be expected. The potential for impacts on minority and low-income populations is based on the evaluation of specific site characteristics. Except in situations where a tower is placed in areas with a disproportionate percentage of low-income or minority populations, no adverse impacts on environmental justice would be expected.

### **4.12.3 Combination of Collocations and New Tower Builds Alternative**

**Socioeconomics.** Impacts on Socioeconomics under this alternative would be the same as described in **Section 4.12.2**. Under the Collocations and New Tower Builds Alternative, no significant impacts on socioeconomic resources would be anticipated. Expenditures would be less than the All New Tower Builds Alternative because a majority of the sites would be collocated with lower up front construction costs than building all new towers. While these costs are significant on a nationwide, programmatic level, the construction costs of new towers under this alternative would be low and highly dispersed around the country. Socioeconomic impacts from the construction of an individual tower would be the same as under the All New Tower Builds Alternative. Overall, the impacts would be negligible because of low cumulative construction costs and the short, 6-week construction timeline. These costs would have minimal impacts on local employment and the local economy.

**Environmental Justice.** Impacts on Environmental Justice under this alternative would be the same as described in **Section 4.12.2**.

### **4.12.4 All Collocations Alternative**

**Socioeconomics.** Under this alternative the USCG would collocate all AIS equipment on existing structures. The impacts on socioeconomics and environmental justice under this alternative would be negligible and would be from the very short installation timeframe, space leasing costs, and periodic maintenance costs. There would be no expenditures that would have more than a negligible effect on economic indicators in areas.

**Environmental Justice.** Impacts on Environmental Justice under this alternative would be the same as described in **Section 4.12.2**.

## **4.13 Human Health and Safety**

If implementation of the proposed project were to substantially increase risks associated with the safety of construction personnel, contractors, or the local community, or substantially hinder the ability to respond to an emergency, it would represent a significant impact. Impacts were assessed based on the potential impacts of construction and operational activities.

### **4.13.1 No Action Alternative**

Under the No Action Alternative, the USCG would not implement the NAIS project. No collocated or newly built shore-based RF sites would be established. Therefore, the No Action Alternative would have no adverse impact on public safety although the beneficial impacts gained by implementation of the Proposed Action would not be realized.

### 4.13.2 All New Tower Builds Alternative

Short-term minor adverse impacts would be expected during construction projects associated with the All New Tower Builds Alternative. Implementation of the All New Tower Builds Alternative would slightly increase the short-term risk associated with construction contractors performing work at the chosen project sites during the normal workday because the level of such activity would increase. Contractors would be required to establish and maintain safety programs. The construction of the proposed shore-based RF site and access road would not pose a safety risk to other personnel or to activities within the vicinity of the chosen project area. Work areas surrounding construction activities would be fenced and appropriate signs posted to further reduce safety risks to the public. No impacts regarding fire hazards or public safety would be expected to occur within the vicinity of the construction areas.

The proposed operating power of the radio transmitters at an NAIS site would be a maximum of 50 watts, with frequencies ranging from approximately 156 to 414 MHz. Based on this operating power, it is reasonable to assume that the potential for harmful exposure to RF radiation would be extremely low. In addition, the change in broadcast frequencies resulting from the technology upgrades would not significantly affect the safety factor. At each tower, only two of the four antennas would transmit signals; the other two antennas would receive signals, and receiving signals poses no exposure risk. The transmitters would not operate continuously; they would only generate radio waves while being used to communicate with vessels. The risk of exposure is further minimized by the fact that the towers would be between 150 and 200 feet tall. The distance between the antennas and human populations would be too great to present a significant exposure risk. There is currently no research that proves that harmful biological impacts can result from exposure to low-level RF radiation (FCC 1999). A significant impact could occur if exposure limits to the occupational or general population exceeded the maximum PELs; however, the USCG would design the towers and would implement safety measures to ensure that exposure limits are not exceeded. To protect maintenance workers, NAIS tower sites would be temporarily shut down during maintenance activities that would occur immediately next to an antenna. In addition, the proposed communication towers would meet guidelines set forth in USCG COMDTINST M10550.25A, *Electronics Manual*.

The data provided by implementation of the proposed NAIS project would support all of the nation's maritime interests—from the safety of ports through collision avoidance, to the safety of the nation through detection and classification of vessels when they are still thousands of miles offshore. Long-term beneficial impacts on public safety (reduced loss of human life and property) from an operating NAIS and the avoidance of a terrorist attack would be expected. The following public safety benefits would also be expected.

**Navigation Safety.** Data available through implementation of the proposed NAIS project would be used to enhance navigation safety through its use in support of vessel traffic management, mobility, and AtoN missions. NAIS would increase situational awareness and optimize vessel traffic flow by identifying vessels and their intentions, assisting in target tracking, simplifying the exchange of navigation information, and providing additional pertinent information to assist in collision avoidance and voyage planning, such as local navigation warnings, AtoN outages, and emergency chart corrections.

The data from NAIS would also be used to analyze and assess navigational requirements or improvements that might be necessary for navigational safety, mobility, and AtoN management. Benefits from such monitoring and analysis include more effective ships routing, waterway management, port and harbor planning, and increased safety-related information exchange.

If implemented, NAIS would have the ability to provide vessel traffic management services beyond those currently existing in locations outside of VTS areas. This would include tracking and communications

capability required to manage vessel movements during an emergency or high-density traffic situation. It could also include monitoring of compliance with existing vessel traffic management regulations, such as vessel routing schemes, regulated navigation areas, mandatory ship reporting systems, safety and security zones, transits of high-value assets, management of marine events, and regattas, and other such requirements (USCG 2006).

***Vessel Movement Anomaly Detection.*** NAIS data would be provided to systems that perform analyses to identify anomalies in the behavior of tracked vessels (e.g., erratic course/speed, loitering, estimated time of arrival, or sailing plan deviations, apparent disabling of the AIS transceiver). AIS information will be used for all maritime security purposes including enforcement of security zones, protection of critical assets and infrastructure, and other risk-reduction measures. NAIS capability would be used to monitor the normal movement of AIS-equipped vessel traffic to better identify anomalies and to monitor the location and movement of vessels of particular interest, including those which might present a threat as well as high-value vessels that might be threatened (USCG 2006).

***Correlation of AIS Data with Other Information.*** AIS data will be correlated with information received by other means and contained in other systems to provide operational commanders with complete MDA information. AIS data would be provided to appropriate systems to be automatically correlated with data such as watch lists, cargo data, or other data sets for the detection of vessels of interest for law enforcement, counterterrorism, or other operations (USCG 2006).

***SAR Operations.*** NAIS data would be used for SAR operations. During a distress, it is often necessary to coordinate a response with private vessels that are in the vicinity of the incident. With the use of AIS tracking data, SAR coordinators can more easily identify, communicate, plan, and work with other responding vessels to prosecute a SAR response. AIS-equipped vessels in distress in an area of AIS coverage would be easier to locate and identify through the capabilities provided by NAIS (USCG 2006).

***Transmission of Standard AIS Messages.*** The USCG would have the ability to transmit standard AIS messages, including safety- and security-related text messages to AIS-equipped vessels in specific areas. Appropriate commands would have the ability to send a variety of messaging, such as sending individual messages to specific vessels or periodic or repeated messages to all ships in a geographic area, including interrogation and assignment messages (USCG 2006).

***Maritime Incident Investigation.*** NAIS data would be used to investigate maritime incidents (such as collisions, grounding, criminal acts, and environmental accidents) by providing a detailed record of the actual event. This could also include previous transits over a period of years of the vessel or vessels involved in the incident (USCG 2006).

### **4.13.3 Combination of Collocations and New Tower Builds Alternative**

The Combination of Collocations and New Tower Builds Alternative would have similar impacts on safety as those described in **Section 4.13.1**. Collocation facilities would already house communication towers which transmit radio waves. Current RF radiation associated with the ongoing missions at collocated facilities would continue at existing levels. It is anticipated that the proposed NAIS towers would not substantially increase RF radiation at collocated facilities.

The public safety benefits of NAIS are described in **Section 4.13.2**.



#### **4.13.4 All Collocations Alternative**

The All Collocations Alternative would have similar impacts on safety as those described in **Section 4.13.1**. However, under the Combination of Collocations and New Tower Builds Alternative, NAIS sites would be constructed on property which would likely already house communication towers which transmit radio waves. Current RF radiation associated with the ongoing mission at collocated facilities would continue at existing levels. It is anticipated that the proposed NAIS sites would not substantially increase RF radiation at collocated facilities.

The public safety benefits of NAIS are described in **Section 4.13.2**.

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