



National Aeronautics and  
Space Administration

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# ENVIRONMENTAL ASSESSMENT FOR NEW PASS AND IDENTIFICATION STATION



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November 2005

**ENVIRONMENTAL ASSESSMENT  
FOR  
REPLACEMENT PASS AND IDENTIFICATION STATION  
Kennedy Space Center, Florida**

**Responsible Federal Agency:**  
National Aeronautics and Space Administration (NASA)

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**Date: November 2005**

**Abstract**

This Environmental Assessment (EA) addresses the proposed action to construct a replacement facility for the existing Pass and Identification Station (M3-2). The proposed facility would house security contractor and NASA badging personnel and Visitor Records Center (VRC) personnel. The facility would replace the existing PIDS located approximately 4 miles west. The proposed facility would be used by visitors to obtain badging to enter the secured areas of Kennedy Space Center (KSC) as well as commercial transportation vehicle inspections. Relocating the PIDS to this site would allow for closer proximity to the existing security gate on NASA Causeway. The project site would cover 4 acres of land that is currently abandoned citrus groves. There would be no wetland impacts other than ditch and canal crossings for access roads.

One alternative location for the construction was evaluated plus a second No Action alternative to determine the extent of environmental impacts to KSC.

## EXECUTIVE SUMMARY

This Environmental Assessment (EA) addresses the proposed action to construct the new Pass and Identification Station (PIDS) at the southeast corner of NASA Causeway west and Range Road. The new facility would replace the old Pass and ID Station (M3-2) located at the western terminus of NASA Causeway West, approximately 4 miles east of the proposed location. In addition, this new PIDS would combine the existing Visitors Record Center (VRC) from NASA Headquarters building and the records center to this new facility. This would allow for the combined use of this facility by both security offices. In addition, the proposed facility would include adequate parking for commercial transportation vehicles for proper security inspections which are now being conducted at the security gates.

Two alternatives to the proposed action were evaluated to determine the extent of impacts to the environment at KSC. One alternative placed the new facility at the southeast corner of NASA Causeway and Space Commerce Way, approximately one mile west of the Proposed Action. The other alternative (the No Action Alternative) was to not build the new facility, and leave the existing facility, and two badging offices where they are today.

This document describes those portions of the KSC environment, which relate to each of the alternatives. Issues associated with thos project that were identified were transportation, utilities, air quality, noise, surface water quality, and land use.

The results of this assessment indicate that minimal environmental impacts are expected at the Proposed Action site. The impacts are to transportation due to development of a new access road to the PIDS; increased loads to existing utilities; air quality due to land clearing, vegetation removal, heavy equipment operation, and increased traffic; noise impacts from construction and operation, surface water impacts due to site preparation and construction of the roadway and stormwater system; land use impacts changing abandoned citrus grove to industrial land use. There are minor impacts to transportation expected once the new roadway is in operation. This is due to the need for traffic signalization along NASA Causeway to allow for vehicle ingress and egress from the site. Minor impacts are also expected to soils due to alteration and compaction of soils for road stabilization and construction. No impacts are expected to cultural resources, geology, or groundwater. The proposed site would be removed from management of the Fish and Wildlife Service, and turned over to NASA management.

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**List of Abbreviations and Acronyms**

AC	Acres
BMPs	Best Management Practices
CCAFS	Cape Canaveral Air Force Station
CNS	Canaveral National Seashore
CO	carbon monoxide
COE	Army Corps of Engineers
dBA	decibels, weighted to the A-scale
EA	Environmental Assessment
EO	Executive Order
EPA	Environmental Protection Agency
FCREPA	Florida Committee on Rare and Endangered Plants and Animals
FPL	Florida Power and Light
ft	feet
ft <sup>2</sup>	square feet
gal	gallons
gsf	gross square feet
ha	hectares
ISS	International Space Station
in	inch
kg	kilogram
km	kilometers
KSC	Kennedy Space Center
kVA	kilovolt/amps
L	liters
m	meters
m <sup>2</sup>	square meters
mgd	million gallons per day
mg/l	milligrams per liter
mi	miles
MINWR	Merritt Island National Wildlife Refuge
mLd	million liters per day
MMPA	Marine Mammal Protection Act
N/A	Not Applicable
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NGVD	National Geodetic Vertical Datum
NHPA	National Historical Preservation Act
NMI	NASA Management Instruction
NO <sub>2</sub>	nitrogen dioxide
NPS	National Park Service
O&C	Operations and Checkout

**List of Abbreviations and Acronyms  
(continued)**

O <sub>3</sub>	ozone
OFW	Outstanding Florida Waters
OSHA	Occupational Safety and Health Administration
PIDS	Pass and Identification Station
PAMS	Permanent Air Monitoring System
SCW	Space Commerce Way
SO <sub>2</sub>	sulfur dioxide
STS	Space Transportation System
STP	Sewage Treatment Plant
U.S.	United States
USFWS	U.S. Fish and Wildlife Service
VAB	Vehicle Assembly Building

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## **1.0 PURPOSE AND NEED FOR ACTION**

### **1.1 Purpose**

The purpose of the proposed action is to construct a new Pass and Identification Station (PIDS) with associated parking and access drive at the southeast corner of NASA Causeway and Range Road. The new facility would combine the functions of the Visitors Records Center (VRC) and the Security Badging personnel in a new more modern and efficient facility. The proposed location and facility would provide for visitor badging and commercial transportation vehicle inspections (Figure 1).

### **1.2 Need for Action**

As part of KSC's upgrades to old facilities, the need for a more efficient and modern PIDS was identified. The existing PIDS is located approximately 4 miles west of the proposed location (Figure 3).

A new badging office would enhance physical security features in proximity to the new perimeter gates and would provide more efficient utilization of contractor badging support personnel by combining personnel in two locations into one, and reduce travel time for KSC personnel escorting visitors. In addition, this new facility would provide for a needed area for commercial vehicle inspection. This would enhance security operations and provide a dedicated area for this activity that would reduce traffic impacts at the new security gates.

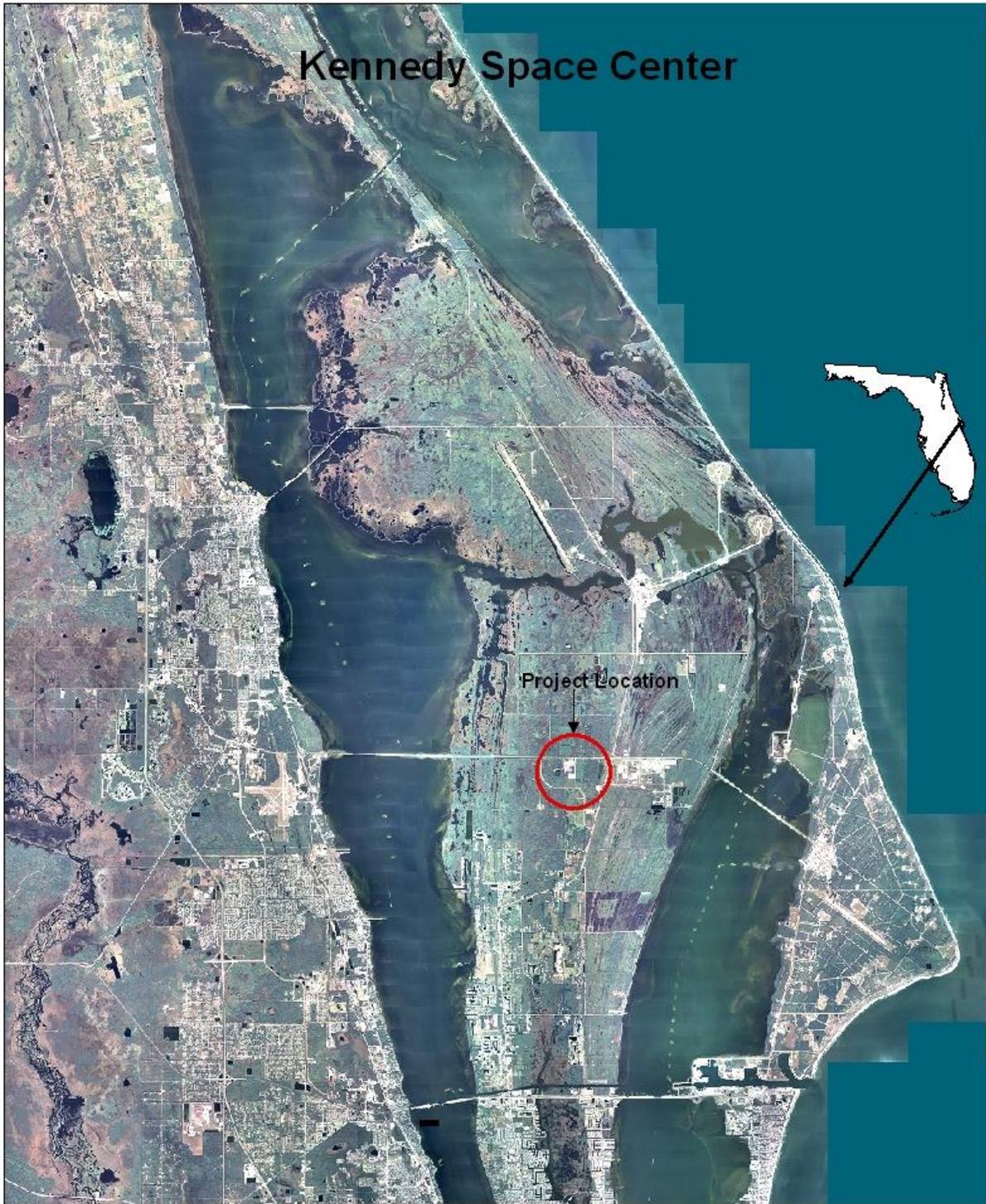
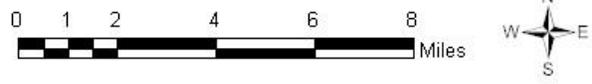


Figure 1



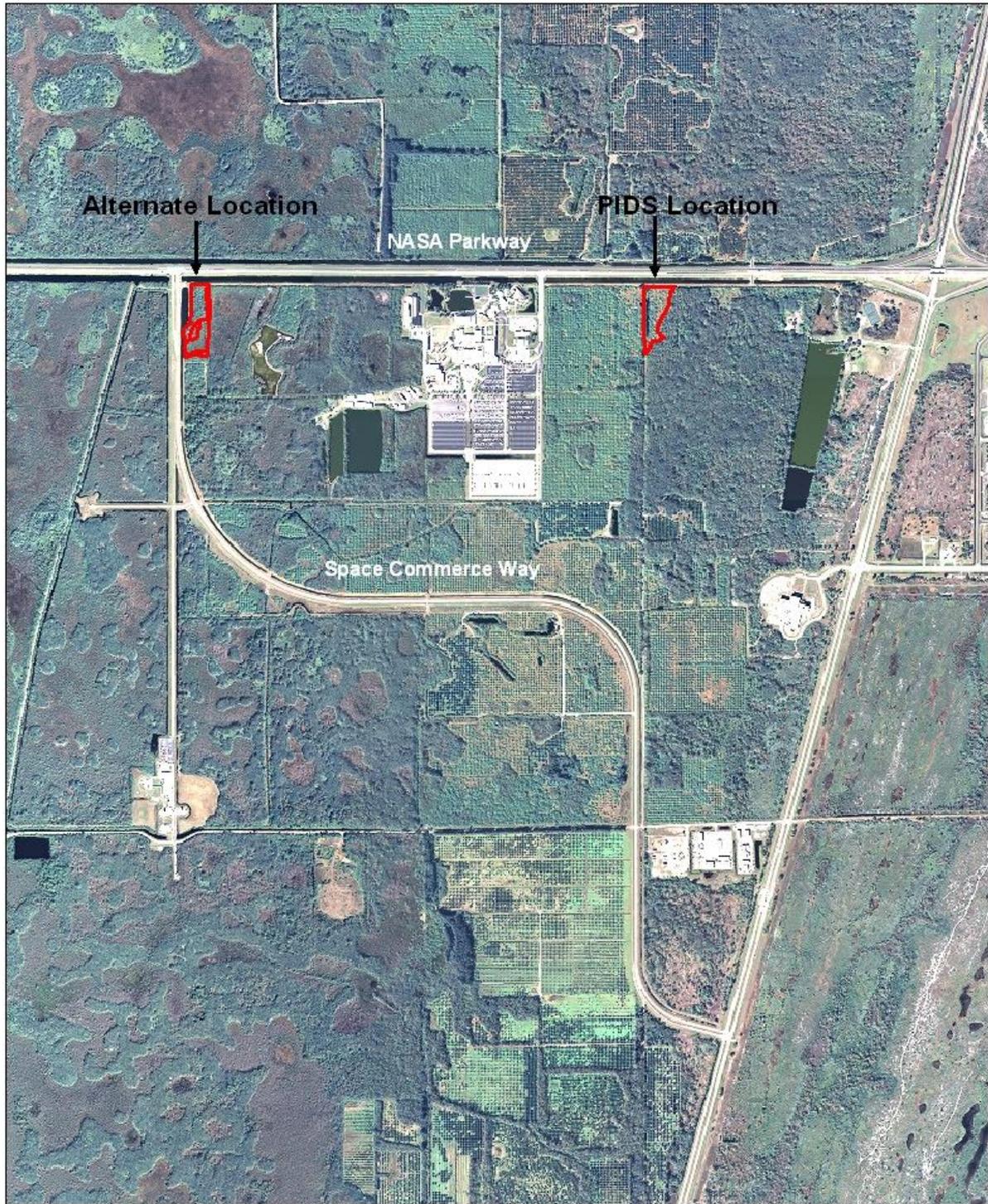


Figure 2

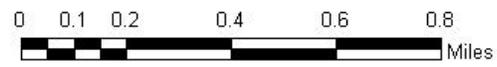




Figure 3

## **2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES**

### **2.1 General**

The completion of a new Pass and ID Facility (PIDS) would replace the existing PIDS located at the western terminus of NASA Causeway in Titusville, with a new, modern, environmentally friendly, Leadership in Energy and Environmental Design (LEED) certified facility and combine the existing Visitors Records Center (VRC) from the NASA KSC Headquarters into one facility. The PIDS would provide for combined personnel from the SGS Security and badging with the Visitors Records Center (VRC). Presently, the Security Badging personnel are housed in the existing PIDS. The VRC personnel are housed in the NASA Headquarters Facility. These two offices have joint badging duties which would function more efficiently in one facility. In addition, the new PIDS would allow for commercial transportation vehicle inspections in a more controlled environment. Currently, these vehicles are inspected at the security gates located on NASA Causeway and Kennedy Parkway.

The proposed action is to construct an approximately 5,200 - square-foot facility, 70,000-square-foot parking area and entrance drive, and associated stormwater management system.

The parking proposed for the PIDS would accommodate both private and government vehicles that would use the new PIDS. There are 60 parking spaces proposed for passenger vehicles, and 20 parking spaces for tractor trailers.

It is the intent that this proposed facility would be designed to achieve U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) Silver Certification. This certification incorporates into the design specific criteria for environmentally friendly components. This includes erosion and sedimentation controls, minimum energy usage, non-CFC air conditioning systems, collection and recycleables, minimum indoor air quality performance, use of recycled materials where possible, and innovative water technologies.

### **2.2 Proposed Action: Construct the Pass and Identification Station at the intersection of Range Road and NASA Causeway**

The proposed action addressed by the Environmental Assessment (EA) is to construct the PIDS on 4 acres of abandoned orange grove located at the southeast corner of NASA Causeway and Range Road. Currently, there is no access to the proposed site from NASA Causeway. The site would be accessed using a new culverted entrance drive across an existing drainage ditch located on the

south side of NASA Causeway. This entrance drive would run south on Range Road with another entrance drive into the PIDS. The new access road would use the existing Range Road right of way with upgrades (Figure 4).

### **2.3 Alternative 1: Construct the Pass and Identification Station at the intersection of Space Commerce Way and NASA Causeway**

This alternative would have the PIDS constructed on 4 acres of land located at the northeast corner of Space Commerce Way (SCW) and NASA Causeway. This location is a combination of abandoned orange grove and wetland areas (Figure 2). Access to this site would be from NASA Causeway.

### **2.4 Alternative 2: No Action Alternative**

This alternative would involve not constructing the new PIDS and leave the existing PIDS activated. Under this alternative, the NASA badging personnel would remain in the Headquarters building.

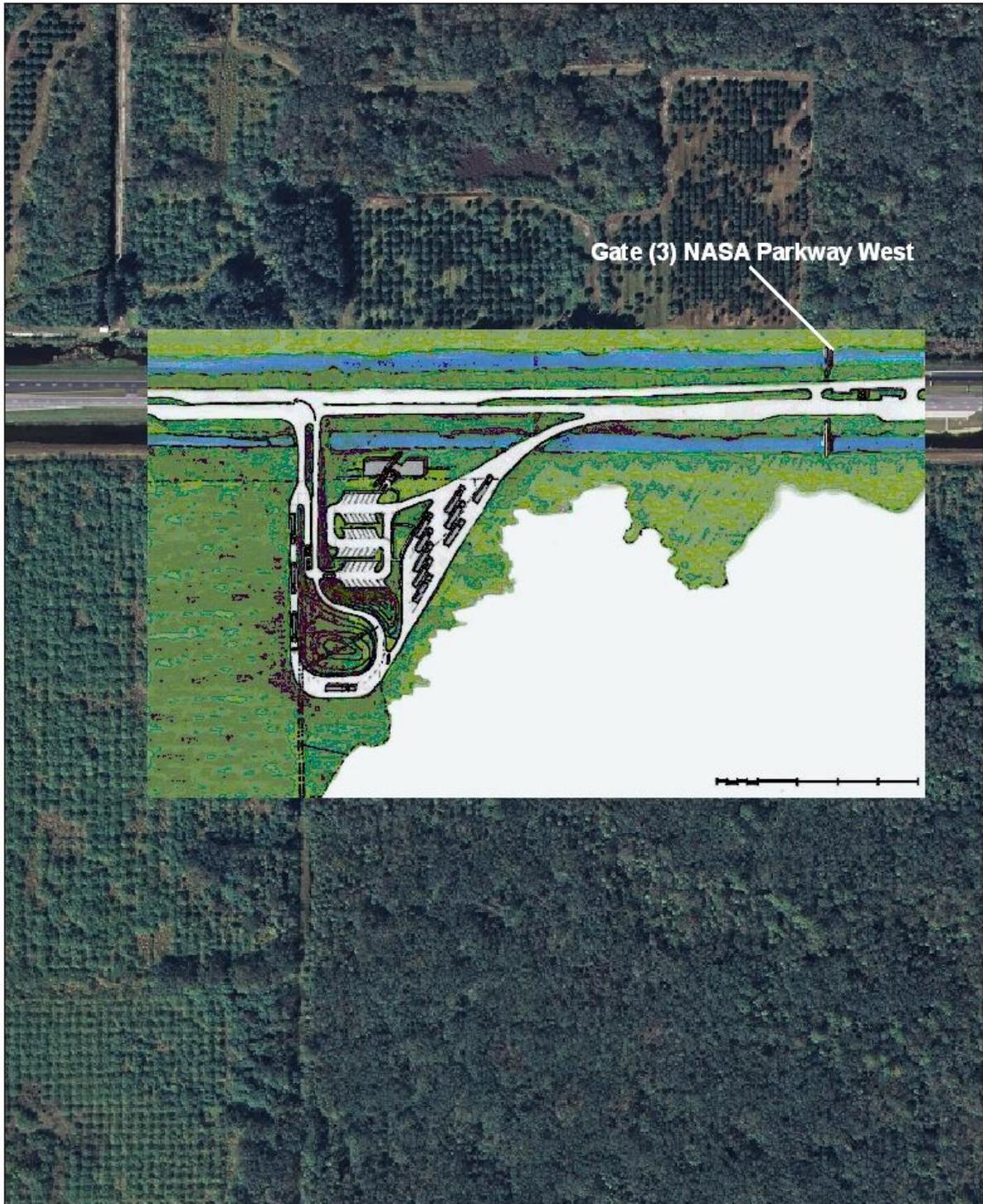


Figure 4



### **3.0 Affected Environments**

#### **3.1 General**

KSC encompasses nearly 56,000 ha (140,000 ac) on the east coast of central Florida and is bordered on the west by the Indian River Lagoon, on the southeast by the Banana River, and on the north by the Mosquito Lagoon. KSC is the primary launch and landing site for NASA's Space Shuttles with two active launch pads, and is the primary eastern U.S. landing site for Space Shuttle flights. In addition to supporting the nation's space mission operations, KSC contains within its boundaries the Merritt Island National Wildlife Refuge (MINWR) and the Canaveral National Seashore (CNS), which are managed by the U.S. Fish and Wildlife Service (USFWS) and National Park Service (NPS), respectively. This unique relationship between space flight and preservation of the environment is carefully managed to ensure that both objectives are pursued with minimal conflict with one another. The existing environment at each of the alternative sites is described in detail in the following sections.

#### **3.2 Facilities and Infrastructure**

##### Transportation

KSC is serviced by over 340 km (211 mi) of roadways with 263 km (163 mi) of paved roads and 77 km (48 mi) of unpaved roads. Of the four access roads onto KSC, NASA Causeway West serves as the primary access road for cargo, tourists, and personnel entering and leaving. This four-lane road originates in Titusville as State Road 405 and crosses the Indian River Lagoon, onto KSC. Once passing through the Industrial Area, the road is reduced to two lanes, crosses over the Banana River, and enters the Cape Canaveral Air Force Station (CCAFS). The second point of entry onto KSC is from the south via Kennedy Parkway South, which originates on north Merritt Island as State Road 3 (Kennedy Parkway). This road is the major north-south artery for KSC. The third entry point is accessible from Titusville along Beach Road, which connects to Kennedy Parkway North. The final access point is south of Oak Hill at the intersection of U.S.1 and Kennedy Parkway North.

The Proposed Action would require a new access road off of NASA Causeway West. This would require the installation of a new traffic signal system. In addition, Range Road would require some significant upgrades. Presently, Range Road is a dirt road, with many low areas that remain wet for extended periods of time. Range Road would require stabilization and paving to allow for

the type of traffic proposed by the new PIDS. Access to the PIDS site off of Range Road would also require a new ditch crossing. Presently, there is a agricultural ditch that separates Range Road from the proposed site.

The Alternative site would also require a new access road. Currently, there is no way to access the Alternative Site from either NASA Causeway or Space Commerce Way, as proposed. New access roads with culverted ditch crossings and traffic signalization would be required.

#### Wastewater Treatment

The Proposed Action and Alternative would require a connection to the wastewater treatment facility. A 4 inch sanitary sewer force main runs parallel with NASA Causeway north of the site. The wastewater that would be generated from the PIDS would be collected on-site and includes general sanitary wastewater. Wastewater would gravity flow to a new local grinder lift station. Effluent would then be pumped to the existing force main that runs along NASA Causeway to the KSC wastewater treatment plant located on Cape Canaveral Air Force Station. The new wastewater service line from the PIDS lift station would be directionally drilled under the canal on the south side of NASA Causeway to connect to the existing force main. Both the Proposed Action and Alternative would use this method of treatment. (JEA 2005)

#### Electricity

The power and lighting distribution systems for KSC has a total capacity of 137,000 kilovolt/amps (kVA), which is provided by Florida Power and Light (FPL) Company. The power entering KSC is distributed from two main substations: C-5 Substation which services the LC-39 Area and the Orsino Substation which services the Industrial Area. The high voltage power is distributed from the substations by approximately 434 km (270 mi) of overhead and underground power lines to the transformers and substations of various facilities. The proposed Action and alternatives would tap into existing buried electrical duct bank running parallel with NASA Causeway. This duct bank is located on the south side of NASA Causeway. (JEA 2005)

#### Communications

The Proposed Action and Alternatives would tap into existing communication duct bank located parallel to NASA Causeway. (JEA 2005)

## Potable Water

A 12 inch water main runs parallel with NASA Causeway north of the Proposed Action and Alternative #1 sites. The water line is located between NASA Causeway and the drainage canal on the south side of the Causeway. The water service line would be directionally drilled under the canal to connect to this water main. (JEA 2005)

### **3.3 Air Quality**

The ambient air quality at KSC is predominantly influenced by daily operations such as vehicle traffic, utility fuel combustion, standard refurbishment and maintenance operations. Air quality is also influenced to some extent by emissions sources outside of KSC, primarily two regional power plants located within an 18.5 km (10 mi) radius of KSC. In addition to these sources, other operations occurring on an infrequent basis throughout the year also play a role in the quality of air at KSC. These include space launches and prescribed fire management practices which influence air quality as episodic events.

The ambient air quality is monitored by a Permanent Air Monitoring System (PAMS) station. The PAMS station continuously monitors the concentrations of sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), ozone (O<sub>3</sub>), and total inhalable (10-micron) particulates, as well as meteorological data. Currently, KSC is located within an area, which is classified as attainment with respect to the National Ambient Air Quality Standards (NAAQS) established by the Environmental Protection Agency (EPA) for all criteria pollutants (KSC 1997-A).

### **3.4 Biological Resources**

#### Vegetation

Vegetation on KSC can generally be categorized into upland and wetland communities. There are approximately 15,300 ha (38,000 ac) of wetlands on KSC and are comprised of both coastal and freshwater communities. Upland communities on KSC are found on well-drained, acidic, sandy soils, which experience brief periods of standing water. Scrub and pine flatwoods are the most common upland communities and are reliant on periodic fire for maintenance of habitat structure and vegetation composition. There are several plant species found on KSC that are listed as Species of Special Concern, Threatened, or Endangered by State and Federal agencies (Appendix A). These species have been

identified by the agencies as being rare or restricted to vulnerable habitats. However, there are no regulatory implications for the occurrences of listed plant species on the project site.

The proposed action as well as Alternative # 1 have a project area of approximately 4 acres. The on-site vegetative assemblages are categorized according to the *Florida Land Use, Cover and Forms Classification System* (FLUCFCS) developed by the Florida Department of Transportation.

#### Proposed Action

Vegetation within the Proposed Action project areas consists of abandoned citrus groves. The eastern border of the site is categorized as wetland hardwood hammock (Figure 5). This hammock area is considered high quality forest that supports a rich diversity of both upland and wetland species. This hammock area transitions into a cabbage palm dominated system then to a slash pine dominated system (JEA 2005).

#### Uplands

The proposed action is to impact upland, abandoned citrus groves only (FLUCFCS 221). There would be no disturbance outside the 4 acre parcel.

#### Surface Water

This community is characterized as Streams and Waterways Ditched (FLUCFCS 510d) and comprises the man-made roadside canals and drainage ditches along NASA Causeway and in the citrus areas, hence the "d" in the FLUCFCS Code. This community is found throughout the project area. There is the main drainage ditch that runs along the south side of NASA Causeway and flows to the west towards the Indian River. There is a small ditch along the east side of Range Road that runs south towards Space Commerce Way. There are several dead end ditches within the orange grove.

#### Alternative #1 Space Commerce Way and NASA Causeway

The Citrus Grove (FLUCFCS 221) comprises approximately 2.63 acres of this site, with approximately 1.87 acres of wetland scrub

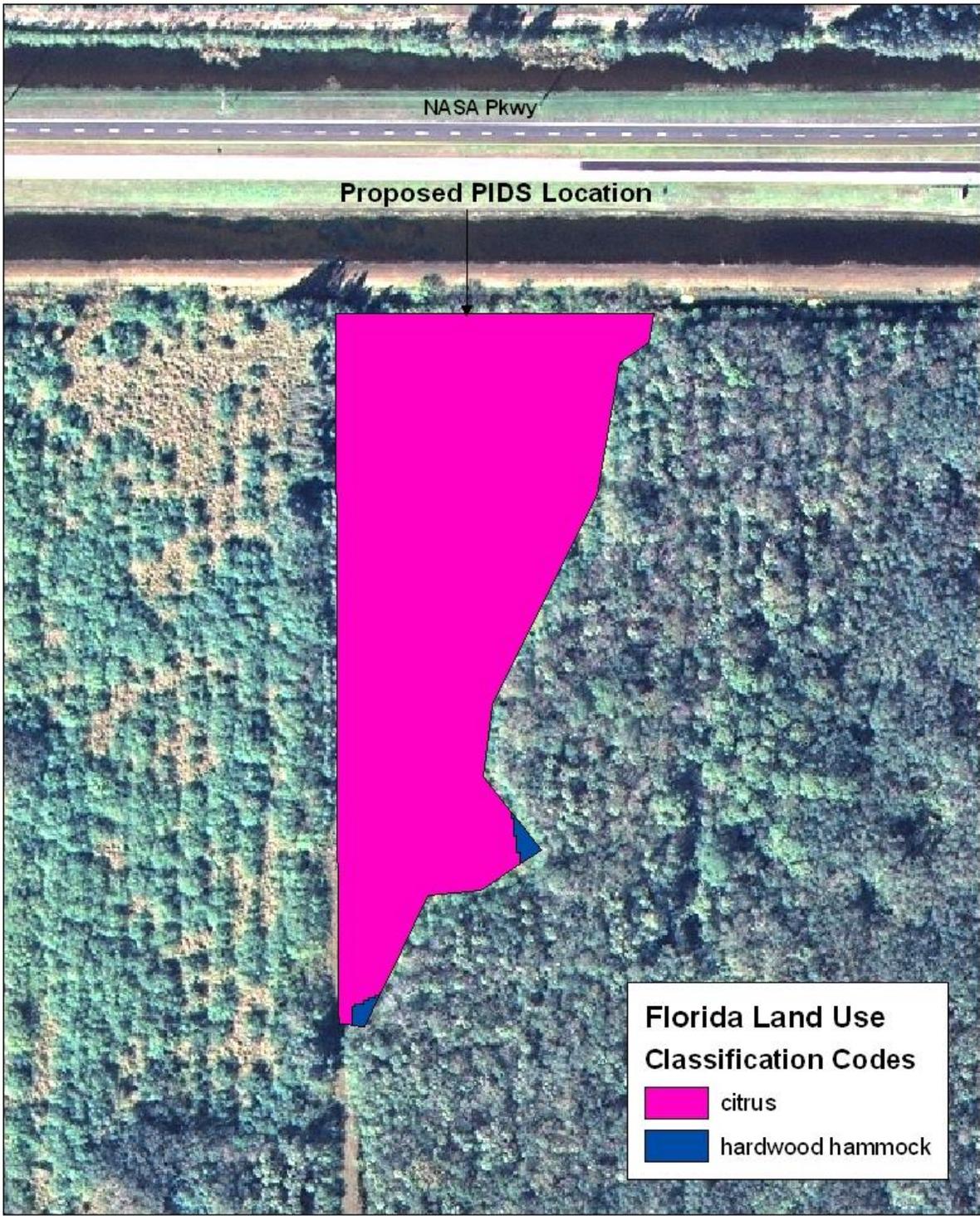


Figure 5

(FLUCFCS 630), and 0.37 acres of hardwood hammock (FLUCFCS 600). (Figure 6).

Sections of the Proposed Action and Alternative # 1 are located within the 100-year floodplain (Figure 7).

## Wildlife

### Birds

KSC and the surrounding coastal areas provide habitat for over 300 bird species. Approximately 90 of these species are breeding residents, over 100 species have been documented to winter on KSC, and the remaining species are transients that regularly use KSC terrestrial and aquatic habitats for brief periods of time.

During a site visit on (date), wading birds were observed utilizing the roadside canals and drainage ditches, particularly the canal that parallels NASA Causeway. No listed species were observed in the Proposed Action or Alternative site.

### Herpetofauna

Fifty-two species of reptiles (12 Federally or State listed) and 16 species of amphibians (one Species of Special Concern) have been documented at the KSC. Commonly found species include the American alligator (*Alligator mississippiensis*), rat snake (*Elaphe* spp.), black racer (*Coluber constrictor constrictor*), Eastern hognose snake (*Heterodon platirhinos*), Florida cottonmouth (*Agkistrodon piscivorus conanti*), and a variety of

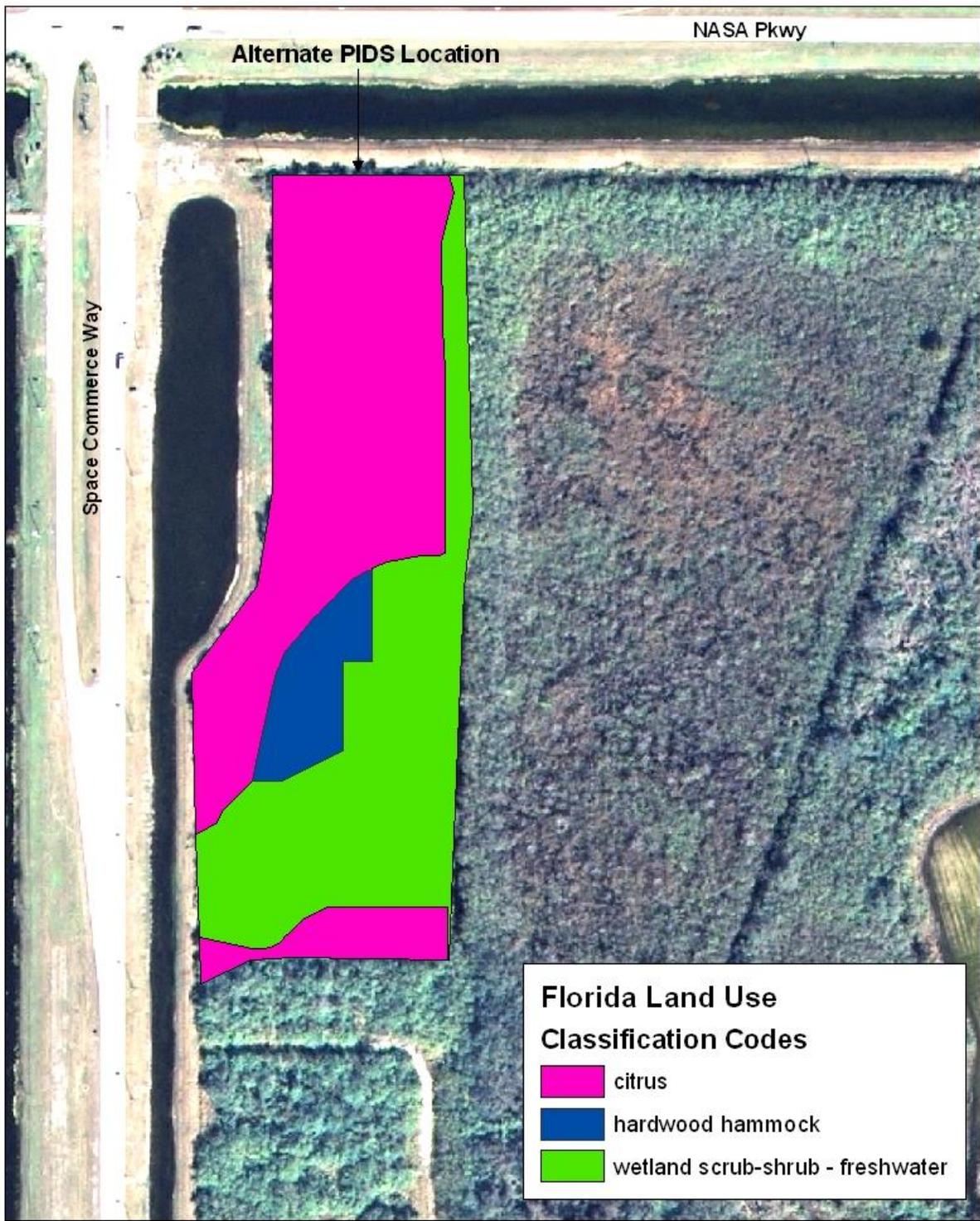


Figure 6

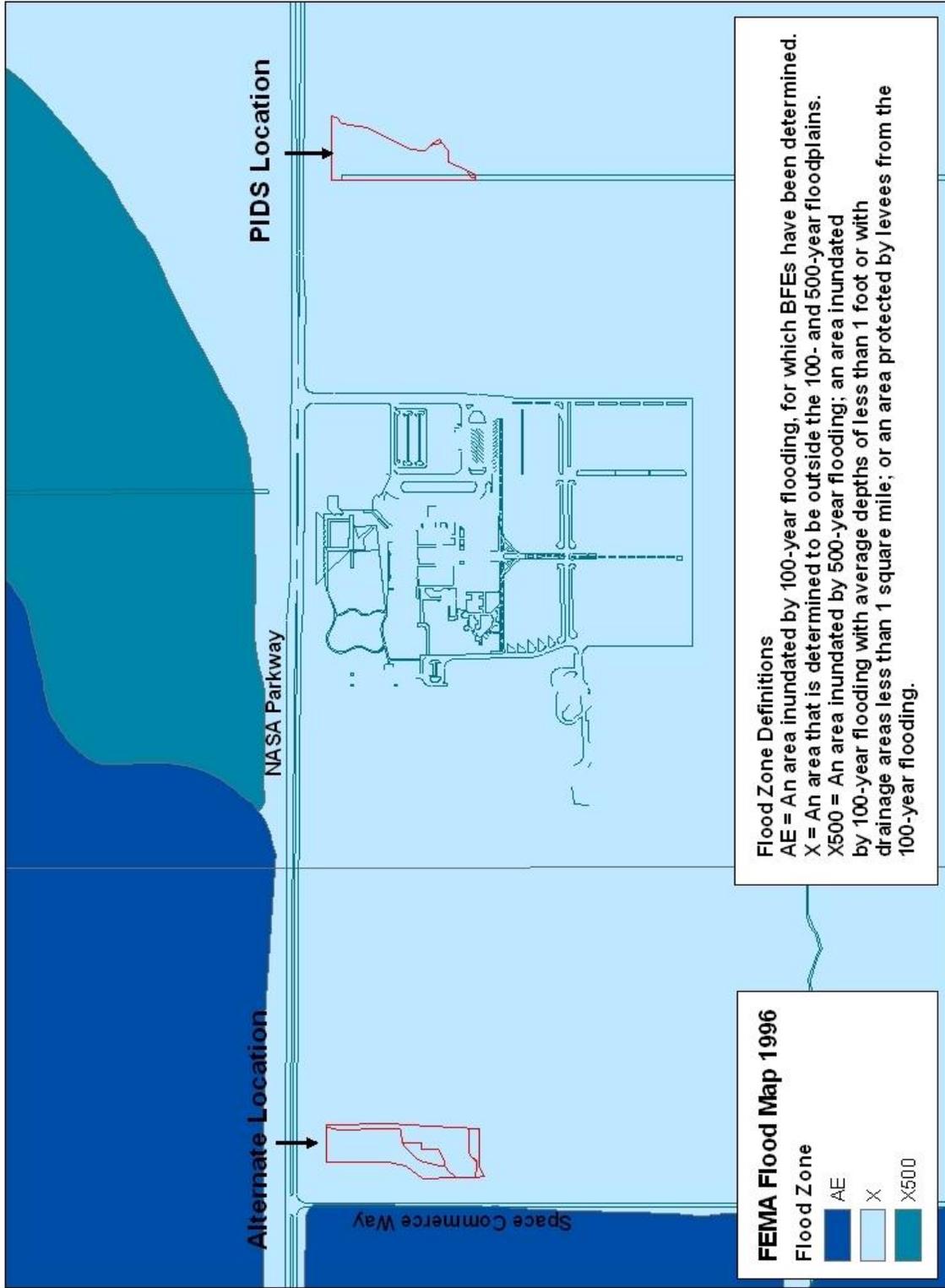


Figure 7

frog species. An important reptile resident of KSC is the gopher tortoise (*Gopherus polyphemus*), a State listed species of concern. Many species including gopher frog (*Rana capito*), Florida pine snake (*Pituophis melanoleucus mugitus*), and eastern indigo snake (*Drymarchon corais couperi*) utilize and rely on burrows excavated by the gopher tortoise, and for this reason the tortoise is considered a keystone species.

However, no gopher tortoises or associated burrows were observed at either the Proposed Action or Alternative Site.

Non-listed reptilian species documented in the proposed action and alternative site areas include black racer, cooter (*Pseudemys* spp.), green anole (*Anolis carolinensis*), and box turtle (*Terrapene* spp.).

#### Mammals

More than 31 species of mammals inhabit KSC lands and waters. Typical large mammalian species that may utilize the site include bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*), armadillo (*Dasypus novemcinctus*), feral hogs (*Sus scrofa*), and opossum (*Didelphis virginiana*). Feral hogs were the only large mammalian species observed in an area that is within the Proposed Action as well as Alternative site. They have created extensive soil disturbance in these areas. Hogs within KSC are actively removed to minimize their detrimental impacts on native communities. No other listed or non-listed mammalian species were observed either the Proposed or Alternative site.

The majority of habitat within the project area is citrus grove, which provides very little habitat value. Suitable habitat area is limited to the wetland communities to the east of the Proposed site and surrounding the Alternative locatin. The wetland area to the east of the Proposed site is a high quality forest that supports a rich diversity of both upland and wetland species (JEA 2005). This area would not be disturbed by the Proposed Action.

### **3.5 Threatened & Endangered Species**

At present, there are over 19 federal and state laws in effect that deal directly with the conservation and preservation of flora and fauna in Florida. The primary objectives of these laws are to establish the listing and de-listing processes for endangered and threatened species, to maintain data on current populations of species, to identify and maintain critical

habitat, and to protect those species, which have been identified as threatened or endangered.

Twelve species are listed as Endangered, Threatened, or Species of Special Concern by the Florida Fish and Wildlife Conservation Commission (FWCC). Of these 12 species, 5 are listed by the U.S. Fish and Wildlife Service (USFWS) as Threatened or Endangered, and thus activities relating to these species fall under the jurisdiction of the Endangered Species Act (ESA). The most common of the federally listed species is the Florida scrub jay (*Aphelocoma coerulescens coerulescens*), wood stork (*Mycteria americana*) and bald eagle (*Haliaeetus leucocephalus leucocephalus*)

There are 16 federal and/or state listed wildlife species that regularly use the lands or waters of KSC. 12 of these species are known to use the land use types of the proposed action site and alternatives. However, no listed species were noted at the Proposed Action location or the Alternative site during site investigations completed October 2005. (Appendix A)

Table 1 and 2 summarizes the biological resources impacted by the Action and Alternative.

### **3.6 Cultural Resources**

Sites containing potential archeological and/or historical resources on KSC are protected under the National Historical Preservation Act (NHPA), which requires that every Federal Agency "take into account" how each undertaking could affect historic sites. The areas proposed for construction have been mapped by NASA in a previous study to indicate their potential for containing historical artifacts (AC 1992). Areas that have low potential for historical artifacts may not require additional Phase I or II archaeological surveys.

The Proposed Action and Alternative are all in Low Potential areas of archaeological significance. In addition, there are no known historic or archaeological sites within these sites.

**TABLE 1. PROPOSED ACTION**

Land cover description	Sum of area (acres)	Features of Concern	Potential Impact
infrastructure - secondary	0.00	Archeological sites	No
ruderal - herbaceous	0.00	SWMU site	No
citrus	3.89	PRL site	No
hardwood hammock	0.04	Wetlands	No
<b>Total area</b>	<b>3.93</b>	Partial Wetlands	<b>Yes</b>

Plants of Concern	Potential Impact	Birds of Concern	Potential Impact
T&E Plants (Within 100 meters)	Unknown	Jay Potential Habitat (primary)	No
		Jay Potential Habitat (secondary)	No
		Jay Potential Habitat (tertiary)	No
		Southeastern American kestrel	<b>Yes</b>
		Little blue heron	No
		Black skimmer	<b>Yes</b>
		Arctic peregrine falcon	<b>Yes</b>
		Least tern	<b>Yes</b>
		Snowy egret	<b>Yes</b>
		Tricolored heron	<b>Yes</b>
		White ibis	<b>Yes</b>
		Florida scrub-jay (LC)	<b>Yes</b>
		Roseate tern	No
		Roseate spoonbill	No
		Piping plover	No
		Limpkin	No
		Reddish egret	No
		Wood stork	<b>Yes</b>
		American oystercatcher	<b>Yes</b>
		Brown pelican	<b>Yes</b>
		Bald eagle	<b>Yes</b>

Amphibians of Concern	Potential Impact
Gopher frog	<b>Yes</b>

Reptiles of Concern	Potential Impact
Atlantic salt march snake	No
Atlantic green turtle	No
Atlantic loggerhead turtle	No
American alligator	No
Gopher tortoise	<b>Yes</b>
Leatherback turtle	No
Florida pine snake	<b>Yes</b>
Eastern indigo snake	<b>Yes</b>
Atlantic hawksbill turtle	No
Atlantic ridley turtle	No

Mammals of Concern	Potential Impact
West Indian manatee	No
Florida mouse	<b>Yes</b>
Southeastern beach mouse	<b>Yes</b>

**TABLE 2. ALTERNATIVE 1**

Land cover description	Sum of area (acres)
wetland scrub-shrub - freshwater	1.87
citrus	2.63
hardwood hammock	0.37
<b>Total area</b>	<b>4.87</b>

Features of Concern	Potential Impact
Archeological sites	No
SWMU site	No
PRL site	No
Wetlands	Yes
Partial Wetlands	Yes

Plants of Concern	Potential Impact
T&E Plants (Within 100 meters)	Unknown

Amphibians of Concern	Potential Impact
Gopher frog	Yes

Reptiles of Concern	Potential Impact
Atlantic salt march snake	No
Atlantic green turtle	No
Atlantic loggerhead turtle	No
American alligator	Yes
Gopher tortoise	Yes
Leatherback turtle	No
Florida pine snake	Yes
Eastern indigo snake	Yes
Atlantic hawksbill turtle	No
Atlantic ridley turtle	No

Mammals of Concern	Potential Impact
West Indian manatee	No
Florida mouse	Yes
Southeastern beach mouse	No

Birds of Concern	Potential Impact
Jay Potential Habitat (primary)	No
Jay Potential Habitat (secondary)	No
Jay Potential Habitat (tertiary)	Yes
Southeastern American kestrel	No
Little blue heron	No
Black skimmer	No
Arctic peregrine falcon	Yes
Least tern	No
Snowy egret	Yes
Tricolored heron	Yes
White ibis	Yes
Florida scrub-jay (LC)	Yes
Roseate tern	No
Roseate spoonbill	No
Piping plover	No
Limpkin	Yes
Reddish egret	No
Wood stork	Yes
American oystercatcher	No
Brown pelican	No
Bald eagle	Yes

### **3.7 Geology and Soils**

KSC is located on the eastern region of Peninsular Florida, which gradually rose above a much larger feature called the Florida Plateau. Four distinct geologic units lie beneath KSC and are characteristic of the coastal area of East-Central Florida. In descending order these are Pleistocene and Recent Age sands with inter-bedded shell layers; Upper Miocene and Pliocene silty or clayey sands; Central and Lower Miocene compacted clays and silts; and Eocene limestones.

#### Proposed Action

Seven soil series are mapped by the Soil Conservation Service within this project area; Chobee, Copeland Complex, Felda, Felda/Winder, Floridana, St. Johns, and Wabasso (Figure 8). Wabasso is the dominant soil unit and is described as nearly level, poorly drained sandy soils in broad areas of flatwoods and on low ridges on floodplains. However, this soil series was not actually confirmed on site, it does not appear to accurately describe actual site conditions. The areas demarcated as Wabasso soils are planted with citrus and appear to contain more well drained soils. This may be a result of the extensive ditch network present. The second most common soil within the project area is the Copeland Complex Series. This soil consists of nearly level, poorly drained sandy soils found in broad low flats, drainage ways, depressions, and cypress ponds. These soils coincide to those found in the field during a site assessment, and the vegetative communities correspond (forested wetlands) to communities that would be expected on these soils. The Chobee, Floridana, and St. Johns series are all characterized as consisting of nearly level, poorly to very poorly drained soils in depressions, low areas of floodplains, sloughs, intermittent ponds, and marshy depressions. These soils coincide with those documented in the field during the site assessment and wetland delineation. Vegetative communities also coincide with those that would be expected on this type of soil. The Felda Series consists of nearly level, poorly drained sandy soils on broad low flats and in sloughs, poorly defined drainage ways, depressions, and cypress ponds. Wetland communities dominated areas within this soil type. The Felda/Winder soils are characterized as poorly drained soils in low, broad, grassy sloughs that have many slightly higher hammocks. Wetland communities also dominated areas designed as this soil type.

#### Alternative 1

The same soil types found in the Proposed site are also found in Alternative 1 site (Figure 8).

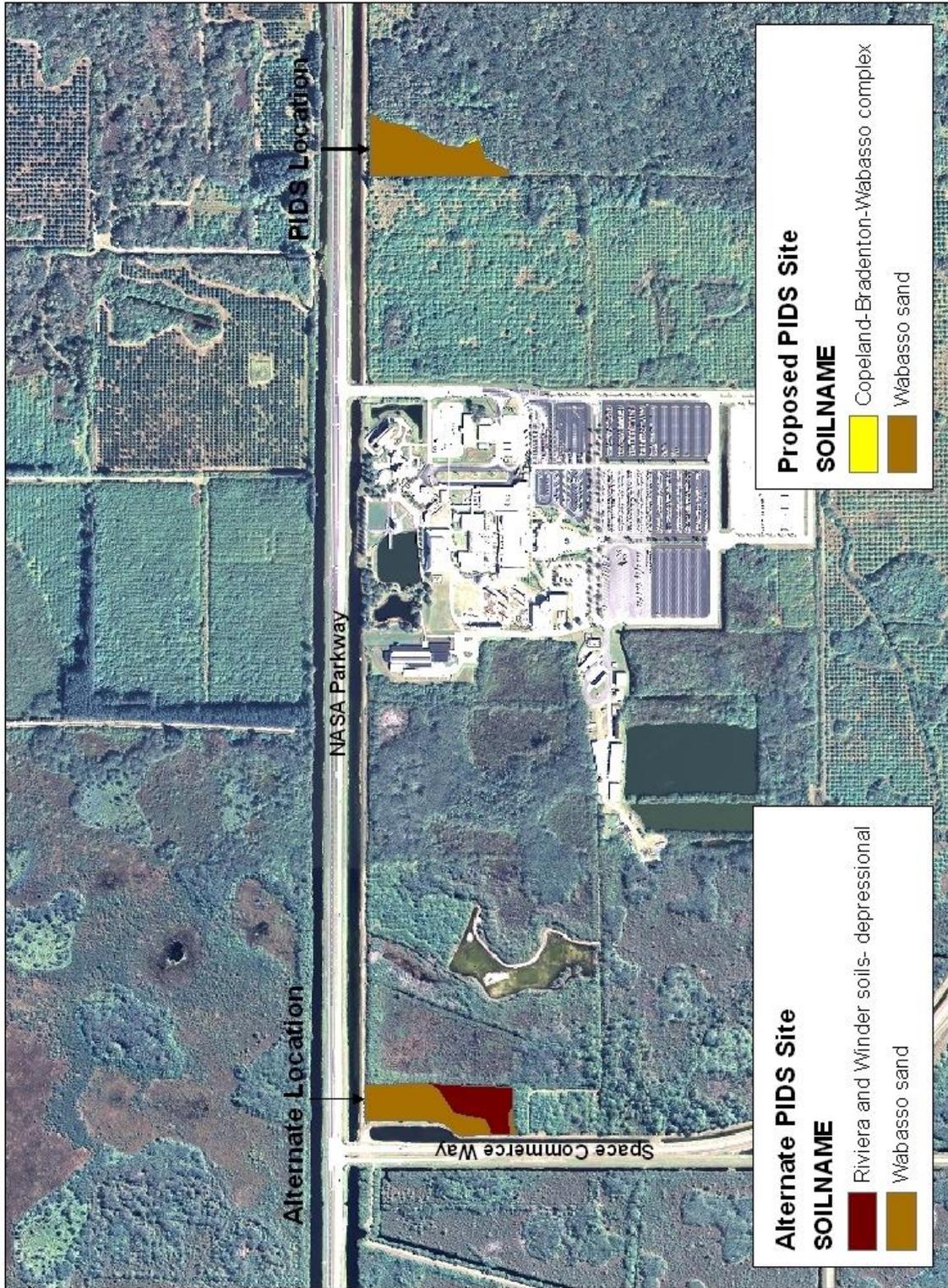


Figure 8

### 3.8 Noise

Noise generated at KSC originates from six different sources: 1) Orbiter reentry sonic booms, 2) launches, 3) aircraft movements, 4) industrial operations, 5) construction, and 6) traffic. Noise generated above ambient levels by these sources has the potential to adversely affect both wildlife and humans. Some typical values for noise levels are shown on Tables 3-4 and 3-5 for activities occurring at construction sites and for activities conducted routinely at KSC. The effects of noise on wildlife have been studied at KSC during the launch of spacecraft (KSC 1981 and Breininger 1990). These studies have shown that besides an initial startle response to launches, birds and other wildlife return to their normal activities soon afterward and show no adverse affects. Other studies conducted on wading bird colonies subjected to military overflights (152 m [500 ft] of altitude) with noise levels up to 100 decibels (dBA) observed no productivity limiting responses, and only a short-term interruption of their daily routine (Black 1984). The Occupational Safety and Health Administration (OSHA) has established permissible noise exposure limits for humans. The 8-hour time weighted average noise level on KSC is appreciably lower than the OSHA recommended level of 85 dBA.

**Table 3. Measured Noise on KSC.**

<b>Source</b>	<b>Peak</b>	<b>Remarks</b>
<b>Re-Entry Sonic Boom [1]</b>		
Orbiter		101 N/m <sup>2</sup> max. (2.1 psf)
SRB casing		96 to 144 N/m <sup>2</sup> (2 to 3 psf)
External tank		96 to 192 N/m <sup>2</sup> (2 to 4 psf)
<b>Launch Noise</b>		
Titan IIIC	94	21 Oct 1965 (9,388 m)
Saturn I	89	Avg. of 3 (9,034 m)
Saturn V	91	15 Apr 1969 (9,384 m)
Atlas	96	Comstar (4,816 m)
Space Shuttle [1]	90	1.4 dBA Down From Saturn V (9,384 m)
<b>Aircraft</b>		
F4 Jet	107	18 km From Ground Zero
F4 Jet	158	Calculated at Ground Zero
NASA Gulfstream	109	Takeoff (Marker 14)
NASA Gulfstream	100	Landing (Marker 14)
<b>Industrial Activities</b>		
Complex 39A	78	Transformers
LEFT	92	Hydraulic Charger Unit
Machine Shop	112	Base Support Building M6-486
Computer Room	88	VAB - Room 2K11
Snack Bar	60	CIF - Room 154
Laboratories	58	CIF - Rooms 139 and 282
Elevator	62	Central Instrumentation Fac.
VAB High Bay	108	Welding, Cutting, etc.
VAB High Bay	116	Chipping
Hangar AE	77	Room 125 During Test
Headquarters Office	75	Room 2637 and Printers
O&C Office	57	Room 2063
Mobile Launcher Platform	94	Main Pump Operating
Mobile Launcher Platform	100	2 Pumps Operating 5K Load
Industrial Area	66	15 m From Traffic Light
<b>Undisturbed Areas</b>		
Seashore	69	Medium Waves (Nice Day)
Riverbank	48	Light Gusts (No Traffic)
150 m Tower	64	Light Gusts of Wind
[1] Estimated		

Ref: KSC 1978

### **3.9 Surface Water Quality**

The surface waters in and surrounding KSC may best be described as shallow estuarine lagoons and include portions of the Indian River Lagoon, the Banana River, Mosquito Lagoon, and Banana Creek. The area of Mosquito Lagoon within the KSC boundary and the northernmost portion of the Indian River Lagoon, north of the Jay Jay Railway spur crossing, is designated by the State as Class II, Shellfish Propagation and Harvesting. All other surface waters at KSC have been designated as Class III, Recreation and Fish and Wildlife Propagation. All surface waters adjacent to and within the MINWR have the distinction of being designated as Outstanding Florida Waters (OFW) as required by Florida Statutes for waters within National Wildlife Refuges.

Several agencies including NASA, USFWS, and Brevard County maintain water quality monitoring stations at surface water sites within and around KSC. The data collected is used for long-term trend analysis to support land use planning and resource management. Surface water quality at KSC is generally good, with the best areas of water quality being adjacent to undeveloped areas of the lagoon, such as Mosquito Lagoon, and the northern most portions of the Indian River Lagoon and Banana River.

There are no large bodies of surface water associated with any of the sites assessed for this project. However, there is one large drainage ditch that runs parallel to NASA Causeway which would have to be crossed with a culverted access road.

### **3.10 Groundwater Quality**

The State of Florida, through legislation, has created four categories to rate the quality of groundwater in a particular area. The criteria for these categories is based upon the degree of protection that should be afforded to that groundwater source, with Class G-I the more stringent and Class G-IV the lesser. The groundwater at KSC is classified as Class G-II, which means that groundwater is a potential potable water source and generally has a total dissolved solids content of less than 10,000 mg/L. The subsurface of KSC is comprised of the Surficial Aquifer, the Intermediate Aquifer, and the Floridan Aquifer. Recharge to the Surficial Aquifer system is primarily due to infiltration of precipitation; however, the quality of water in the aquifer beneath KSC is influenced by intrusion of saline and brackish surface waters from the Atlantic Ocean and surrounding lagoon systems. This is evident by the high mineral content, principally chlorides, that has been observed in groundwater samples collected during various KSC surveys.

The Surficial Aquifer in the area of the Proposed Action site, and Alternatives 1 is called the West Plain Sub-aquifer, and is in a region considered to be fair to poor in terms of its ability to recharge the underlying aquifer systems. The waters of this aquifer system are predominately fresh; however, due to intrusion from nearby saline waters, some areas may exhibit high chloride as well as high total dissolved solids concentrations.

### **3.11 Socioeconomics**

The KSC workforce is comprised of approximately 13,000 personnel that includes contractor, construction, tenant, and permanent civil service employees (KSC 1999). Approximately 50 percent of the personnel have positions directly related to the Space Shuttle and payload processing operations. The remaining work force is employed in ground and base support, unmanned launch programs, crew training, engineering, and administrative positions. Approximately 53 percent of the personnel at KSC are stationed in the VAB Area, while 39 percent are located in the Industrial Area. The remaining work force is stationed at various outlying facilities at KSC.

### **3.12 Land Use**

KSC comprises approximately 56,600 ha (140,000 ac) of which nearly 95 percent is undeveloped area including uplands, wetlands, mosquito control impoundments, and open water areas.

KSC is unique in that the MINWR and CNS lie within its boundaries and are managed for NASA by the USFWS and NPS, respectively. These agencies exercise management control over agricultural, recreational, and environmental programs within the MINWR and CNS.

NASA manages nearly 2428 ha (6000 ac) of facilities and rights-of-way. Approximately 1740 ha (4300 ac) of the 2428 ha (6000 ac) are around operational facilities that have been removed from USFWS fire management units. The remaining undeveloped operational areas are dedicated safety zones around existing facilities or are held in reserve for planned and future expansion. The operational areas developed within KSC that are dominated by the VAB Area, the Industrial Area, and the SLF. These facilities account for more than 70 percent of the NASA operational area.

The Proposed Action location is currently undeveloped and is classified as citrus grove and as part of the MINWR. Implementation of this action would require removal of the area

from the Refuge. Alternatives 1 is also undeveloped and under Refuge management. Both the Proposed Action and Alternative would require that this land be removed from under FWS management, and placed under NASA real property management.

## 4.0 Environmental Consequences

### 4.1 Summary of Relevant Issues and Status of Issues

Impacts resulting from the implementation of this project were identified and then classified in one of the five following categories:

- Not Applicable (N/A) - those activities not related to the site specific or regional environment
- None - those areas in which no impacts are expected
- Minimal - those areas in which the impacts are not expected to be measurable or are too small to cause any discernable degradation to the environment
- Minor - those impacts which would be measurable but are within the capacity of the impacted system to absorb the change, or can be compensated for, so that the impact is not substantial
- Major - those environmental impacts which individually or cumulatively could be substantial

Impacts of the construction and operation at each of the alternative sites vary from none to minor upon the environmental issues evaluated. Results of the analyses are summarized in Table 5, which shows the impacts to each media for each alternative.

This matrix can be used to review the overall impacts of implementation of this project for each site alternative. The following discussion provides the detail of the scope and type of these impacts. This section is organized by alternative so that the overall impacts of each alternative can be seen as a whole.

**Table 4. Issues Matrix.**

Issues		Proposed Action	Alt. #1
Facilities and Infrastructure			
	Transportation	C	Minor
Utilities		O	Minimal
		C	Minor
Air Quality		O	Minimal
		C	Minor
Biological Resources		O	Minimal
		C	Minor
Threatened & Endangered Species		O	Minimal
		C	Minimal
Cultural Resources		O	None
		C	None
Geology		O	None
		C	None
Noise		O	Minor
		C	Minimal
Surface Water Quality		O	Minimal
		C	None
Groundwater Quality		O	None
		C	None
Socioeconomic		O	None
		C	Minor
Land Use		O	None
		C	Minor
Soils		O	None
		C	Minor
		O	Minor

## 4.2 Proposed Action

### 4.2.1 Facilities and Infrastructure

#### Transportation

##### Construction

The construction of PIDS at the proposed location is expected to have a minor impact to transportation routes within KSC. Increased construction traffic would occur during normal working hours and may cause some traffic delays. However, the capacity of all affected roads is not expected to be exceeded by this increase in vehicles.

### Operation

Operation of PIDS is expected to produce no impacts to roads on KSC as the number of vehicles entering the Center is expected to remain unchanged. However, the overall flow of vehicle traffic will be positively impacted with the use of the new PIDS for commercial vehicle inspections.

### **Utilities**

#### Construction

The construction of PIDS at the Proposed Action location would require connections to wastewater, communication, electrical and potable water utilities. Construction at this site is expected to present minimal impacts to these utilities.

#### Operation

The operation of PIDS at the Proposed Action location is expected to require electrical connections lighting. There are overhead power lines that could provide electricity to SCW. The power required for these lights is expected to have minimal impacts to the electrical sources. All other utilities would have minimal impacts from operation of the PIDS at the Proposed Location.

### **4.2.2 Air Quality**

#### Construction

The site preparation and construction of the PIDS at the Proposed Action location would produce minimal impacts to the surrounding air quality. The clearing of land and other construction activities would generate airborne particulates from earth moving, vegetation burning, as well as hydrocarbon exhaust from heavy equipment. Such activities are expected to be small in scope and of short duration. Best Management Practices (BMP's) would also be employed to mitigate for emissions due to earth movement and burning. These BMP's include water spraying, placement of hay bales, and other forms of dust control. Burning (vegetation debris) would be controlled using a high efficiency burn pit with forced air injections, which allows for a high temperature burn with little smoke and particulate emissions. Both the Proposed Action and Alternative would have short term, minimal impacts to air quality during construction. This impact would be from construction activities which could increase dust and particulate matter. These impacts would be minimize by using Best Management Practices (BMP's) to reduce or eliminate this particulate matter.

#### Operation

Operation of the PIDS at the Proposed Action location is expected to produce no net increase of traffic on KSC. In addition, this project would not produce an overall increase of traffic within the region, only a potential re-direction of traffic from existing nearby roads through KSC. Therefore, this proposed project is expected to produce only minimal to no impacts to the surrounding air quality.

### **4.2.3 Biological Resources**

#### **Vegetation**

##### Construction

Construction of the PIDS at the Proposed Action location would result in removal of 4 acres of abandoned citrus grove, which represents less than 0.1 percent of all groves found on the KSC. This abandoned citrus grove is completely overgrown with Brazilian pepper.

Clearing of the Proposed Action location would benefit the overall vegetative communities of the area by removing a significant seed source for the continued spread of Brazilian pepper.

##### Operation

No impacts to vegetation are expected from operation of the PIDS. An exception to this may be if non-native vegetation invades the surrounding natural communities through natural seed dispersion along the road right-of-way or in the median.

#### **Wetlands, Surface Water, and Floodplains**

##### Construction

Construction of the PIDS would result in removal of no wetlands, and only minimal impacts to surrounding surface waters consisting of man-made canals/ditches for stormwater treatment and drainage purposes and would be replaced by additional roadside drainage ditches. All work, including laydown areas can be contained within the proposed site.

##### Operation

There are no anticipated impacts to adjacent wetlands or floodplains as a result of operational of the Proposed Action.

## **Wildlife**

### Construction

Potential impacts to wildlife from construction of the Proposed Action appear to be minimal. A majority of the impacted habitats are either man-made (canals and ditches), dominated by exotic species, or citrus groves. Both the Brazilian pepper and citrus grove communities provide little habitat value and their removal would therefore result in minimal impacts to wildlife. Removal and alterations to the existing ditches and canals within the project area may impact wading birds, reptile, and amphibian species. However, this is a temporary impact as new drainage ditches and canals would be constructed with the new roadway.

### Operation

The potential impacts to wildlife by long-term operation of the Proposed Action are expected to be minimal. Species that are more sensitive to human activities would move away from disturbance created by the PIDS, resulting in at least a temporary shift in the population structure of these species or the mortality of migrating individuals due to intraspecific competition. Wide ranging species such as large mammals and the indigo snake may be impacted by habitat removal and the disruption of their previous movement patterns due to the existence of a roadway, mortality, and population fragmentation. In addition, there may be an increased incidence of road mortality.

## **Biodiversity**

### Construction

Impacts to local biodiversity from land clearing and construction of the PIDS are expected to be low due to the low quality habitat that would be removed. Impacts resulting from construction are not expected to cause changes of any great magnitude to the overall population size or structure of any of these species on KSC.

### Operation

Operation of the PIDS is expected to have minimal impacts on biodiversity of the area. Impacts to biodiversity are due to the fact that roads often act as barriers to movement patterns of wildlife. Roads fragment populations, increase mortality, and provide access routes for opportunistic species that may out-compete existing species. In addition, roads can have a long-term effect on local population success by altering dispersal,

foraging, and mate finding routes that are often necessary for survival.

#### **4.2.4 Threatened and Endangered Species**

##### Construction

Minimal impacts to protected species are expected during the construction of this project. Several wading bird species utilizing the on-site canals and ditches were the only protected species documented within the project area. These ditches and canals would be temporarily removed and replaced once the roadway project is complete. On-site habitats also do not support non-water dependent protected species found at KSC such as indigo snake, gopher tortoise, and its commensal species.

##### Operation

The potential impacts to protected species by long-term operation of the Proposed Action are expected to be low. Species that are more sensitive to human activities would move away from disturbance created by the PIDS, resulting in at least a temporary shift in the population structure of these species. Wide ranging species such as large mammals and indigo snake may be temporarily impacted by habitat removal and disruption of their previous movement patterns due to the existence of a roadway.

#### **4.2.5 Cultural Resources**

##### Construction

The area for the proposed action site has been previously mapped by NASA to indicate its potential for containing historical artifacts. As a result of this study, the Proposed Action has been identified as having a low potential for impacts to cultural resources. In addition, there are no known historic or archaeological properties within the site. Therefore, no impacts to historic or archeological properties are expected.

##### Operation

The operation of PIDS at the Proposed Action site is not expected to produce any impacts to cultural resources.

#### **4.2.6 Geology and Soils**

##### Construction

Site preparation activities would present the only potential impact to the geology and soils within the project area. Land clearing and excavation for roadway foundations and stormwater systems would require that the upper soil strata layers be removed. This impact may affect shallow subsurface flows of water from rainfall events. However, this would be mitigated for with site grading and construction of a suitable stormwater system.

##### Operation

Operation of the Proposed Action is not expected to result in any impacts to the geologic strata or soils of the project or local area.

#### **4.2.7 Noise**

##### Construction

Ambient noise levels are expected to increase during construction activities. The noise generated by construction vehicles is expected to be below all noise thresholds and would occur for a brief period. EPA's recommended upper level noise threshold is 70 dBA, for a 24-hour timeframe (KSC 1997-A 1997). In addition, there are no known noise receptors (e.g., wildlife) in or around the site, which are especially sensitive to the expected noise levels. The potential impacts from the construction of the PIDS are therefore considered minor.

**Table 5. Construction Noise on KSC.**

SOURCE	NOISE LEVEL (Peak)	DISTANCE FROM SOURCE [a]			
		50 ft	100 ft	200 ft	400 ft
<b>Construction</b>					
Heavy Trucks	95	84-89	78-83	72-77	66-71
Pickup Trucks	92	72	66	60	54
Dump Trucks	108	88	82	76	70
Concrete Mixer	105	85	79	73	67
Jackhammer	108	88	82	76	70
Scraper	93	80-89	74-82	68-77	60-71
Dozer	107	87-102	81-96	75-90	69-84
Paver	109	80-89	74-83	68-77	60-71
Generator	96	76	70	64	58
Shovel	111	91	85	79	73
Crane	104	75-88	69-82	63-76	55-70
Loader	104	73-86	67-80	61-74	55-68
Grader	108	88-91	82-85	76-79	70-73
Caterpillar	103	88	82	76	70
Dragline	105	85	79	73	67
Shovel	110	91-107	85-101	79-95	73-95
Dredging	89	79	73	66	77
Pile Driver	105	95	89	83	77
Ditcher	104	99	93	87	81
Fork Lift	100	95	89	83	77
<b>Vehicles</b>					
Diesel Train	98	80-88	74-82	68-76	62-70
Mack Truck	91	84	78	72	66
Bus	97	82	76	70	54
Compact Auto	90	75-80	69-74	63-68	57-62
Passenger Auto	85	69-76	63-70	57-64	51-68
Motorcycle	110	82	76	70	64
[a] Assume 6 dBA decrease for every doubling of distance.					
Ref: Golden 1980.					

## Operation

Increased noise levels for operations are not expected to result from operation of the PIDS. The location of the noise source is changing from the existing PIDS to the Proposed Location

### **4.2.8 Surface Water Quality**

#### Construction

Construction of the PIDS would have minimal effects to surface water quality at the Proposed Action site. These impacts may be but not limited to turbidity increases from surface runoff. These effects would be compensated for with construction of a surface water management system, which would treat runoff due to the new impervious area of the access road, parking area and the PIDS. During actual construction activities, impacts to surface waters in the area would be minimized, by ensuring BMP's are initiated and maintained, in order to control erosion and sedimentation. A Stormwater Pollution Prevention Plan would be required to be prepared and implemented during construction.

#### Operation

Operation of the PIDS at the Proposed Action site would have no impacts to surface water quality. The stormwater management system would be designed and operated of treating all stormwater runoff.

### **4.2.9 Groundwater Quality**

#### Construction

Groundwater quality at the Proposed Action site is affected by runoff from roadways and nearby facilities that percolates into the surficial aquifer. Construction of the PIDS would temporarily increase the amount of sedimentation and pollutants that could migrate into the groundwater system. However, maintaining BMPs and construction of the stormwater management system would inhibit this from occurring. Therefore, construction of the PIDS at the Proposed Action site would have no impacts to groundwater quality.

#### Operation

Operations of the PIDS would generate pollutants typically created by vehicle traffic. The poor recharge ability in the area inhibits migration of contaminants downward into the surficial aquifer and promotes their transport into the surface water management system that would be constructed. There are no

effects to groundwater quality expected for operation of this facility.

#### **4.2.10 Socioeconomics**

##### Construction

Construction of the PIDS would input some \$2.8M into the local economy. There would be approximately 50 to 100 jobs produced on a temporary basis. These workers are expected to come from the local workforce. This positive impact on the economy would be measurable but not produce any conflicts with existing or planned road development and improvement projects.

##### Operation

Operation of the PIDS would not produce any impacts to the local economy. The PIDS would be maintained and populated by NASA and contractor personnel already present at KSC.

#### **4.2.11 Land Use**

##### Construction

Only a relatively small portion of the total acreage of KSC has been developed or designated for NASA operational and industrial use. Of the 56,600 ha (140,000 ac) of total KSC area, less than 5 percent is designated for KSC operational area, and only 62 percent of this area has been developed. The approximately 4 acre site for the PIDS is considered a diminimus increase. Construction of the PIDS at the Proposed Action site would require removing the area from under management actions completed by the Fish and Wildlife Service (FWS).

KSC is within the Coastal Zone as defined by Florida Statutes (15 CFR 930.30-44). As such, a Coastal Zone Consistency Determination is required (FDER 1984). Results indicate that the proposed action could be implemented within existing environmental regulations, and has been determined to be consistent with the Florida Coastal Zone Management Plan.

##### Operation

Operation of the PIDS at the Proposed Action site would have no impacts to the land use.

### **4.3 Alternative 1**

The impacts of constructing and operating the PIDS at the Alternative Site 1 (SCW and NASA Causeway) would have the identical impacts as the Proposed Action location with one addition that being the impact to approximately 2 acres of wetlands and ~0.5 acres of hardwood hammock. Therefore, the only aspect that will be discussed in this section of this EA will be the additional impacts to wetlands and hardwood hammock by constructing the PIDS at the Alternative Site. All impacts to other media will be referenced to the previous discussion of the Proposed Action.

#### **4.3.1 Biological Resources**

##### Vegetation

##### Construction

Construction of the PIDS at Alternative Location would result in removal of approximately 2 acres of wetland hardwood forest and 2 acres of abandoned citrus grove (Fig. 5). The wetland hardwood forest is a large, moderate to high quality wetland system that extends west of the project area. This is considered a minor impact to wetlands at KSC as there are 5172 acres of this type of wetlands elsewhere on KSC. Therefore this area represents less than 0.01% of the total habitat of this type on KSC. In addition, this area is isolated from other similar wetlands type on the center, making its functionality minimal.

These hardwood hammocks, however, do have a function in migratory bird use. Again, the loss of less than 0.01% of the total acreage of this land cover would still be considered minor.

##### Operation

No impacts to vegetation are expected from operation of the PIDS.

#### **Wetlands, Surface Water, and Floodplains**

##### Construction

Construction of Alternative Roadway Alignment 1 would result in removal of approximately 2 acres of wetlands and 0.1 acre of surface water. This surface water impact would be minimal in that the total impact would be less than 1,000 square feet of ditches from access road construction and filling.

## Operation

There are no anticipated impacts to adjacent wetlands or floodplains as a result of the operation of the PIDS at Alternative Site.

### **4.4 No Action**

There would be no environmental impacts by implementing the No Action alternative since no construction would occur, and operations would remain the same as they are today. Therefore, this section will not address any impacts.

## 5.0 ENVIRONMENTAL JUSTICE

On February 11, 1994, the President of the United States signed EO 12898, entitled, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The general purposes of the EO are to: 1) focus the attention of Federal Agencies on the human health and environmental conditions in minority communities and low-income communities with the goal of achieving environmental justice; 2) foster non-discrimination in Federal programs that substantially affect human health or the environment; and 3) give minority communities and low-income communities greater opportunities for public participation in and access to, public information on matters relating to human health and the environment.

The EO directs Federal Agencies, including NASA, to develop environmental justice strategies. Further, EO 12898 requires NASA, to the greatest extent practicable and permitted by law, to make the achievement of environmental justice part of NASA's mission by identifying and addressing, as appropriate, disproportionately high adverse human health or environmental effects on minority or low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands.

In accordance with EO 12898, NASA established an agency-wide strategy, which, in addition to the requirements set forth in the EO, seeks to: 1) minimize administrative burdens; 2) focus on public outreach and involvement; 3) encourage implementation plans tailored to the specific situation at each center; 4) make each center responsible for developing its own Environmental Justice Plan; and, 5) consider both normal operations and accidents.

In turn, KSC has developed a plan to comply with the EO and NASA's agency-wide strategy. As part of that plan, the impacts to low-income and minority populations in the KSC area were addressed as part of this EA. This project, for all alternatives addressed, would be implemented within the boundaries of KSC. The closest residential areas are 3 km (1.8 mi) to the south on Merritt Island and 12 km (7.6 mi) to the west in Titusville. No groups of either low-income or minority populations have been identified in either location. In addition, the distances of these areas from the Proposed Action preclude any direct impacts from construction or operations. Economic impacts are not expected to adversely affect any particular group. Construction

personnel would be drawn from the local workforce and provide a short-term economic benefit to the local area.

## 6.0 PREPARERS, CONTRIBUTORS, AND CONTACTS

The individuals from KSC who provided detailed data or analyses and who prepared this document are listed in Table 4. The table provides information concerning which section(s) each person was involved in writing or assembling.

**TABLE. 4 List of Preparers**

<b>Preparers</b>	<b>Affiliation</b>	<b>Professional Title</b>	<b>Contribution</b>
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## 7.0 REFERENCES

- KSC 2002                    Environmental Assessment for Space Commerce Way Phase 2. Jones Edmunds and Associates, prepared For NASA.
- FDER 1984                   Florida Department of Environmental Regulation, 1984. Florida Coastal Management Program Federal Consistency Evaluation Procedures. Office of Coastal Management, Department of Environmental Regulation, Tallahassee, Florida.
- Golden 1980                Golden, J.; R.P. Oullete; S. Sarri; and P.N. Cheremisinoff, "Environmental Impact Data Book," Ann Arbor Science Publishers Inc., Ann Arbor, Michigan, 1980.
- Hall 1991                    Hall, Carlton, Ambient Water Quality Conditions at the John F. Kennedy Space Center. John F. Kennedy Space Center, Florida, 1991.
- JEA 2005                    Jones Edmunds and Associates, Study to Construct Replacement Pass and ID Facility. June 10, 2005

- KSC 1992            National Aeronautics and Space  
Administration, Kennedy Space Center,  
"Facilities Master Plan, Volume I, John F.  
Kennedy Space Center," John F. Kennedy Space  
Center, December 11, 1992.
- KSC 2000            National Aeronautics and Space  
Administration, Kennedy Space Center,  
"Environmental Resources Document, John F.  
Kennedy Space Center," John F. Kennedy Space  
Center, February 1997.
- NPS 1986            National Park Service, Cape Canaveral  
National Seashore Management Plan, 1986,  
Canaveral National Seashore, Florida.
- USDA-SCS 1974      United States Department of Agriculture  
Soil Conservation Service, "Soil Survey of  
Brevard County, Florida," November 1974.

**APPENDIX A**  
**Ecological survey of Propose Site for PIDS**

## Ecological Characterization of the Pass and Identification Station Proposed Action Site

The Proposed Action Site is located immediately adjacent to the Kennedy Space Center Visitors' Center on SR 405. It is a total of 1.59 ha (3.93 ac); 1.57 ha (3.89 ac) are abandoned orange grove and the remaining 0.02 ha (0.04 ac) are hardwood hammock. The overstory consists primarily of citrus trees, with a line of Australian pines extending along the western edge and large Brazilian peppers along the northern edge. The hardwood hammock occurs on the eastern and southern sides of the site and contains oaks (*Quercus* sp.), cabbage palms (*Sabal palmetto*), and red maples (*Acer rubrum*). The ground cover on most of the site is typical of highly disturbed habitats, and is dominated by the exotic guinea grass (*Panicum maximum*) with few openings. The only soil type present is Wabasso sand, which is described as nearly level, poorly drained sandy soil where the water table is within 76 cm (30 in.) most of the time (Soil Survey of Brevard County, Florida 1974).

No protected wildlife species are expected to inhabit this site. Although citrus groves are sometimes used by gopher tortoises (*Gopherus polyphemus*) and associated species, such as eastern indigo snakes (*Drymarchon couperi*), these groves are abandoned and not maintained. The ground cover has become too thick to be suitable for gopher tortoise burrows and none were observed during field visits to the site. The Wabasso sand soils are also more hydric than what is preferred by tortoises for burrowing.

The hardwood hammock is potential habitat for eastern indigo snakes, but the 0.02 ha (0.04 ac.) included in this assessment is too small a portion to be considered an impact for these far-ranging snakes. Average home range size for a male indigo is 195 ha (482 ac.) and for a female is 210 ha (85 ac.), so the loss of 0.02 ha is likely insignificant. However, only 6% of the total vegetation on KSC is hardwood hammock, and it is often slated for development because it not considered a wetland and does not support many protected wildlife species. The hardwood hammock does provide important habitat for many non-protected wildlife species, in particular migratory birds which depend on KSC as a winter home or feeding/resting stop during migration. Confining impacts of this project to the citrus grove and avoiding destruction of or indirect impacts to the hammock (soil disturbance, hydrologic changes, etc.) should be attempted.

The access road into the site will come from SR 405 across the existing ditch. Impacts to the ditch will potentially affect several species of concern, including American alligator (*Alligator mississippiensis*), eastern indigo snake, snowy egret

(*Egretta thula*), little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), white ibis (*Eudocimus albus*), roseate spoonbill (*Ajaia ajaja*), woodstork (*Mycteria americana*), least tern (*Sterna antillarum*), and black skimmer (*Rynchops niger*). The alligator and indigo