APPENDIX B

NATURAL RESOURCES ASSESSMENT
COUNTY ROAD 2209
ST. JOHNS COUNTY, FLORIDA

1.0 INTRODUCTION

The purpose of this report is to provide reasonable assurance that endangered or threatened species will not be significantly affected by the proposed new County Road 2209 (CR 2209) in St. Johns County, Florida. The project limits are from Racetrack Rd. to County Road 208, a distance of approximately 15 miles. This report examines the area between CR 210 south to CR 208. The proposed corridor generally parallels I-95 and is located approximately one to two miles west of I-95. A general location map for the project is shown on Exhibit 2.1.

In July 2001, a Final Alternatives Corridor Report and Implementation Plan was prepared for St. Johns County. This report recommended a local road traffic reliever for I-95. This recommendation was then supported by the County's Florida Department of Transportation (FDOT) I-95 Variance Agreement dated September 24, 2002.

2.0 ENVIRONMENTAL CHARACTERISTICS

2.1 Existing Land Use

The majority of the existing land uses fall into several general categories based on their location. The properties fronting on C.R. 210 are mainly residential neighborhoods with some commercial property. South of the C.R. 210, agricultural and silvicultural development become the dominant land uses within the project corridor, however remnant natural areas are also present. A large portion of this area has been and continues to be used as pine plantation and for various types of agricultural purposes including row crops and pasture. The land uses shift back towards residential and institutional with some pasturelands as the corridor approaches and crosses International Golf Parkway and S.R. 16.

Between S.R. 16 and CR 208 pine plantation is the dominant land use within the project corridor. These areas were undoubtedly pine flatwoods prior to their conversion. Turnbull Creek and its minor tributaries along with their associated forested wetlands as well as highly impacted isolated forested wetlands are the dominant natural systems present in this area. Mesic pine flatwoods and live oak hammock are minor components. Between SR 16 and the proposed Turnbull Creek crossing, the project corridor traverses property purchased by St. Johns County for the purpose of creating a wetland mitigation bank. This tract is referred to as the Turnbull Regional Off-site Mitigation Bank. Restoration of the historic hydrology and natural communities is an integral part of the development plan for this tract.

2.2 Physiography and Topography

The project corridor is located in the Atlantic Coastal Plain Physiographic Province. Land surface topography in this area and for all of northeast Florida is dominated by ancient marine terraces. These terraces were created during the Pleistocene Epoch (10,000 to 2,000,000 years ago) as a result of changes in sea level. As sea level lowered, a new, relatively level terrace was exposed. A low scarp which is remnant of the ancient shoreline marks the landward extent of each terrace. A total of seven marine terraces have been identified in northeast Florida. They are, in descending elevation, the Coharie, Sunderland, Wicomico, Penholoway, Talbot, Pamlico, and Silver Bluff. All of the terraces have been dissected by stream erosion. Only small remnants of the older terraces exist. The project corridor is situated on the Pamlico Terrace (25 feet above mean sea level).

According to the Orangedale, Durbin, and Bakersville, FLA (1952, 1952 - photorevised 1970, and 1970 – photorevised in 1992, respectively) USGS 7.5 Minute Topographic Quadrangles, the project corridor has an elevation ranging from 25 feet to 31 feet.

2.3 Geotechnical Data

A preliminary geotechnical investigation was performed to help evaluate the possible habitat types and locations within the project area. Specifically, the purpose of this preliminary geotechnical investigation was to review readily available published information regarding anticipated geotechnical conditions within the study area. This information included the US Department of Agriculture (USDA), Natural Resources Conservation Services “Soil Survey of St. Johns County, Florida.” Figure 3.1.3 of the PER displays the SCS Soil Survey Map of the study area and Table 2.3 lists the general soil types that are mapped in the Soil Survey within the study area.

Table 2.3 Existing Soils

Florida MUID	Hydrological Soil Group	Description
92	A	Ortega-Penney-Centenary
101	A	Tavares-Zolfo-Paolo
102	A	Palm Beach-Canaveral-Urban Land
103	B/D	Pamona-Eaugallie-Malabar
105	D	Floridana-Rivera-Terra Ceia
107	B/D	Terra Ceia-Samsula-Tomoka

Areas possessing a hydrologic soil group of D are considered poorly drained soils. The B/D hydrologic soil group is soils that are typically saturated with water and are considered very poorly drained. Group A soils are characterized as having well drained sandy or gravely soils.

2.4 Hydrogeology

Three distinct hydrogeologic units (aquifer systems) exist within the stratigraphic units underlying the project corridor and include the surficial aquifer, the semi-confined aquifer and the Floridan Aquifer. The surficial aquifer consists of Holocene and Pleistocene sediments and extends from the first occurrence of ground water to the top of the Hawthorne Group, a depth of approximately 80 feet below ground surface. The upper part of the surficial aquifer is comprised of undifferentiated quartz sands and clayey sands and shell marl beds. Some of the more rich clay beds may serve as semi-confining units. The surficial aquifer is hydraulically connected to the surface and is therefore susceptible to petroleum and chemical impacts.

The semi-confined aquifer is incorporated within the Hawthorne Group. Lithologies characterizing this aquifer system consist of interbedded dolomitic and phosphatic quartz sands and clayey sands, clays and limestone. Clay beds in this formation serve as confining units for the semi-confined and Floridan Aquifer systems.

The Floridan Aquifer system is present from the base of the lower most confining unit in the Hawthorne Group through those portions of the fossiliferous limestone of the Ocala Group. This hydrogeologic unit is the major source of water for irrigation, public supply, and industry in northeast Florida. The depth to the Floridan Aquifer at the project corridor is approximately 230 feet below ground surface.

Groundwater environmental impacts, when present, primarily effects the surficial aquifer. Petroleum impact is usually concentrated near the top of the surficial aquifer due to petroleum's relatively low specific gravity which prevents it from sinking. Solvent contamination may penetrate deeper aquifers due to a higher specific gravity, which allows the solvents to sink

2.5 Upland Habitat

Uplands in the project area were classified using the January 1999 version of the *Florida Land Use, Cover and Forms Classification System* (FLUCFCS) developed by the Thematic Mapping Section of the Department of Transportation. Five upland habitat types are found at the project site –cropland and pastureland (210), pine flatwoods (411), pine - mesic oak (414), live oak hammock (427) and pine plantation (441).

Cropland and Pastureland (210)
Historically pine flatwoods was the dominant upland natural community along the project corridor. Presently the majority of the upland habitat within the project corridor has been modified for agricultural and silvicultural use. The central portion of the project area has been cultivated for row crops such as potatoes, soybean, cabbage and other suitable commercial species. Fallow fields are generally dominated by ruderal species such as dog fennel (*Eupatorium capillifolium*), broomsedge (*Andropogon* sp.) and blackberry (*Rubus argutus*). Bahia grass (*Paspalum notatum*) is the dominant species of the pasture. The agricultural use has severely impacted the diversity of wildlife utilizing these areas. Generally the wildlife species found are common in northeast Florida and found in a number of habitats. The fields provide primarily foraging habitat used on an opportunistic basis. In addition to the direct physical impacts to the lands being cultivated, these practices have also altered the hydrology of adjacent areas.

Pine Flatwoods (411)
Pine flatwoods remnants are located throughout the project corridor. Historically, this natural community type was the dominant upland habitat. Conversion for agricultural and silvicultural development has resulted in its currently limited extent in the project corridor. Slash pine (*Pinus elliottii*) is the dominant canopy species present with saw palmetto (*Serenoa repens)* and gallberry (*Ilex glabra*) as common groundcover associates.

Pine - Mesic Oak (414)
This land cover type is a mesic variant of the pine flatwoods natural community. It has also been severely impacted by past agricultural and silvicultural development and currently is represented by small remnants scattered throughout the project corridor. Slash pine is the dominant canopy species with water oak (*Quercus nigra*) and diamond-leaf oak (*Quercus laurifolia)* as common subcanopy species. Gallberry is the dominant groundcover species associated with this habitat type.

Live Oak Hammock (427)
Small remnants of live oak hammock are found along Turnbull Creek in the project corridor south of SR 16 crossing. Live oak (*Quercus virginiana)* is the dominant canopy species with saw palmetto and sapling live oak as common groundcover associates.

Pine Plantation (441)
Slash pine is the dominant canopy species of the pine plantation, generally forming a closed canopy. Groundcover varies from saw palmetto in the highest elevations to gallberry with mesic oaks and red maple (*Acer rubrum*) in slightly lower elevations. The northern and southern portions of the project area has been maintained and operated as silvicultural lands for many years. This has removed any semblance to the natural communities that existed prior to these operations and has limited their use by wildlife as suitable habitat.

2.6 Wetland Habitat

Wetlands along the project corridor consist of predominantly contiguous and isolated, forested systems within the Trout Creek and Sixmile Creek watersheds. Generally emergent wetlands are located along the disturbed fringes of the mixed, forested wetlands and bottomland swamp, in the littoral zones of the borrow lakes and in various ditches throughout the project corridor.

Wetlands in the project area were classified using the January 1999 version of the *Florida Land Use, Cover and Forms Classification System* (FLUCFCS) developed by the Thematic Mapping Section of the Department of Transportation. Four wetland types are found at the project site –stream and lake (bottomland) swamp (615), hydric pine plantation (6251), wetland mixed forest (630) and freshwater marsh (641). Wetland systems at the site have been impacted by silvicultural and agricultural activity.

Stream and Lake (Bottomland) Swamp (615)
The bottomland hardwood swamp type is associated with the streams found along the project corridor. Common species in this wetland type include bald cypress (*Taxodium distichum*), black gum (*Nyssa sylvatica* var. *biflora*), elm (*Ulmus americana* var. *floridana*), red maple, sweetgum (*Liquidambar styraciflua*), water oak and diamond-leaf oak. Wetlands in this category are generally of good quality in the project area.

Hydric Pine Plantation (6251)
The hydric pine plantation type can best be described as a variation of the hydric pine flatwoods. These wetlands were historically more than likely hydric pine flatwoods or the fringe of mixed, forested wetlands prior to conversion to pine plantation. Slash pine is the dominant canopy species with some mesic oaks or loblolly bay (*Gordonia lasianthus*). Groundcover is composed of gallberry, fetterbush (*Lyonia lucida*), broomsedge and other hydrophytic herbaceous species. The hydric pine plantation wetlands at the project site are generally marginally jurisdictional and of poor quality.

Wetland Mixed Forest (630)
The mixed wetland forest type is composed of hardwoods and conifers in which neither type dominates the canopy. Common species in this wetland type include bald cypress, black gum, slash pine, red maple, sweetgum, water oak, swamp bay (*Persea palustris*), wax myrtle (*Myrica cerifera*), poison ivy (*Toxicodendron radicans*), chain fern (*Woodwardia virginica*) and maidencane (*Panicum hemitomon*). Wetlands of this type are generally of moderate quality with adjacent agricultural and silvicultural activity having the greatest influence upon the wetland functions.

Freshwater Marsh (641)
The freshwater marsh type wetlands are located at the disturbed fringes of the mixed, forested wetlands and bottomland swamp, in the littoral zones of the borrow

lakes and in various ditches throughout the project corridor. Common species include maidencane, broomsedge, soft rush (*Juncus effusus*), tall swamp panicum (*Panicum scabriusculum*), blue maidencane (*Amphicarpum muhlenbergianum*), chain fern and pickerelweed (*Pontederia cordata*). Generally these wetlands are of moderate quality.

2.7 Surface Water Features

The project corridor crosses several surface water features along its length. From CR 210 heading south, the first surface water encountered is Lake Kathryn, a borrow pit located to the northeast of the alignment. A narrow zone of maidencane characterizes the littoral zone of this surface water. Impacts to Lake Kathryn will be minimized or avoided by the preferred alignment. The second feature encountered is Trout Creek. Trout Creek is one of the small tributaries of the Lower St. Johns River. It drains Big Island Swamp, which is located east of the project corridor. A large bottomland hardwood swamp is associated with Trout Creek. The project corridor crosses Trout Creek at Whites Ford at one of its narrowest points in order to minimize the impacts to the system.

The project corridor also crosses Mill Creek and Turnbull Creek, two tributaries of Sixmile Creek. From its headwaters at Big Island Swamp located east of the project corridor, Mill Creek flows southwestward discharging to Sixmile Creek, which ultimately joins the St. Johns River. Within the project corridor, Mill Creek is a narrow semi-channeled system with little to no vegetative buffer. Turnbull Creek is also a headwater tributary of Sixmile Creek. It is a larger creek system that originates at Turnbull Swamp, which is located northeast of the project corridor. Turnbull Creek has a well-developed and relatively undisturbed bottomland hardwood swamp associated within its floodplain. Impacts to Turnbull Creek and its associated wetlands will be avoided or minimized to all extents practicable.

3.0 METHODOLOGY

3.1 Listed Species

3.1.1 Agency Contacts

Three agencies that maintain information on protected species were contacted for information available from their records, including computer searches for related data.

1. U.S. Fish and Wildlife Service (FWS). A search of the FWS Internet database was conducted to obtain the latest list of federally endangered and threatened species for St. Johns County.

2. Florida Fish and Wildlife Conservation Commission (FWC).

Florida's Endangered Species, Threatened Species and Species of Special Concern Official List (29 January 2004) was obtained during a search of the FWC Internet database. The FWC's Eagle Nest Locator and Waterbird Colony Locator databases were also searched in an effort to determine the presence of a nests within or adjacent to the project limits.

3. Florida Natural Areas Inventory (FNAI). A search of the FNAI Internet database was conducted to obtain the latest list of state and federal endangered and threatened species for St. Johns County. Additionally, a Standard Data Report was obtained including element occurrences and potential habitat for rare species. The search revealed 20 potentially occurring federally listed and state-listed protected wildlife species and numerous plant species associated with the project area.

3.1.2 Literature Search

In addition to the contacts discussed above, a literature search was conducted to provide additional information on the potential presence of threatened or endangered species within the defined project limits. Standard references were consulted in developing the project area profile in relation to listed species. All of these sources appear in Section 6 REFERENCES and include the *Rare and Endangered Biota of Florida* series and the FNAI *County Distribution and Habitats of Rare and Endangered Species in Florida* (2002).

3.1.3 Field Survey

In preparation for a field inspection, reference materials were reviewed. These included St. Johns County soil survey maps (U.S. Department of Agriculture, Natural Resource Conservation Service 1974), topographic maps for the Orangedale, Durbin and Bakersville 7.5-minute quadrangles (USGS 1988), the most current National Wetland Inventory maps for the same quadrangles (USFWS 2002), and data obtained from government sources. An initial analysis of habitat types was developed according to *Florida Land Use, Cover and Forms Classification System* (FLUCFCS) (FDOT 1999). An environmental study was conducted in order to determine potential impacts to habitats and listed species. This study comprised a series of site reviews in April and May 2004 to identify existing communities, vegetative composition and to assess each community's potential to support listed species

3.2 Wetland Determinations

Detailed identification of wetlands in the project area involved a combination of interpretation of current aerial photograph grayscale and infrared prints (1"=200' or larger) and on-site ground truthing. Other resources used in evaluating the wetlands included the USGS 7.5-minute topographic Orangedale, Durbin and Bakersville quadrangles (*1992*), U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory map, and U.S. Department of Agriculture Natural Resource Conservation Service soil survey maps (*1983*).

Standard federal and state definitions guided the identification of wetlands in the project area per Florida Department of Transportation and Federal Highway Administration guidance. Characteristics of hydric soils, hydrophytic vegetation and wetland hydrology are determining factors in all of these definitions. Wetlands throughout the project area were determined based on the *U.S. Army Corps of Engineers Wetlands Delineation Manual* (Department of the Army, Waterways Experiment Station, U.S. Army Corps of Engineers 1987) as well as on the unified statewide methodology of the Florida Department of Environmental Protection (FDEP) and St. Johns River Water Management District (SJRWMD) specified in Chapter 62-340 F.A.C.

Wetlands were identified and described based on the January 1999 version of the *Florida Land Use, Cover and Forms Classification System* (FLUCFCS) developed by the Thematic Mapping Section of the Department of Transportation and the U.S. Fish and Wildlife Service's (FWS) classification system described in *Classification of Wetlands and Deep Water Habitats of the United States* (Cowardin *et al*. 1985). Wetland limits shown in this document have not been verified by the regulatory agencies.

3.3 Contamination

3.3.1 Data Collection

As part of this contamination screening evaluation, a computerized database search was requested from Environmental Data Resources, Inc. (EDR). The database search included the entire project corridor length of approximately 12.1 miles and a maximum search radius of one mile. The results of the database search served as a basis for the environmental regulatory review included in a typical Level I contamination screening evaluation. The following table (Table 3.3.1) provides a list of the government databases (e.g., National Priority List, Comprehensive Environmental Response, Compensation, and Liability Information System) that are included in the search and the number of sites contained in each database. A copy of the EDR Corridor Study Report is located in the project file.

Table 3.3.1. Summary of Database Findings

GOVERNMENT DATABASE	NUMBER OF SITES FOUND	GOVERNMENT DATABASE	NUMBER OF SITES FOUND
Federal ASTM Standard		**Federal ASTM Supplemental (continued)**	
NPL	0	PADS	0
Proposed NPL	0	US Brownfields	0
CERCLIS	0	DOD	0
CERC-NFRAP	0	RAATS	0
CORRACTS	0	TRIS	0
RCRIS-TSD	0	TSCA	0
RCRIS Large Quantity Generator	0	SSTS	0
RCRIS Small Quantity Generator	0	FTTS	0
ERNS	0	**State or Local ASTM Supplemental**	
State ASTM Standard		AST	2
State Hazardous Waste	0	FL Sites	0
State Landfill	0	Florida Cattle Dip Vats	0
LUST	4	Spills	0
UST	4	Priority Cleaners	0
Indian UST	0	DEDB	0
VCP	0	Dry Cleaners	0
Federal ASTM Supplemental		Wastewater	0
CONSENT	0	**EDR Proprietary Historical Databases**	
ROD	0	Coal Gas	0
Delisted NPL	0	**Brownfields Databases**	
FINDS	0	US Brownfields	0
HMIRS	0	Institutional Control	0
MLTS	0	Brownfields	0
MINES	0	VCP	0
NPL Liens	0		

Note: Facilities may be listed in more than one database.

3.3.2 Aerial Photographs

Copies of aerial photographs taken in 1952, 1960, March 1983 and 2003 were obtained from the St. John's County Public Works Department, Survey & Mapping/GIS Division. These aerial photographs were evaluated to identify changes in land use and areas of potential environmental concern.

The 1952 aerial photographs show the south portion of the project corridor, between County Road 208 and Nine Mile Road (International Golf Parkway), as pastureland and wooded areas. Other roads in the vicinity of the project corridor such as State Road 13A, State Road 16 and Pacetti Road are visible. The northern portion of the project corridor from International Golf Parkway to County Road 210 is pastureland and wooded areas. State Road 16, Nine Mile, Leo Maguire Road and other unpaved minor roads are visible.

The 1960 aerial photographs show an overall increase in agricultural land use at the project corridor. The northern and southern portions of the project corridor as well as the surrounding area are mainly pastureland, wooded areas and unimproved roads similar to conditions seen in the 1952 aerial photographs. A potential gasoline station, currently Horton's Grocery, is visible west of the intersection of State Road 16 and International Golf Parkway (Nine Mile Road). A school building, Mill Creek Elementary School, is located north of the intersection of State Road 16 and International Golf Parkway. A structure resembling a gasoline service station is visible at the intersection of Pacetti Road and County Road 208.

The March 1983 aerial photographs show the south portion of the project corridor as pastureland, agricultural and wooded areas. Also, development of unimproved roads north of County Road 208 are visible. The north portion of the project corridor appears as wooded areas, pastureland and agricultural. An electrical substation is present along the south side of County Road 210 and immediately east of the project corridor. A power line easement parallel to the project corridor extends south of this electrical substation and eventually crosses the project corridor. Horton's Grocery and Mill Creek Elementary School are visible west of the central portion of the project corridor.

The 2003 aerial photographs showed the project corridor and surrounding area similar to conditions observed during the site reconnaissance.

3.3.3 Project Corridor Walk-Through and Interviews

Site visits were also performed for the purpose of verifying information obtained during the record search, noting changes in land use and observing

signs of possible contamination sources such as odors, spills, stains, excavations, storage areas, drains, and the presence of stressed vegetation. During these visits, property owners and/or occupants were not available for interviews. The site visits also included a visual inspection of adjacent properties for any visible signs of potential contamination sources that could adversely impact the project corridor.

3.3.4 Field Methods

Based on information found during the regulatory review and the visual reconnaissance, no additional soil and/or groundwater testing were performed as part of this investigation.

3.3.5 Impact Analysis

Each property within and/or adjacent to the proposed project corridor was evaluated for its potential environmental impact to the project corridor. Facilities were rated as no risk, low risk, medium risk, or high risk. A description of these ratings is offered below:

- **No** – After a review of all available information, there is nothing to indicate contamination would be a problem. It is possible that contaminants could have been handled on the property, however, all information indicate problems should not be expected.

- **Low** – The former or current operation has a hazardous waste generator identification number, or deals with hazardous materials; however, based on all available information, there is no reason there would be any involvement with contamination. This is the lowest rating a gasoline station operating within current regulations could receive.

- **Medium** – After a review of all available information, indications are found that identify known soil and/or water contamination and that the problem does not need remediation, is being remediated, or that continued monitoring is required. The complete details of the remediation requirements are important to determine what the FDOT must do if the property were to be acquired. A recommendation should be made on each property falling into this category as to its acceptability for use within the proposed project, what actions might be required if the property is acquired, and the possible alternatives if there is a need to avoid the property.

- **High** – After a review of all available information, there is a potential for contamination problems. Further assessment will be required after alignment selection to determine the actual presence and/or levels of

contamination and the need for remedial action. A recommendation must be included for what further assessment is required. This would also be the case where the analyst "strongly suspects contamination" at the site. Conducting the actual Contamination Assessment is not expected to begin until alignment is defined; however, circumstances may require additional screening assessments to begin earlier. Properties that were previously used as gasoline stations and have not been evaluated or assessed would probably receive this rating

4.0 RESULTS

4.1 Listed Species

4.1.1 General Information

There are several listed species that may utilize resources found within the project area. The fact that the majority of the project corridor consists of lands developed for pasture and silviculture purposes limits the natural systems required to support a rich diversity of wildlife species. The majority of listed wildlife found within the corridor is associated with isolated wetland systems as well as those contiguous with Mill Creek and Trout Creek. The list is displayed in Table 4.1.1

Those species that require habitat types not found within or adjacent to the project area were determined to have no likelihood of occurring within the project corridor. Those species whose required habitats were adjacent to but not in the project area were given a low likelihood of occurring within the project corridor. In these instances consideration was given to more mobile species, such as birds, and consequently was given a low probability of occurrence even if their required habitat was not adjacent to the project corridor but is found within the same general region. Those species that are known to occur or whose preferred habitat is known to occur within the project corridor were given a high probability of occurrence.

Table 4.1.1. Federal and State Listed Fauna and Flora that Potentially Occur within the CR 2209 Project Corridor.

Scientific Name	Common Name	Status		Habitat Preference	Likelihood of Occurrence
		Federal	State		
Amphibians					
Ambystoma cingulatum	Flatwoods Salamander	T	SSC	Pine flatwoods with wiregrass groundcover and scattered cypress or gum wetlands	Low
Rana capito	Gopher Frog		SSC	Upland habitat, usually associated with gopher tortoise burrows	Low; commensal with gopher tortoise
Reptiles					
Alligator mississippiensis	American Alligator	T (S/A)	SSC	Rivers, wetlands and open water bodies	High
Gopherus polyphemus	Gopher Tortoise		SSC	Longleaf pine-xeric oak, sand pine scrub, hammocks, dry prairie, pine flatwoods and disturbed habitats	Low
Drymarchon corais couperi	Eastern Indigo Snake	T	T	Wide range of habitat types from upland sandhill to swamp edges	Moderate
Pituophis melanoleucus mugitus	Florida Pine Snake		SSC	Longleaf pine-xeric oak, sand pine scrub, pine flatwoods, and old field habitats	Low
Birds					
Aramus guarauna	Limpkin		SSC	Mangroves, freshwater marshes, swamps, springs and spring runs, and pond and river margins	Low
Egretta caerulea	Little Blue Heron		SSC	Freshwater, brackish and saltwater wetlands	High

Scientific Name	Common Name	Status		Habitat Preference	Likelihood of Occurrence
		Federal	State		
Birds Continued					
Egretta thula	Snowy Egret		SSC	Permanently and seasonally flooded wetlands, streams, lakes, swamps, and manmade impoundments and ditches	High
Egretta tricolor	Tricolored Heron		SSC	Prefers coastal environments; permanently and seasonally flooded wetlands, tidal creeks, ditches and edges of ponds and lakes	High
Eudocimus albus	White Ibis		SSC	Freshwater and brackish marshes, salt flats and salt marsh meadows, forested wetlands, wet prairies, swales, seasonally inundated fields, and manmade ditches	High
Grus canadensis pratensis	Florida Sandhill Crane		T	Prairies, freshwater marshes, and pasturelands	Low
Mycteria americana	Wood Stork	E	E	Inundated forested wetlands, freshwater marshes, swamps, lagoons, ponds, tidal creeks, and flooded pastures and ditches	High
Picoides borealis	Red-cockaded Woodpecker	E	SSC	Open mature pine woodlands, forages in forested habitat types that include pines of various ages	Low

Scientific Name	Common Name	Status		Habitat Preference	Likelihood of Occurrence
		Federal	State		
Birds Continued					
Falco peregrinus	Peregrine Falcon		E	Dry prairies, wet prairies, marshes, and agricultural environments	Low
Falco sparverius paulus	Southeastern American Kestrel		T	Open pine habitats, sandhill, woodland edges, prairies, pastures	Moderate
Haliaeetus leucocephalus leucocephalus	Bald Eagle	T	T	Areas close to coastal areas, bays, rivers, lakes, or other bodies of water that provide concentrations of food sources	High
Mammals					
Sciurus niger shermani	Sherman's Fox Squirrel		SSC	Sandhills, pine flatwoods, and pastures	Low
Ursus americanus floridanus	Florida Black Bear		T	Wide variety of forested communities	Moderate
Felis concolor coryi	Florida Panther	E	E	Extensive blocks of mostly forested communities	Low
Plants					
Adiantum tenerum	Brittle Maidenhair Fern	-	E	limestone ledges; sink walls	Low
Asclepias viridula	Green Milkweed; Southern Milkweed	-	T	wet pinelands; flatwoods	Moderate
Calopogon multiflorus	Many-flowered Grass Pink	-	E	mesic pinelands; meadows	High
Calydorea caelestina	Bartram's Ixia	-	E	grassy flatwoods	Moderate
Ctenium floridanum	Florida Toothache Grass	-	E	sandhills; dry pinelands	Low

Scientific Name	Common Name	Status		Habitat Preference	Likelihood of Occurrence
		Federal	State		
Plants Continued					
Epidendrum conopseum	Green-fly Orchid	-	C	cypress & hardwood swamps; mesic hammock	Moderate
Helianthus carnosus	Flatwoods Sunflower	-	E	wet sandy soil in flatwoods	Moderate
Lilium catesbaei	Pine Lily	-	T	wet flatwoods; bogs; usually with grasses	High
Lycopodium cernuum	Nodding Clubmoss; Staghorn Clubmoss	-	C	wet depressions; ditches; mesic flatwoods	Moderate
Opuntia stricta	Erect Pricklypear	-	T	shell mittens; dunes; coastal hammocks	Low
Osmunda cinnamomea	Cinnamon Fern	-	C	Wet depressions; ditches; swamps	High
Osmunda regalis var. spectabilis	Royal Fern	-	C	swamps; wetlands	High
Matelea gonocarpos	Angle-pod	-	T	bluffs; floodplains	Low
Monotropis reynoldsiae	Pigmy-pipes; Sweet Pine-sap	-	E	grows on *Cornus florida* roots	Low
Myrcianthes fragrans	Simpson's Stopper; Naked-wood; Twinberry	-	T	coastal hammocks	Low
Nemastylis floridana	Celestial Lily	-	E	wet flatwoods; prairies; marshes; cabbage palm hammock edges	Moderate
Nolina atopocarpa	Florida Beargrass	-	T	grassy areas of flatwoods; bordering savannahs; shell middens	Low
Ophioglossum palmatum	Hand Fern	-	E	hydric hammock; strand swamp	Moderate

Scientific Name	Common Name	Status		Habitat Preference	Likelihood of Occurrence
		Federal	State		
Plants Continued					
Pecluma plumula	Plume Polypody	-	E	wet hammocks; swamps	Moderate
Pinguicula caerulea	Blue Butterwort	-	T	pine flatwoods; ditches	High
Pinguicula lutea	Yellow Butterwort	-	T	flatwoods; bogs	High
Platanthera blephariglottis	White-fringed Orchid	-	T	marshes; meadows; bogs; depressions in pine savannahs	Moderate
Platanthera ciliaris	Yellow-fringed Orchid	-	T	bogs; wet flatwoods	High
Platanthera nivea	Snowy Orchid	-	T	bogs; wet prairie; pine savanna; pine flatwoods	Moderate
Pogonia ophioglossoides	Rose Pogonia	-	T	Sphagnum bogs; meadows; swamps; pine savannahs; pine flatwoods wet prairie	High
Pteroglossaspis ecristata	Non-crested Eulophia	-	T	sandhill; sand pine scrub; pine flatwoods	Low
Rhapidophyllum hystrix	Needle Palm	-	C	river bluffs; ravine slopes; hammocks; bottomlands	Moderate
Rhododendron canescens	Pink Azalea	-	C	wet to well drained woodlands with acidic soils	Moderate
Rudbeckia nitida	St. John's Susan	-	E	wet or mesic pine flatwoods; bogs; savannahs; seepage slopes; ditches	Moderate
Ruellia noctiflora	Night-flowering Ruellia; Night-blooming Wild Petunia	-	E	wet flatwoods; seepage slopes	Moderate

Scientific Name	Common Name	Status		Habitat Preference	Likelihood of Occurrence
		Federal	State		
Plants Continued					
Sarracenia minor	Hooded Pitcher-plant	-	T	flatwoods; bogs; ditches	Moderate
Zamia pumila	Coontie	-	C	well drained sandy or loamy soils	Low
Zephyranthes atamasco	Rain-lily	-	T	wet pasture; meadows; moist woods	Moderate
Zephyranthes treatiae	Treat's Zephyr Lily	-	T	moist hammocks; floodplain forests	Moderate

Legend
E – Endangered; T – Threatened; SSC - Species of Special Concern; T (S/A) = Threatened/Similarity of Appearance; C – Commercially exploited.

Note: The CR 2209 project corridor extends from CR 208 to CR 210.

Sources: Florida Fish and Wildlife Conservation Commission (FWC). Florida's Endangered Species, Threatened Species and Species of Special Concern. Official Lists, August 1, 1997; FWC. Eagle Nest Locator database search; FWC. Water Bird Colony Locator database search; Florida Natural Areas Inventory database search; Coile, Nancy C. 1996. *Notes on Florida's Endangered and Threatened Plants*. Florida Department of Agriculture and Consumer Services, Division of Plant Industry, Gainesville, FL.

4.1.2 Federally Listed Species

Fauna

Flatwoods Salamander (*Ambystoma cingulatum*)
The Flatwoods Salamander is a small headed, stocky salamander found in the lower Coastal Plain. In Florida the species is ranges throughout the Panhandle to as far south as Marion County. The preferred habitat is pine flatwoods-wiregrass communities adjoining cypress heads and naturally occurring ponds without predatory fish. The Flatwoods Salamander is listed as Threatened by FWS and as a Species of Special Concern by FWC. Reasons for the current status of the species include habitat destruction, inappropriate land management plans such as prescribed burns conducted only during the winter season and pesticide poisoning from silvicultural and agricultural land uses.

Suitable habitat for the Flatwoods Salamander is scarce along the project corridor. Additionally the project site is outside the known range of the species. For these reasons, the proposed construction is not anticipated to impact the Flatwoods Salamander.

American Alligator (*Alligator mississippiensis*)
The American Alligator is listed as a Species of Special Concern by the FWC and is listed as Threatened by the FWS due to its similarity of appearance to the American Crocodile (*Crocodylus acutus*). The American Alligator is a large aquatic reptile found in all types of permanent water bodies throughout the state.

The wetlands along the project corridor provide suitable habitat for the American Alligator. The wetlands adjacent to the project corridor also provide denning and foraging habitat for the species. No American Alligators were observed during the April/May 2004 site surveys.

The American Alligator population in Florida is no longer considered threatened by the federal government but is listed as such due to its similarity of appearance to the American Crocodile. Because there are no American Crocodiles in St. Johns County, there is no possibility of confusing the two species and impacting the American Crocodile. Since compensatory mitigation for the unavoidable wetland impacts associated with construction of the subject roadway will be required, it is not anticipated that the species will be adversely impacted.

Eastern Indigo Snake (*Drymarchon corais couperi*)
The Eastern Indigo Snake is a large non-venomous snake, which occurs throughout Florida and the coastalplain of Georgia. Prime habitat is high, dry, well-drained sandy soils. The species is often found in association with the Gopher Tortoise. The tortoise burrow is commonly used as a den and for egg laying. The Eastern Indigo Snake is also found in swamps and flatwoods. Both FWS and FWC classify the Eastern Indigo Snake as Threatened. Habitat loss and historic over-collecting by the pet trade are the reasons for the current status of the species.

While some suitable habitat exists within the project corridor, there is not a large enough tract of contiguous habitat to support a large Eastern Indigo Snake population. Given the patchwork nature of the suitable habitat within the project area and the species large land acreage requirements, the likelihood of occurrence of the species within the project corridor is moderate at best. No Eastern Indigo Snakes or evidence of their presence were observed during the April/May 2004 site surveys.

Wood Stork (*Mycteria americana*)
The Wood Stork is state and federally listed as an Endangered species and is further protected under the U.S. Migratory Bird Treaty Act. The Wood Stork can be found throughout peninsular Florida and the eastern panhandle but is generally absent from the western panhandle and the Florida Keys. Wood Storks are large colonial-nesting, wading birds. Primary nesting sites are cypress or mangrove swamps, although colonies have been reported in artificial or impacted areas. Foraging habitat includes shallow waters of marshes, lagoons, lakes, tidal creeks, seasonally flooded pastures and roadside ditches. Small fish provide the main dietary item. Wood Storks have been documented to fly 80 miles from nesting to foraging sites. Habitat destruction and modification of wetland hydrology are the primary causes of the decline of the species.

A search of the FWC's Waterbird Colony Locator database indicated that there are two active Wood Stork rookeries in the general area but none that are close to the project corridor. Rookery # 594004 is located in southeastern Duval County approximately 13 miles from the project corridor and Rookery # 606109 is situated in St. Johns County approximately 15 miles southeast of the project corridor near the Intracoastal Waterway. There are several suitable foraging habitats within the corridor mostly associated with the creek crossings (White's Ford, Mill Creek and Turnbull Creek) and Lake Kathryn. Given the existence of suitable foraging habitat, the likelihood of the species occurring within the project corridor is high.

Red-cockaded Woodpecker (*Picoides borealis*)
The Red-cockaded Woodpecker is federally listed as an Endangered species and state listed as a Species of Special Concern. The Red-cockaded Woodpecker can be found throughout Florida, except the Florida Keys, with their distribution tied to the remaining stands of old-growth pine forest. This species requires mature pine habitat and generally prefers longleaf pine flatwoods in central and north Florida and slash pine in the southern portions of the state. While they require mature pines for nesting, pine dominated habitat of any age can be used for foraging, although a preference is noted for older stands.

A review of the Florida Bird Breeding Atlas shows no known populations of the Red-cockaded Woodpecker occur within St. Johns County. Additionally, no suitable nesting habitat is found within the project area due to extensive silvicultural and agricultural practices. Given the lack of suitable nesting habitat and no documented populations within or near the project area, the likelihood of occurrence of the species within the project corridor is remote.

Bald Eagle (*Haliaeetus leucocephalus leucocephalus*)
The Bald Eagle is state and federally listed as a Threatened species and is further protected under the U.S. Migratory Bird Treaty Act. The Bald Eagles' preferred habitat includes mature forested areas in close proximity to open bodies of water that provide suitable food sources. Preferred nesting trees are generally tall, mature pines, although other tree species are used, with a clear view of the surrounding area. Florida has the largest breeding population of Bald Eagles outside of Alaska with breeding pairs found mainly in the peninsula and the eastern portion of the panhandle. Historic bioaccumulation of contaminants as well as habitat destruction has impacted the species. The viability of the species has improved with the ban on certain pesticides in the United States.

A search of the FWC's Bald Eagle Nest Locator database revealed that no known nests occur within 2 miles of the project corridor, but nests are common along the St. Johns River. However, while no nests were discovered during the field reviews one adult and one immature Bald Eagle were observed within the project area near Lake Kathryn. This is not surprising, given the prevalence of suitable nesting trees and foraging habitat (numerous sizable retention ponds) within the general area. Due to the presence of abundant suitable nesting and foraging habitat and the documented nests within the general project area, the likelihood of occurrence of the species within the project corridor is high.

Florida Panther (*Felis concolor coryi*)
Both the FWS and the FWC classify the Florida Panther as Endangered. The actual number of panthers remaining in the wild in Florida is estimated at about 50. The current distribution of the reproducing population of the species has been documented only in southern Florida. Everglades National Park, Big Cypress National Preserve, Fakahatchee Strand State Preserve, Big Cypress Seminole Indian Reservation and the Florida Panther National Wildlife Refuge are the primary public tracts supporting this remnant population. Private ranches and preserves in parts of Collier, Hendry, Lee and Glades Counties are also inhabited.

The Florida Panther utilizes tropical hammocks, pine flatwoods, cabbage palm forests, mixed swamp, cypress swamp, live oak hammocks, sawgrass marshes and Brazilian pepper thickets. Open agricultural lands are common around most publicly owned land in southern Florida and may be used by panthers if cover is adequate. Deer and wild hog are the primary food sources, as well as raccoons and armadillos.

On June 7, 2005 a healthy, uncollared, three-year-old, adult male panther identified as UCFP74 was struck and killed by a car on I-95 near the St. Johns - Flagler County line. Considering the age of the individual, FWC is of the opinion that this was a "dispersing" male of the south Florida population in the area in search of a mate. There is no documented viable population of the species in St. Johns County. According to U. S. Fish & Wildlife Service (FWS), this was the first confirmed sighting of a Florida Panther in the area in 20 years.

Since habitats within the project corridor are of marginal quality and utilization of the project area by the Florida Panther is uncommon, the likelihood of occurrence of the species is low. The project as proposed is not expected to impact the species.

Flora
According to the FWS website, there are no known federally listed plant species populations remaining within St. Johns County. No federal or state listed plants were observed during the April/May 2004 site surveys.

4.1.3 State Listed Species

Gopher Frog (*Rana capito*)
The Gopher Frog is state listed as a Species of Special Concern and is not listed by FWS. It is found throughout the state with the exception of the Everglades and the Florida Keys. Preferred habitat includes sandhill and scrub systems with adjacent isolated frequently flooded wetlands or ponds. It is often found closely associated with the Gopher Tortoise as it uses the tortoises' burrows as shelter during the day. Habitat loss is the primary reason for the decline of the species.

The xeric habitat required by the gopher frog is absent from the project corridor. The majority of the corridor is developed residential or agricultural lands with the remaining natural habitat consisting mostly of hydric or mesic systems. Given the lack of suitable habitat within or near the project area, the likelihood of the Gopher Frog occurring within the project corridor is low. The proposed roadway construction is not expected to impact the species.

Gopher Tortoise (*Gopherus polyphemus*)
The Gopher Tortoise is listed as a Species of Special Concern by the FWC and is not listed by the FWS. It is a large terrestrial species, which inhabits well-drained uplands such as dunes, xeric scrub, Florida sandhills and coastal strand. Burrows are constructed for protection from temperature, predators and desiccation. These burrows are extensively used by a large number of other species. Habitat loss is the primary reason for the decline of the species.

The xeric habitat required by the Gopher Tortoise is absent from the majority of the project corridor. The majority of the corridor is mesic silvicultural and agricultural lands with the remaining natural habitat consisting mostly of mesic to hydric forested systems or residential areas. Given the lack of suitable habitat within most of the project area, the likelihood of occurrence of the Gopher Tortoise within the project corridor is low.

Florida Pine Snake (*Pituophis melanoleucus mugitus*)
The Florida Pine Snake is listed as a Species of Special Concern by the FWC and is not listed by the FWS. It utilizes sandy habitats throughout northern and central Florida and along the Atlantic Coastal Ridge in south Florida. It is considered a commensal of Gopher Tortoise burrows. Ground-dwelling birds and their eggs, mice and pocket gophers are the

primary food source. Habitat destruction, historic collection by the pet trade and road mortality are the primary causes for the current status of the species.

The xeric habitat required by the Florida Pine Snake is absent from the majority of the project corridor. The corridor is characterized by predominantly mesic silvicultural and agricultural lands with the remaining natural habitat consisting primarily of mesic to hydric forested systems or residential areas. Given the lack of suitable habitat within most of the project area, the likelihood of occurrence of the Florida Pine Snake within the project corridor is low.

Limpkin (*Aramus guarauna*)
The Limpkin is listed as a Species of Special Concern by the FWC and is not listed by the FWS. It is found throughout the state with the largest populations in the central and southern areas. Preferred habitat includes marshes, creeks, streams, swamps, mangroves, and other shallow aquatic systems with ample food supplies. Nesting occurs in a wide range of habitats including aquatic and emergent vegetation and in the crowns of numerous tree species. Historic hunting by the millinery business, bioaccumulation of contaminants and habitat destruction are all factors that have led to the current listed status of this species.

A review of the Florida Bird Breeding Atlas shows one rookery site in St. Johns County known to be used by Limpkins, however it is not located within close proximity to the project area. The FWC's Waterbird Colony Locator database did not indicate any nesting by the species in St. Johns County. There are several suitable foraging habitats within the corridor primarily associated with the creek crossings (White's Ford, Mill Creek and Turnbull Creek) and Lake Kathryn. However, none of these foraging areas contain the Limpkin's preferred food, the apple snail or other snails and bivalves. Given the existence of marginal foraging habitat, the likelihood of occurrence of the species within the project corridor is low.

Little Blue Heron (*Egretta caerulea*)
The Little Blue Heron is listed as a Species of Special Concern by the FWC and is not listed by the FWS. It can be found throughout Florida, although becoming less frequent in the western panhandle and the southern reaches of the Florida Keys. The Little Blue Heron is a colonial nesting bird frequently found in a mixed-species colony. Nesting habitat consists of a variety of forested systems including cypress, mangroves, maples and palms generally located within flooded areas or on an island. Similar to other wading birds, the preferred foraging habitat includes shallow water areas like creeks and ditches, but with a preference for freshwater systems. Small fish and crustaceans are the primary food source. Historic hunting by the millinery business, bioaccumulation of contaminants and habitat destruction are all factors that have led to the current listed status of this species.

The FWC's Waterbird Colony Locator database indicated nesting by the species at Rookery # 594302 which is located approximately 15 miles northeast of the project corridor at Ponte Vedra Beach. There are several suitable foraging habitats within the corridor primarily associated with the creek crossings (White's Ford, Mill Creek and Turnbull Creek)

and Lake Kathryn. Given the existence of suitable foraging habitat, the likelihood of occurrence of the Little Blue Heron within the project corridor is high.

Snowy Egret (*Egretta thula*)
The Snowy Egret is listed as a Species of Special Concern by the FWC and is not listed by the FWS. It can be found throughout Florida, although becoming less frequent inland in the northern peninsula and in the western panhandle. The Snowy Egret is a colonial nesting bird frequently found in a mixed-species colony. Nesting habitat consists of a variety of forested systems including cypress, mangroves, maples and palms generally located within flooded areas or on an island. Foraging habitat is similar to other wading birds, shallow water areas like creeks and ditches, in both fresh and salt water. Small fish and crustaceans are the primary food source. Historic hunting by the millinery business, bioaccumulation of contaminants and habitat destruction are all factors that have led to the current listed status of this species.

The FWC's Waterbird Colony Locator database indicated nesting by the species at Rookery # 594302 which is located approximately 15 miles northeast of the project corridor at Ponte Vedra Beach. There are several suitable foraging habitats within the corridor mostly associated with the creek crossings (White's Ford, Mill Creek and Turnbull Creek) and Lake Kathryn. Given the existence of suitable foraging habitat, the likelihood of occurrence of the Snowy Egret within the project corridor is high.

Tricolored Heron (*Egretta tricolor*)
The Tricolored Heron is listed as a Species of Special Concern by the FWC and is not listed by the FWS. It can be found throughout Florida, although becoming less frequent inland in the northern peninsula and in the western panhandle. The Tricolored Heron is a colonial nesting bird and can be frequently found nesting in a mixed-species colony. Nesting habitat consists of a variety of forested systems including cypress, mangroves, maples and palms generally located within flooded areas or on an island. Foraging habitat is similar to other wading birds, shallow water areas like creeks and ditches, in both fresh and salt water. Small fish and crustaceans are the primary food source. Historic hunting by the millinery business, bioaccumulation of contaminants and habitat destruction are all factors that have led to the current listed status of this species.

The FWC's Waterbird Colony Locator database indicated nesting by the species at Rookery # 594302 which is located approximately 15 miles northeast of the project corridor at Ponte Vedra Beach. There are several suitable foraging habitats within the corridor primarily associated with the creek crossings (White's Ford, Mill Creek and Turnbull Creek) and Lake Kathryn. Given the existence of suitable foraging habitat, the likelihood of occurrence of the Tricolored Heron within the project corridor is high.

White Ibis (*Eudocimus albus*)
The White Ibis is listed as a Species of Special Concern by the FWC and is not listed by the FWS. It is found throughout Florida. The White Ibis is a colonial nesting bird frequently found in a mixed-species colony. Nesting habitat consists of a variety of forested systems including cypress, mangroves, maples and palms generally located within flooded areas or

on an island. Foraging habitat is similar to other wading birds, shallow water areas like creeks and ditches, with a varied prey list including crayfish, insects, snakes, fish and crabs. Historic hunting by the millinery business, bioaccumulation of contaminants and habitat destruction are all factors that have led to the current listed status of this species.

The FWC's Waterbird Colony Locator database indicated nesting by the species at Rookery # 606108 which is located approximately 10 miles southeast of the project corridor near Hastings. There are several suitable foraging habitats within the corridor mostly associated with the creek crossings (White's Ford, Mill Creek and Turnbull Creek) and Lake Kathryn. Given the existence of suitable foraging habitat, the likelihood of occurrence of the White Ibis within the project corridor is high.

Florida Sandhill Crane (*Grus canadensis pratensis*)
The Florida Sandhill Crane is listed as Threatened by the FWC and is not listed by the FWS. It inhabits freshwater marshes, prairies, pastures and shallow flooded open areas. Fish are the primary food item. Florida Sandhill Cranes typically nest in shallow water of lakes, ponds and open marshes that are dominated by pickerelweed (*Pontederia cordata*), maidencane (*Panicum hemitomon*) and arrowhead (*Sagittaria sp.*). Habitat destruction is the primary cause that has led to the current listed status of this species, however predation by domestic dogs is also a factor.

No Florida Sandhill Cranes or signs of their presence were observed during the survey of the project corridor. The project corridor is located at the northern edge of the known range of the species. In addition only limited foraging and nesting habitat exists at the project corridor. For these reasons the likelihood of occurrence of the species at the project corridor is low.

Peregrine Falcon (*Falco peregrinus*)
The Peregrine Falcon is listed by FWC as an Endangered species and is not listed by FWS. Protection on the federal level is obtained through the U.S. Migratory Bird Treaty Act. It is a seasonal resident of Florida and can be seen during their spring and fall migrations between their breeding grounds to the north and their winter refuges in the south. The Peregrine Falcon is a swift predator targeting other birds, like doves, ducks, and shorebirds, as it's favorite prey. Bioaccumulation of contaminants as well as habitat destruction are the most prominent factors that have led to the current listed status of this species.

No Peregrine Falcons were observed at the subject property during the survey of the project corridor. Because Peregrine Falcons typically migrate through Florida, they may forage at the subject property. However, the subject property is not an important staging area for this species. The likelihood of occurrence of the species at the project corridor is low.

Southeastern American Kestrel (*Falco sparverius paulus*)
The Southeastern American Kestrel is listed by FWC as a Threatened species and is not listed by FWS. Protection on the federal level is obtained through the U.S. Migratory Bird

Treaty Act. It is a small falcon found throughout Florida in a variety of habitats including pine flatwoods, sandhill and open fields. Nesting takes place from March through June. A migratory population is present in Florida during the winter. Small invertebrates are the primary food source, but small mammals and reptiles are also taken. Abandoned woodpecker cavities in dead pine trees, also known as snags, are a common nesting site. Habitat destruction is the primary factor that has led to the current listed status of this species.

No documented nesting sites are located at or near the project corridor. Nesting habitat in the general project area has been severely impacted by past and current land use practices (i.e., silviculture, agriculture, residential development), however foraging habitat is abundant. For these reasons the likelihood of occurrence of Southeastern American Kestrel within the project corridor is moderate at best.

Sherman's Fox Squirrel (*Sciurus niger shermani*)
The Sherman's Fox Squirrel is listed by FWC as a Threatened species and is not listed by the FWS. It can be found throughout peninsular Florida, excluding the southwestern portion, and is absent from the panhandle. The Sherman's Fox Squirrel prefers sandhills, but also occurs on the margins of pine flatwoods, live oak forest and cypress ponds.

Given that much of its former habitat has been eliminated as a result of conversion to pine plantation, row crops and development, the likelihood of occurrence of the species within the project corridor is low.

Florida Black Bear (*Ursus americanus floridanus*)
The Florida Black Bear is classified as a Species of Special Concern by the FWC and is not listed by the FWS. The Florida Black Bear prefers remote, forested areas. The more important types of forest include pine flatwoods, hardwood swamp, cypress swamp, cabbage palm forest, sand pine scrub and mixed hardwood hammock. Florida black bears are omnivorous, with vegetative material accounting for greater than 80 % of their diet. Habitat loss is the primary threat to the species however illegal hunting and roadkill mortality are also factors.

The project site is located within the secondary range of the St. Johns population of Florida Black Bears. This classification means that bears have been documented within the area but only sporadically. The primary range of the St. Johns population is located to the south and west of the project site. The secondary habitat at the project site essentially encompasses the Twelvemile Swamp system east of the project corridor and the Turnbull Creek system. Secondary ranges generally serve as travel routes connecting larger populations, however this does not appear to be the case in this instance.

No Florida Black Bears or evidence of their presence were observed during the site inspection. Although bears are known to occur in this region, the project site is located primarily in altered natural habitats, including agricultural fields and pasture. Other than the forested swamp systems associated with Six-Mile and Turnbull Creeks, little unfragmented forest exists at the project site. The upland forests that are found along the project corridor

consist of predominantly pine plantation, an intensively managed habitat type that is considered to be of marginal quality for the species. Therefore, the loss of habitat attributed to the proposed construction is not likely to affect the species' ability to continue to use the area. Large tracts of forest associated with Twelvemile Swamp will remain to the east of the project site as well as the hardwood systems associated with the other creeks in the project area.

The proposed road construction is not expected to significantly affect the species' ability to utilize or travel through the area. Since the proposed roadway is located within the secondary range of the St. Johns population of Florida Black Bears, some mortality may occur as a result of collisions with vehicles. This impact is not considered to be significant since utilization of the general project area by the species is anticipated to decrease due to the rapid urbanization of the uplands along the northern part of the project corridor.

Flora
No state-listed flora was observed during the site survey, however the likelihood of occurrence of several species is high. Current Florida regulations allow the harvesting of listed plant species by the landowner.

4.2 Wetlands

4.2.1 Wetland Impacts

Unavoidable wetland impacts associated with the four development alternatives are detailed below. As previously stated, forested wetlands will be the most highly impacted wetland type. The four build alternatives are displayed in Chapter 7 of the PER as figures 7.1 – 7.3.

No Build Alternative (0 acres)
No wetland impacts will result if this alternative is chosen.

Alternative 1 (68.5 acres)
Central Segment (47.0 acres)
Along this segment, the majority of the wetland impacts will be to forested systems associated with the Whites Ford/Trout Creek and Big Island Swamp/Mill Creek. Many of the wetlands that will be impacted were historically isolated from the creek systems by mesic pine flatwoods but are currently connected by ditches. Several of the wetlands remain isolated. Some of the wetlands have been converted to pine plantation but still maintain a wetland hydrology. Of this total approximately 10% is high quality, bottomland hardwood swamp. The remainder of the anticipated impacts are to moderate quality contiguous and isolated cypress-dominated wetlands as well as poor quality hydric pine plantation. The majority of the uplands in this segment are developed as agricultural fields or pine plantation.

South Segment (21.5 acres)
Along this segment, the majority of the wetland impacts will be to forested systems associated with the Turnbull Creek. The quality of the wetlands to be impacted varies from moderate to high. The highest quality wetlands are located on the county-owned Turnbull parcel and are identified as wetland mixed forest (basin swamp) or bottomland hardwood swamp. This alternative minimizes wetland impacts on the Turnbull parcel to the greatest extent possible. The majority of the uplands in this segment are developed as pine plantation.

Alternative 2 (84.5 acres)
Central Segment (60.1 acres)
The impacts associated with Alternative 2 in this section are similar to Alternative 1. The major differences are the impacts to the bottomland hardwood swamps associated with Trout Creek and Mill Creek, the encroachment on Lake Kathryn and the impacts to the Big Island Swamp system. Alternative 2 has crossings of the aforementioned creeks more diagonally oriented than in Alternative 1, leading to increased impacts to the higher quality bottomland hardwood swamp. Alternative 2 also requires the filling of a small portion of Lake Kathryn. Open water as well as a narrow zone of moderate quality, emergent wetlands will be impacted. Additionally, the more easterly position of Alternative 2 within the project corridor also increases the disturbance to the Big Island Swamp system. The majority of the uplands in this segment are developed as agricultural fields or pine plantation.

South Segment (24.4 acres)
The impacts associated with Alternative 2 in this section are also similar to Alternative 1. The major differences are the impacts to borrow pits on the Turnbull parcel as well as an overall increase in wetland impacts on the Turnbull parcel. The borrow pit impacts are mainly to open water, however a narrow fringe of emergent wetlands will also be eliminated. Additionally, the alignment of Alternative 2 through the Turnbull parcel requires an increase in wetland impacts from what is proposed in Alternative 1. The majority of the uplands in this segment are developed as pine plantation.

Alternative 3 (88.5 acres)
Central Segment (58.7 acres)
The impacts associated with Alternative 3 in this section are similar to Alternative 1. This alternative essentially has a more easterly position in this section of the project corridor than Alternative 1. This results in slightly more disturbance of the Big Island Swamp system than with Alternative 1. Also the diagonal alignment at the Mill Creek crossing causes an increased impact to the higher quality bottomland hardwood swamp from that proposed in Alternative 1. The majority of the uplands in this segment are developed as agricultural fields or pine plantation.

South Segment (29.8 acres)
The types of wetlands impacted by this segment of Alternative 3 are similar to Alternative1. The alignment of Alternative 3 through the Turnbull parcel requires an increase in impacts

to higher quality wetlands from what is proposed in Alternative 1. The total proposed wetland impact in this section is approximately 7.81 acres. The majority of the uplands in this segment are developed as pine plantation.

Alternative 4 (67.5)

Central Segment (45.6 acres)

The types of wetlands impacted by this segment of Alternative 4 are similar to Alternative1. This alternative generally has a more westerly alignment within the project corridor. With Alternative 4, the impact to the high quality, bottomland hardwood swamp at the Trout Creek crossing is increased as well as at some larger cypress-dominated wetlands on the Rayland Tract, however the encroachment on the Big Island Swamp system decreases. The total proposed wetland impact in this section is approximately 4.01 acres. The majority of the uplands in this segment are developed as agricultural fields or pine plantation.

South Segment (21.9 acres)

The types of wetlands impacted by this segment of Alternative 4 are similar to Alternative1. Like Alternative 1, this alternative minimizes impacts to high quality wetlands at the Turnbull parcel. Along the eastern side of Turnbull Creek, Alternative 4 generally is aligned more closely to the creek than the other alternatives. The total proposed wetland impact in this section is approximately 7.67 acres. The majority of the uplands in this segment are developed as pine plantation.

4.2.2 Conceptual Mitigation

Compensatory mitigation for unavoidable wetland impacts of the proposed construction will be accomplished at the county-owned Turnbull Regional Mitigation Bank site adjacent to the south segment of the project corridor. The mitigation plan will consist of restoration of the historic hydrology and natural communities, including but not limited to, wetland preservation, wetland enhancement, upland restoration/preservation and possibly wetland creation. Since the proposed roadway will bisect the Turnbull Regional Off-site Mitigation Bank site, a wildlife crossing will be constructed in this section.

4.3 Contamination

Potential contamination sources along the project corridor were identified through a combination of sources, including the computerized database search results, review of aerial photographs, visual reconnaissance of the corridor, and regulatory agency file reviews. Table 4.3a provides a summary of these identified facilities. Pollutant storage tank data are summarized in Table 4.3b for only those facilities that have, or had tanks. Site photographs are contained in the project file.

Table 4.3a. Potential Contamination Sources.

SITE No.	FACILITY NAME & ADDRESS	Distance/ Direction From Project Corridor	FDEP FACILITY ID No. / EPA ID No.	POTENTIAL SOURCE OF CONTAMINATION	CONTAMINATION RISK RATING	RATIONALE FOR RISK RATING	SAMPLING RECOMMENDATION
1	St. Johns County Anastasia Mosquito District 10150 Cartwheel Bay Avenue Jacksonville, Florida 32259	1,000 feet North-Northwest	FDEP FAC. ID. No. 9201922	Petroleum, Pesticides	No	Hydraulically Crossgradient; No Cleanup Required.	None
2	Pacetti Farms 3504 Nine Mile Road St. Augustine, Florida 32092	Within Central Portion of Project Corridor	FDEP FAC. ID. No. 8515905	Petroleum	High	Former UST Located within Corridor.	Soil and Groundwater. Petroleum Constituents of Concern
3	St. Johns County School Building – Mill Creek 3725 Nine Mile Road St. Augustine, Florida 32084	1,000 feet Southwest	FDEP FAC. ID. No. 9200912	Petroleum	No	Hydraulically Downgradient, No Further Action.	None
4	Mill Creek Grocery & Station 5405 Highway 16 St. Augustine, Florida 32092	1,800 feet Southwest	FDEP FAC. ID. No. 8839690	Petroleum	No	Hydraulically Crossgradient, Distance from Project Corridor, Lateral Extent of Impacted Groundwater is Defined.	None
5	Division of Forestry – Bakersville State Road 208A St. Augustine, Florida 32084	1,400 feet West	FDEP FAC. ID. No. 8518888	Petroleum	No	Hydraulically Downgradient, No Documented Discharge of Petroleum.	None
6	Cimarrone Golf Club 2800 Cimarrone Boulevard Jacksonville, Florida 32259	4,000 feet Northwest	Unknown	Petroleum, Pesticides, Herbicides, Solvents	No	Hydraulically Crossgradient, Distance from Project Corridor.	None

Table 4.3a. Potential Contamination Sources (continued).

SITE No.	FACILITY NAME & ADDRESS	Distance/ Direction From Project Corridor	FDEP FACILITY ID No. / EPA ID No.	POTENTIAL SOURCE OF CONTAMINATION	CONTAMINATION RISK RATING	RATIONALE FOR RISK RATING	SAMPLING RECOMMENDATION
7	St. Johns Golf & Country Club 205 St. Johns Golf Drive St. Augustine, Florida 32092	4,500 feet East	Unknown	Petroleum, Pesticides, Herbicides, Solvents	No	Hydraulically Upgradient, Distance from Project Corridor.	None
8	Unnamed Truck Service County Road 208 St. Augustine, Florida	County Road 208 and Project Corridor	Unknown	Petroleum, Solvents	Medium	Hydraulically Downgradient, Within Project Corridor.	None
9	Bakersville Pit Pacetti Road Bakersville, Florida	3,000 feet West	Unknown	Solid Waste	No	Hydraulically Downgradient, Distance from Project Corridor.	None
10	Gun Range VCP Real Estate Investments North of Lake Kathryn St. Augustine, Florida	Within Project Corridor	Unknown	Lead	Medium	Within Project Corridor	Soil and Groundwater - Lead
11	Richard & Barbara Pacetti Parcel North of County Road 208 St. Augustine, Florida	Within Project Corridor	Unknown	Fertilizer/ Herbicide Spill	Medium	Stressed Vegetation; Within Project Corridor	Soil – Fertilizer & Herbicides
12	Richard & Barbara Pacetti Parcel North of County Road 208 St. Augustine, Florida	Within Project Corridor	Unknown	Abandoned Well	No	Migration Pathway for Contaminants.	Proper Well Abandonment
13	Richard & Barbara Pacetti Parcel North of County Road 208 St. Augustine, Florida	Within Project Corridor	Unknown	PCB's	Low	Within Project Corridor	Soil – PCB's

Table 4.3b. Pollutant Storage Tank Data.

SITE No.	FACILITY NAME & ADDRESS	FDEP FACILITY ID No. / EPA ID No.	STORAGE TANK CAPACITY	TANK CONTENTS	TANK PLACEMENT	CONTAMINATION REPORTED & DATE
1	St. Johns County Anastasia Mosquito District 10150 Cartwheel Bay Avenue Jacksonville, Florida 32259	FDEP FAC. ID. No. 9201922	1,500 gallons	Unleaded Gasoline	Above Ground	Yes / June 30, 1992
			1,000 gallons	Pesticide	Above Ground	
			1,000 gallons	Pesticide	Above Ground	
			1,000 gallons	Diesel	Above Ground	
2	Pacetti Farms 3504 Nine Mile Road St. Augustine, Florida 32092	FDEP FAC. ID. No. 8515905	2,500 gallons	Unleaded Gasoline	Underground	Not Reported
			1,000 gallons	Unleaded Gasoline	Above Ground	
			1,000 gallons	Diesel	Above Ground	
3	St. Johns County School Building – Mill Creek 3725 Nine Mile Road St. Augustine, Florida 32084	FDEP FAC. ID. No. 9200912	1,000 gallons	Fuel Oil	Underground	Yes/January 10, 1992
4	Mill Creek Grocery & Station 5405 Highway 16 St. Augustine, Florida 32092	FDEP FAC. ID. No. 8839690	3,000 gallons	Unleaded Gasoline	Underground	Yes/October 28, 2002
			550 gallons	Diesel	Underground	
			6,000 gallons	Diesel	Underground	
			3,000 gallons	Unleaded Gasoline	Underground	
5	Division of Forestry – Bakersville State Road 208A St. Augustine, Florida 32084	FDEP FAC. ID. No. 8518888	560 gallons	Diesel	Underground	Yes / June 30, 1992
			1,000 gallons	Unleaded Gasoline	Underground	
			1,000 gallons	Diesel	Underground	
			1,000 gallons	Unleaded Gasoline	Underground	

Available information and records from the St Johns County Planning Division, Environmental Health Office, EDR Corridor Study Report and the FDEP Oculus database were review by RS&H personnel. Analyses of available information and records was performed to determine potential environmental impacts to the project corridor, current regulatory status of each facility and to determine the potential of encountering impacted soil or groundwater during road construction activities along the proposed County Road 2209 project corridor. The following narratives contain detailed information concerning any documented contamination for areas and/or facilities that have a potential to impact the project corridor.

Site No. 2
Pacetti Farms
3504 Nine Mile Road
St. Augustine, Florida 32092
FDEP Facility I.D. No. 8515905
Within Central Portion of Project Corridor
Pacetti Farms formerly operated one 2,500-gallon UST and currently operates two 1,000-gallons AST's. According to the EDR database and the FDEP, the former 2,500-gallon unleaded gasoline UST was installed in July 1980 and removed in June 1992. No additional closure information was available for this UST. The two 1,000-gallon AST's have secondary containment and were installed in July 1989. These AST's reportedly contain unleaded gasoline and diesel fuel for agricultural equipment. A facility inspection report completed in January 2003 identified cracked walls in the secondary containment. A follow up inspection made in May 2003 reported the Pacetti Farms AST's were in compliance. No spills associated with the AST's were reported.

Based on the former operation of an UST within the project corridor and the incomplete UST closure information, this facility is a potential concern to the proposed project corridor.

Site No. 8
Unnamed Truck Service
County Road 208
St. Augustine, Florida
County Road 208 and Southwest Portion of Project Corridor
This facility was identified during the visual reconnaissance of the surrounding area. No information was available in the EDR database or any FDEP file as a generator of hazardous wastes or used oil generator. Typical wastes may include automotive parts, solvents, used oil, used oil filters and paint related wastes.

Based on no reported violations, groundwater flow direction and the distance from the project corridor, this facility is not expected to be a concern to the proposed project corridor therefore, this site is rated No.

Site No. 10
Gun Range
VCP Real Estate Investments
North of Lake Kathryn
St. Augustine, Florida
Within Northern Portion of Project Corridor
An active gun range used for sport was identified in the north portion of the project corridor, northwest of Lake Kathryn. According to the FDEP, lead comprises 92% - 98% of the total weight of most bullets and shot. The accumulation of bullets and shot combined with soil characteristics, precipitation and the close proximity of groundwater, activities at the gun range may have an adverse affect on soil and groundwater within the project corridor.

Based on this information, this gun range is a potential concern to the proposed project corridor.

Site No. 11
Stressed Vegetation
Richard & Barbara Pacetti Parcel
North of County Road 208
St. Augustine, Florida
Within Project Corridor
During the visual reconnaissance of the project corridor, an area with stress vegetation was identified. This area is located within a Pacetti parcel, north of International Golf Parkway, adjacent to a wooded area and dirt access road which, leads to a cellular tower. The cause of the stressed vegetation is unknown. However, the presence of farm implements suggests the most likely cause of the stressed vegetation is the result of a fertilizer or herbicide spill.

Based on the stressed vegetation within the project corridor, this area has the potential to be a concern to the proposed project corridor therefore, this site is rated **Medium**.

Site No. 12
Water Well
Richard & Barbara Pacetti Parcel
North of County Road 208
St. Augustine, Florida
Within Project Corridor
One water well was identified approximately 600 feet north of International Golf Parkway during the project corridor walk through of a Pacetti parcel. The water well appeared to be secured and no free flowing water was observed. The existence of this water well does not represent an environmental concern however, the water well can provide a pathway of surface pollutants to subsurface media and should be

properly abandoned before road construction begins. Construction details of this water well were not available for review.

Site No. 13
Electrical Pole-Mounted Transformer
Richard & Barbara Pacetti Parcel
North of County Road 208
St. Augustine, Florida
Within Project Corridor

During the project corridor walk through of a Pacetti parcel, one pole-mounted transformer was identified approximately 600 feet north of International Golf Parkway (adjacent to the water well – Site No. 12). The pole-mounted transformer was not labeled in such a way that indicated no PCB's were contained within. A visual inspection of the ground surface beneath the pole-mounted transformer did not indicate any surface staining, stressed vegetation or other signs of past spills.

Based on the existence of the unlabeled pole-mounted transformer and location within the project corridor, this area is not expected to be a concern to the proposed project corridor.

5.0 CONCLUSIONS

5.1 Listed Species

Due to the lack of suitable habitat and the mitigation of wetland impacts that will be required during the Environmental Resource Permit (ERP) process, the project is anticipated to have no affect on the following federally and/or state listed species: Flatwoods Salamander, Gopher Frog, American Alligator, Gopher Tortoise, Florida Pine Snake, Limpkin, Little Blue Heron, Snowy Egret, Tricolored Heron, White Ibis, Wood Stork, Red-cockaded Woodpecker, Peregrine Falcon, Southeastern American Kestrel, Sherman's Fox Squirrel, Florida Black Bear, Florida Panther.

The proposed project may affect the habitat of the Eastern Indigo Snake and Bald Eagle.

Standard Protection Measures for the Eastern Indigo Snake will be initiated during the construction phase of the project. These Protection Measures are included in displayed as exhibit 5.1. Based on the implementation of these protection measures, the construction of the proposed roadway may affect, but is not likely to adversely affect, the Eastern Indigo Snake or adversely modify its habitat.

If an active Bald Eagle nest is identified within the vicinity of the construction area during the final design and permitting phases, mitigation measures to avoid disturbing this species will be initiated. Mitigation measures may include control of the timing and location of construction activities and establishment of a buffer zone around active nesting sites. Based on the implementation of these protective

measures, the construction of the proposed roadway may affect, but is not likely to adversely affect, the Bald Eagle or adversely modify its habitat.

Exhibit 5.1 STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE

1. An Eastern indigo snake protection/education plan shall be developed by the applicant or requestor for all construction personnel to follow. The plan shall be provided to the Service for review and approval at least 30 days prior to any clearing activities. The educational materials for the plan may consist of a combination of posters, videos, pamphlets, and lectures (*e.g.*, an observer trained to identify Eastern indigo snakes could use the protection/education plan to instruct construction personnel before any clearing activities occur). Informational signs should be posted throughout the construction site and contain the following information:

    a. a description of the Eastern indigo snake, its habits, and protection under Federal Law;
    b. instructions not to injure, harm, harass or kill this species;
    c. directions to cease clearing activities and allow the Eastern indigo snake sufficient time to move away from the site on its own before resuming clearing; and,
    d. telephone numbers of pertinent agencies to be contacted if a dead eastern indigo snake is encountered. The dead specimen should be thoroughly soaked in water, then frozen.

2. Only an individual who has been either authorized by a section 10(a)(1)(A) permit issued by the Service, or designated as an agent of the State of Florida by the Florida Fish and Wildlife Conservation Commission for such activities, is permitted to come in contact with or relocate an eastern indigo snake.

3. If necessary, Eastern indigo snakes shall be held in captivity only long enough to transport them to a release site; at no time shall two snakes be kept in the same container during transportation.

4. An Eastern indigo snake monitoring report must be submitted to the appropriate Florida Field Office within 60 days of the conclusion of clearing phases. The report should be submitted whether or not eastern indigo snakes are observed. The report should contain the following information:
    a. any sightings of Eastern indigo snakes;
    b. summaries of any relocated snakes if relocation was approved for the project (*e.g.*, locations of where and when they were found and relocated);
    c. other obligations required by the Florida Fish and Wildlife Conservation Commission, as stipulated in the permit.

5.2 Wetlands

Approximately 67.5 acres of unavoidable wetland impacts are associated with the construction of the Preferred Alternative (Alternative 4). Wetlands along the project corridor consist of predominantly contiguous and isolated, forested systems within the Trout Creek and Sixmile Creek watersheds. Generally emergent wetlands are located along the disturbed fringes of the forested wetland systems, along the littoral shelves of borrow lakes and in drainage ditches throughout the project corridor. The bottomland hardwood swamps associated with the creeks are the highest quality wetlands along the project corridor. The majority of the remaining forested wetlands, with the exception of the hydric pine plantation, are of moderate quality, having been impacted by past land use practices in the general area (i.e., silviculture, agricultural fields, and cattle grazing). The quality of the hydric pine plantation wetlands is generally poor. The majority of the uplands along the project corridor are developed as agricultural fields or pine plantation.

Based upon the considerations that have been outlined in this report, it has been determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands.

5.3 Contamination

Based on the proximity to the project corridor and the undocumented closure of an UST system, RS&H recommends additional assessment adjacent to the Pacetti Farms facility. Based on identified activities and the proximity to the project corridor additional assessment should be performed at the project corridor adjacent to the truck service facility. Also, based on identified areas of environmental concerns within the project corridor additional assessments should be performed at the gun range, stressed vegetation and the pole-mounted transformer locations.

These additional assessments should include the advancement of soil borings and the installation of temporary monitoring wells at the area of environmental concern. For those facilities adjacent to the project corridor, additional assessments should be performed at the project corridor, which share a common boundary with the adjacent facility. Soil and groundwater samples should be collected with laboratory analysis of potential contaminants of concern. The objective of the additional assessment is to evaluate potential environmental impact of soil and/or groundwater. In addition, the additional assessment can determine the extent of impacted media (if any) within the project corridor that may be encountered during road construction. Knowing the extent of petroleum impacted soil and/or groundwater at these areas of concern can assist in evaluating handling, disposal and/or treatment requirements.

Finally, the water well identified north of International Golf Parkway within the Pacetti parcel should be properly abandoned in accordance with St. Johns Water Management District requirements.

6.0 REFERENCES

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