LEGISLATIVE # 120227D

Appendix C - Addendum to Data and Analysis for the Conservation, Open Space & Groundwater Recharge Element

Exhibit C-1 Floridan aquifer

(Source: Planning & Development Services Department, May 2012)

The Floridan aquifer ground water system is the primary drinking water resource for the City and surrounding areas of Alachua County. To date, policies regarding identification and protection of "prime" ground water recharge areas have been based on regional analysis and mapping prepared by the St. Johns River Water Management District (SJRWMD) and the Suwannee River Water Management District (SRWMD), whose common boundary runs through the City area. A composite map entitled Floridan Aquifer Recharge is currently included in the Environmentally Significant Land & Resources Map Series of the Future Land Use Element. The area of the Floridan Aquifer Recharge map within the SJRWMD is based on quantified rates of recharge which are graphically depicted in five (5) rate categories, with the highest rate of recharge category labeled as "exceeding 12 inches per year." The area of the map within the SRWMD is based on two generalized categories, "Moderate to High Recharge Potential" and "Moderate Recharge Potential." Decisions regarding land use and development by the City have relied on this map as a technical reference in determining the location of areas of Floridan aquifer high recharge. In the absence of any other designation of "prime" ground water recharge criteria, the water management districts consider the categories "Exceeding 12 inches per year" and "Moderate to High Recharge Potential" to best represent areas of "Floridan aquifer high recharge." In recent years, the Florida Department of Environmental Protection, Florida Geological Survey (FGS) has conducted a comprehensive and detailed vulnerability analysis of the Floridan Aquifer System (FAS) in Alachua County using the methodologies developed for the statewide Florida Aquifer Vulnerability Assessment (FAVA). This analysis, the Alachua County Aquifer Vulnerability Analysis (ACAVA) is more refined than the statewide model due to the higher resolution of data involved. As opposed to the regionally described recharge concept used by the water management districts, the ACAVA incorporates local area vulnerability based on ground water quality information obtained from water well sampling, with emphasis on the watersheds of stream to sink basins through which surface waters are directly conveyed to the Floridan aquifer. Based on the ACAVA and the FAVA results, Alachua County has adopted a generalized map titled Alachua County Floridan Aquifer High Recharge Area, which provides a mapping of zones of relative vulnerability, ranging from High to Medium to Low Vulnerability, with an overlay zone of Stream-to-Sink Basins. It is extremely difficult to quantify recharge because of the heterogeneity and varying thickness of the sediments overlying the Floridan aguifer system and the stream-to-sink watersheds. In work conducted for the SRWMD by the USGS (JW Grubbs 1998 Recharge rates to the Upper Floridan Aquifer in the SRWMD, Florida WRI 97-4283), Grubbs used several techniques and came up with average annual recharge rates based on aquifer confinement, which assign numeric recharge values.

Staff recommends that the City replace the current reference map (Floridan Aquifer Recharge map) with the Alachua County Floridan Aquifer High Recharge Area map, rescaled to include only the central area of Alachua County, including the Urban Reserve Area. This change is recommended as the scale of focus is so different for the water management district purposes as opposed to local government purposes, and the local emphasis is so much more on vulnerability and contamination potential, rather than on ground water supply (which is the districts' focus),

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with knowledge that the technical basis and expertise behind this revised mapping is quite sufficient to give confidence in the result.

Exhibit C-2 Cabot Carbon/Koppers Superfund Site (Source: GRU, June 2012)

The Cabot Carbon/Koppers superfund site is located along NW 23rd Avenue west of Main Street in Gainesville. Although they are considered as one superfund site, the Cabot Carbon (Cabot) and Koppers properties are actually two separate properties. The Cabot Carbon site is located at the corner of Main Street and 23rd Avenue, and is currently occupied by a shopping plaza and various commercial businesses. The Cabot Carbon site had been used to produce charcoal, turpentine and other products from pine stumps until 1967. The Koppers site is located just west of the Cabot site and was operated as a wood treating facility from 1916 to 2010. Both sites have been contaminated due to historical operations, which included the use of unlined lagoons for storing waste products.

The City of Gainesville does not have responsibility for cleaning up the site, nor does the City have regulatory authority over the site cleanup. However, the City (including both general government and GRU) will continue to be active as an affected stakeholder and push for cleanup of the site and provide technical review and comments to U.S. Environmental Protection Agency (EPA). The City, along with Alachua County and the Alachua County Health Department have formed a "local Intergovernmental Team (LIT) to represent the interests of the community, highlight local environmental concerns and provide technical input to EPA. By working together, the LIT members are able to leverage one another's technical strengths and avoid duplication of efforts, thus representing community interests more effectively and efficiently than if they worked independently. Team members and their roles include:

City of Gainesville (General Government) - The City of Gainesville active as a stakeholder in providing input to EPA and FDEP to ensure that both on-site and off-site contamination are cleaned up properly, so that public health and the environment are protected, and so that the site can be redeveloped in a manner that is beneficial to the community. The City has regulatory authority for certain site development issues and permitting, which are not regulated by EPA. The City provides expert opinions related to surface soil and creek sediment issues (on and offsite) and on-site stormwater management issues. The City's efforts also include assembling outside experts to assist in interacting with EPA and FDEP.

Gainesville Regional Utilities (GRU) - GRU (owned by the City of Gainesville) is focused on protecting the community's water supply wellfield which is located approximately two miles from the site. GRU's efforts have included assembling a team of experts with specialized expertise in remediation of wood treating sites. GRU and its team provide technical input to EPA to ensure that appropriate actions are taken to characterize and remediate the site, and to ensure that the community's drinking water supply is protected.

Alachua County Environmental Protection Department (ACEPD) — ACEPD provides local environmental and technical expertise in review of clean-up plans and contamination investigation actions on the Cabot Carbon/Koppers site and on neighboring impacted properties. ACEPD's role includes providing input to EPA and FDEP concerning local environmental conditions and codes

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and conveying community concerns related to cleanup and monitoring actions at the site. ACEPD also provides communication to the public and local officials on technical activities at the Cabot Carbon/Koppers Superfund Site including a web-based electronic library of technical documents.

Exhibit C-3 Paynes Prairie Sheetflow Restoration Project (Source: GRU, June 2012)

Gainesville Regional Utilities (GRU) and the City of Gainesville Public Works Department (GPWD) are constructing the Paynes Prairie Sheetflow Restoration Project. The project provides a cost-effective, integrated approach to solve several environmental problems. It will improve water quality and meet regulatory requirements for both GRU and GPWD. The state of Florida and EPA have established a Total Maximum Daily Load (TMDL) for Alachua Sink, which receives flow from Sweetwater Branch and is located within Paynes Prairie Preserve State Park. This TMDL requires all sources of nitrogen to Alachua Sink to be reduced. The GRU Main Street Water Reclamation Facility and the GPWD stormwater system are required to reduce nitrogen loads to Alachua Sink to meet this TMDL. The project will meet these requirements. In addition, the project will restore 1,300 acres of natural wetlands within the state park, protect drinking water, and provide a public park with hiking trails, boardwalks and other facilities.

The City is implementing the project in partnership with the Florida Department of Environmental Protection (FDEP), St. Johns River Water Management District (SJRWMD), and the Florida Department of Transportation (FDOT). The focal point of the project is a 125-acre constructed enhancement wetland, which will reduce nutrient loads from wastewater treatment plant effluent, stormwater runoff, septic tank drainage, and other sources (See Figure 1). The project will also include improvements to GRU Main Street Water Reclamation Facility (MSWRF), construction of facilities to intercept trash and sediment from stormwater, removal of man-made drainage ditches, and construction of a distribution channel to restore the natural flow pattern onto Paynes Prairie. Construction of the project is expected to be completed by 2015.

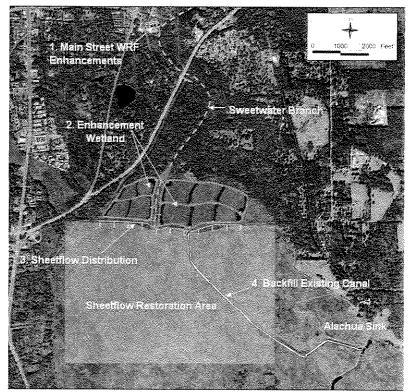
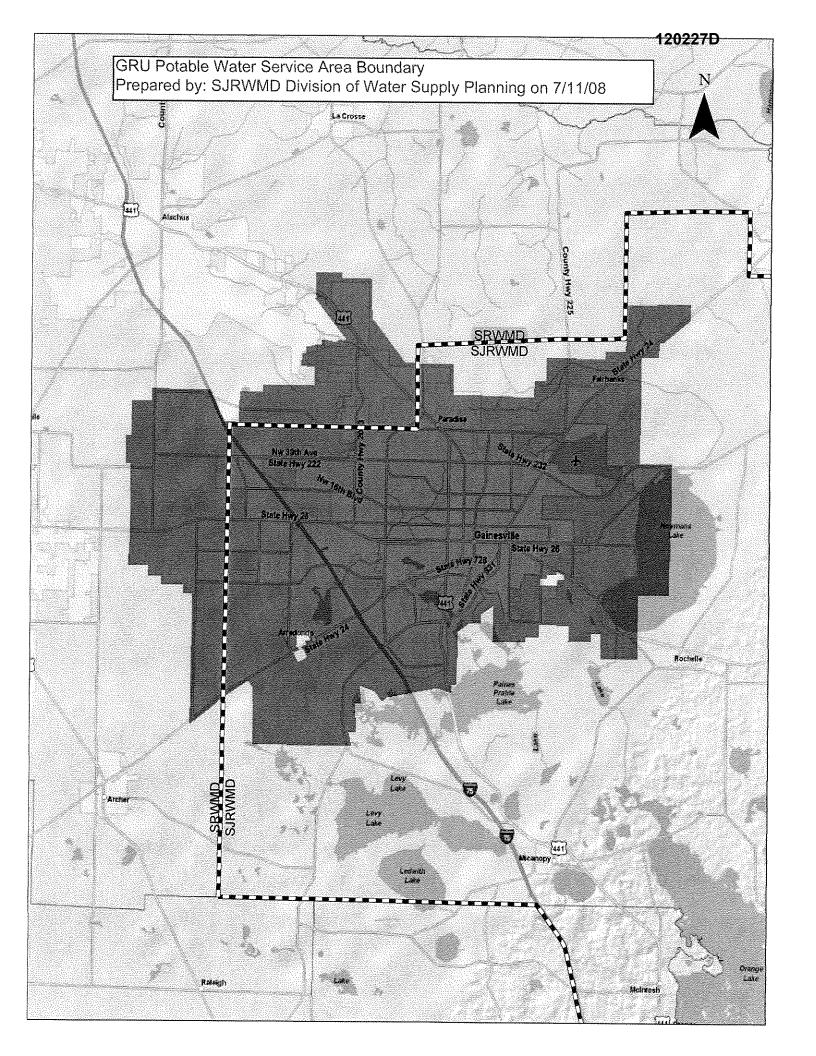


Figure 1. Paynes Prairie Sheetflow Restoration Project Conceptual Plan.

Exhibit C-4 Potable Water Projected Needs and Sources (Sources: GRU June 2012; St. Johns River Water Management District, June 2012)

GRU provides centralized potable water service to approximately 63,000 residential customers and 6,000 commercial customers in the City and surrounding areas. The total population served is approximately 189,000 people. The City gets its potable water supply from the Floridan Aquifer. Water is withdrawn from the Floridan Aquifer at the Murphree Wellfield and is treated at the City's Murphree Water Treatment Plant before it is distributed to customers. Water withdrawal at the Murphree Wellfield is permitted through a consumptive use permit (CUP) through the St. Johns River Water Management District (SJRWMD).

The current CUP extends through 2014 and provides a maximum annual average withdrawal of 30 mgd. However, GRU will renew the permit prior to expiration. Based on the SJRWMD 2010 Water Supply Plan the projected demand for 2030 is 31.8 mgd. This projection is based on population projections and water use profiles. The City will continue to utilize groundwater from the Floridan Aquifer as its water supply. The City will continue to implement water conservation and water reuse measures to ensure adequate potable water supply to meet future demands.



GRU Population and Potable Water Demand Projections - Best Available Data

Note: GRU's service area encompasses all of the City of Gainesville and portions of unincorporated Alachua County

	Consumptive Use Permitting Process (permit issued by SJRWMD on 8/13/09; expires 8/11/14) ¹			SJRWMD Water Supply Planning Process (WSA 2010) ²		
Year	Population			Population	Demand (mgd)	
2008	181,788	28.99				
2009	184,281	29.43	29.43			
2010	186,657	29.85	29.85	188,097	27.85	
2011	189,237	30.29	30.00	A Level Nava a Second		
2012	191,701	30.73	30.00			
2013	194,052	31.15	30.00			
2014	196,292	31.55	30.00			
2015	198,424	31.94		195,174	28.90	
2016	200,449	32.31				
2017	203,224	32.76				
2018	205,920	33.20				
2019	208,537	33.63				
2020	211,077	34.04		202,806	30.03	
2021	213,540	34.45				
2022	215,927	34.84				
2023	218,240	35.22				
2024	220,478	35.59				
2025	222,643	35.95		210,278	31.13	
2026	224,734	36.29				
2027	227,363	36.72				
2028	230,024	37.15				
2029						
2030			\$50% \\$53@\\$44@\\$00@	214,680	31.79	

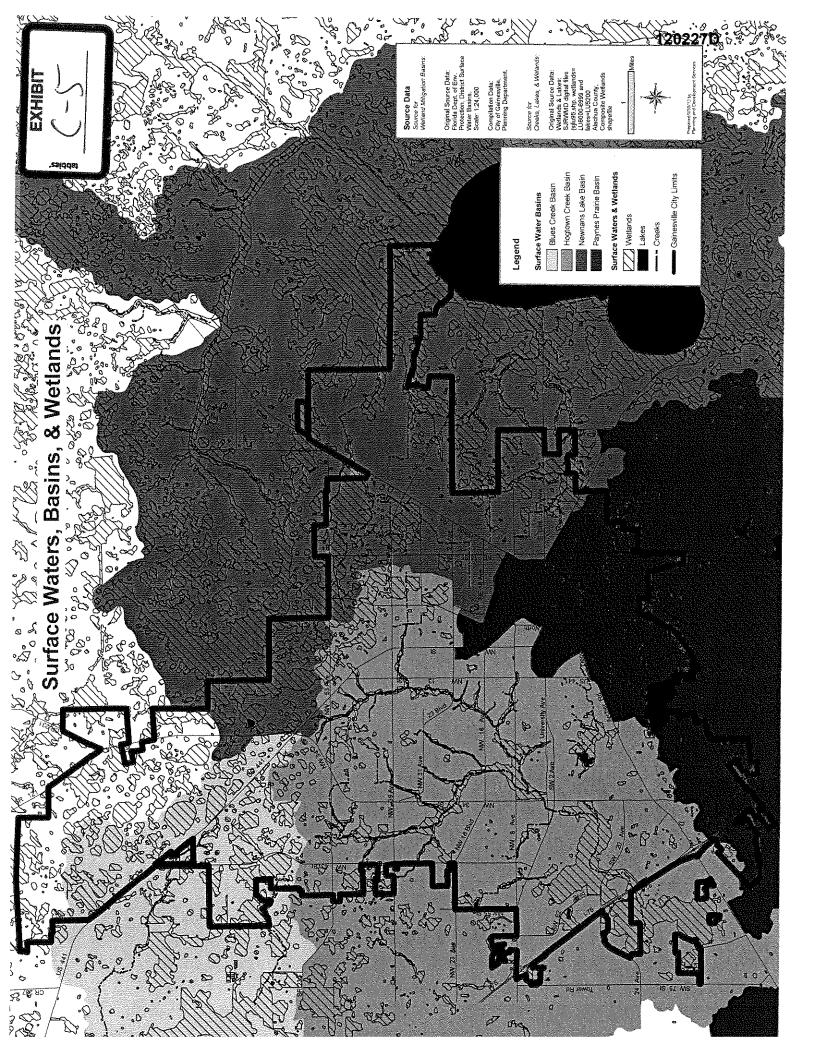
Note: Actual groundwater used by GRU in years 2009, 2010 and 2011 was less than the CUP groundwater allocations for those years (24.2 mgd, 22.6 mgd and 24.06 mgd, respectively).

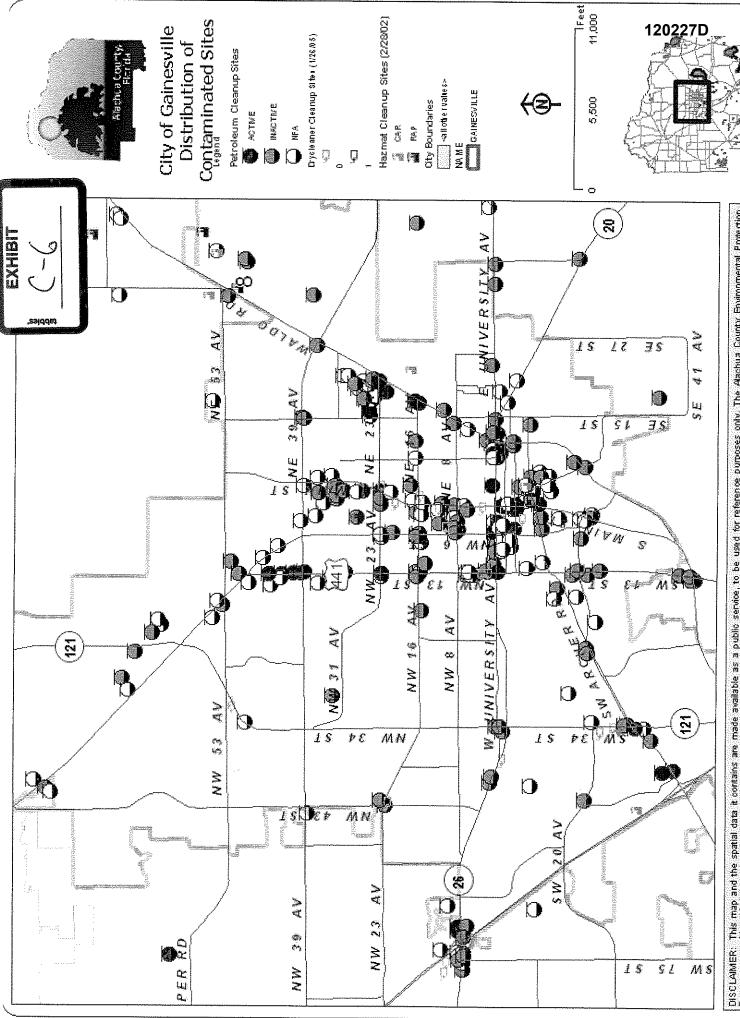
Note: SJRWMD will be completing a new water supply planning process (North Florida regional water supply planning process) in 2013-2014 that should result in updated population and demand projections for GRU as well as the identification of feasible alternative water supply options through 2035.

Note: GRU will file a CUP renewal application prior to the 8/11/14 expiration date. At that time, it is anticipated that GRU and SJRWMD will work together to identify adequate water supply for the GRU service area through a combination of groundwater, reclaimed water and water conservation.

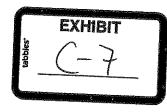
¹ Population and demand projections provided by GRU to SJRWMD on 1/30/08 in response to RAI #2. Allocations are from the CUP issued by SJRWMD on 8/13/09.

² Projections prepared by SJRWMD as part of the 2010 Water Supply Assessment. Population projections are based on 2009 medium BEBR.





DISCLAMER: This map and the spatial data it contains are made available as a public service, to be used for reference purposes only. The Alachua County Environmental Protection Department provides this information AS 18 without warranty of any kind, implied or expressed, regarding accuracy, completeness, or ithess of use. The quality of the data is dependent on the various sources from which each data layer is obtained.



W. Grand Control of the Control of t		Gainesville Contaminated Sites		
Commission and Administration of Commission			100000000000000000000000000000000000000	
	Total # Sites	Active Cleanup Sites	Inactive Cleanup Sites	NFA
Dry Cleaners Sites	19	THE TAXABLE PROPERTY OF TA	19	
Hazmat Cleanup Sites	10	10	0	
Petroleum Cleanup Sites	270	37		122
Total	389	47	130	122
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Map Legend Abbreviations	An annual state of the state of	The second secon	THE COLOR OF THE C	
Active = Petroleum Contaminated Site -Current Cleanup Activity Occurring	ated Site -Current	Cleanup Activity Occurring	- A-C-C-C-C-C-C-C-C-C-C-C-C-C-C-C-C-C-C-	
Inactive =Petroleum Contamina	ated Site - No cur	nactive =Petroleum Contaminated Site - No current cleanup action due to low priority	The state of the s	
NFA = Cleaned Up Petroleum Site	Site	The state of the s		
0 = Inactive Drycleaner Site - Potentially Contaminated Site, No Cleanup Activity	otentially Contami	nated Site, No Cleanup Activity	The state of the s	
1= Active Drycleaner Cleanup S	Site-Contaminate	1= Active Drycleaner Cleanup Site- Contaminated Site- Cleanup Activity Ongoing		,
CAR≈ Contaminated Non-Petroleum Site- Contamination Assessment Phase	oleum Site-Contai	mination Assessment Phase		The state of the s
RAP= Contaminated Non-Petroleum Site- Remedial Action Plan Phase	leum Site- Reme	dial Action Plan Phase		

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		EDERAL STATUS	STATUS	g a	
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COLENTIALO MARC			STATE		
SCIENTIFIC NAME RARE PLANTS	COMMON NAME		က	FNAI STATUS*	
Acacia angustissima var. hirta	- In-the second				
Adiantum tenerum	Prairie Acacia		E		
Agrimonia incisa	Brittle Maidenhair		E	G5 S3	
	Incised Groovebur		LE_	G3 S2	
Andropogon arctatus	Pinewoods Bluestem		T	G3 S3	
Arnoglossum diversifolium	Variable-leaved Indian Plantain		T	G2 S2	
Asplenium pumilum Asplenium verecundum	Dwarf Spleenwort		<u> </u>	G5 S1	
	Modest Spleenwort		E	G1 S1	
Athyrium filix-femina	Southern Lady Fern		T		
Blechnum occidentale var. minor	Hammock fern		E	G5 S1	
Brickellia cordifolia	Flyr's nemesis		Е	G2G3 S2	
Callirhoe papaver	Poppy Mallow		E	G5 S2	
Calopogon multiflorus	Manyflowered Grass-pink		E	G2G3 S2S3	
Calycanthus floridus	Carolina allspice		E	G5 S2	
Carex chapmanii	Chapman's sedge		t	G3 S3	
Centrosema arenicola	Pineland Butterfly Pea		E	G2Q S2	
Cheilanthes microphylla	Southern Lip Fern		E	G5 S3	
Cleistes bifaria	Small Spreading Pogonia		T	G4 S3	
Cleistes divaricata	Spreading Pogonia		Т	G4 S1	
Coelorachis tuberculosa	Florida Jointtailgrass		Т	G3 S3	
Ctenium floridanum	Florida Toothachegrass	MC_	E	G2 S2	
Drosera intermedia	Spoonleaf Sundew		T	G5 S3	
Epidendrum conopseum	Green-fly Orchid		CE		
Forestiera godfreyi	Godfrey's Swamp Privet		E	G2 S2	
Habenaria nivea	Snowy Orchid		T		
Hexalectris spicata	Crested Coralroot		E		
Lilium catesbael	Catesby's Lily		T	G5 S1	
Listera australis	Southern Twayblade Orchid		T		
Litsea aestivalis	Pondspice		E	G3 S2	
Lobelia cardinalis	Cardinalflower		T		
Malaxis unifolia	Green Adder's-Mouth Orchid		E	G5 S3	
Matelea flavidula	Carolina milkvine	MC	E	G2 S2	
Matelea floridana	Florida Spinypod		T	G2 S2	
Matelea gonocarpos	Anglepod		E		
Matelea pubiflora	Sandhill Spinypod		E	G3? S1	
Matelea spp	Milkvine species		T/E		
Najas filifolia	Siender Naiad		T	G1 S1	
Pecluma dispersa	Widespread Polypody		E	G5 S2	
Pinguicula caerulea	Blueflower Butterwort		Т		
Pinguicula lutea	Yellow Butterwort		Т		
Platanthera blepharigiottis	White-fringed Orchid		Т		
Platanthera ciliaris	Yellow-fringed Orchid		T		
Platanthera cristata	Crested-fringed Orchid		Т		
Platanthera flava	Southern Tubercled Orchid		T		
Pogonia ophioglossoides	Rose Pogonia		Т		
Polygonum meisnerianum	Mexican Tearthumb		Е	G5?T5? S1	

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	FNAI STATUS*
Pycnanthemum floridanum	Florida Mountain-mint			G3 S3
Pteroglossaspis ecristata	Giant Orchid	мс	T	G2 S2
Rhododendron austrinum	Florida Flame Azalea		E	G3 S3
Rhus michauxii	Michaux's Sumac	E	E	G1
Sacoila lanceolata	Leafless Beaked Ladiestresses		TT	
Salix floridana	Florida Willow		E	G2 S2
Salvia urticifolia	Nettle-leafed Sage		E	G5 S1
Sarracenia minor	Hooded Pitcherplant		TT	
Schoenolirion croceum	Yellow Sunnybell		E	G4 S2
Sideroxylon alachuense	Silver Buckthorn		E	G1 S1
Sideroxylon lycioides	Buckthorn Bully		E	G5 S2
Spiranthes brevilabris	Texas ladiestresses		Е	G1 S1
Spiranthes ovalis	October Ladiestresses		TET	
Spiranthes tuberosa	Little Ladiestresses		T T	
Thelypteris reptans	Creeping Star-hair Fern		E	G5 S2
Tipularia discolor	Cranefly Orchid		1 - 1	
Triphora trianthophoros	Three-birds Orchid		1 + 1	
Verbesina heterophylla	Variable-leaved Crownbeard	МС		G2 S2
Zephyranthes atamasco	Atamasco Lily		+	
Zephyranthes simpsonli	Simpon's Rain Lily		T	G2G3 S2S3
Zephyranthes treatiae	Treat's Rain Lily		T	
Zephyranthes spp	Rain Lily species		T	
RARE ANIMALS				
INVERTEBRATES				
Sphodros rufipes	Red-legged purseweb spider			G4S3
Autochton cellus	Golden-banded Skipper		ļ <u>.</u>	G4S1
Cordulegaster sayi	Say's Spiketail			G2 S2
Nemopalpus nearcticus	Sugarfoot Moth Fly			G1G2 S1S2
AMPHIBIANS				
Ambystoma cingulatum	Flatwoods Salamander	T	SSC	G2G3 S2S3
Ambystoma tigrinum	Eastern Tiger Salamander		ļ <u> </u>	G5 \$3
Amphiuma pholeter	One-toed Amphiuma			G3 S3
Desmognathus auriculatus	Southern Dusky Salamander			G5 S3
Hemidactylium scutatum	Four-toed Salamander			G5 S2
Notophthalmus perstriatus	Striped Newt			G2G3 S2S3
Rana capito	Gopher Frog		ssc	G3G4 S3
Rana virgatipes	Carpenter Frog			G5 S2
Stereochilus marginatus	Many-lined Salamander			G5 S1
REPTILES				
Alligator mississipiensis	American Alligator	T(s/a)	SSC	G5 S4
Clemmys guttata	Spotted Turtle			G5 S3?
Crotalus adamanteus	Eastern Diamondback Rattlesnake			G4 S3
Crotalus horridus	Timber Rattlesnake			G4 S3
Drymarchon corais couperi	Eastern Indigo Snake	T	T	G4T3 S3
Gopherus polyphemus	Gopher Tortoise		1 7 1	G3 S3

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	FNAI STATUS*
Heterodon simus	Southern Hognose Snake			G2 S2
Pituophis melanoleucus mugitus	Florida Pine Snake		SSC	G4T3 S3
Lampropeltis getula	Common Kingsnake			G5 S2S3
Lampropeltis extenuata	Short-tailed Snake		Т	G3 S3
BIRDS				
Aimophila aestivalis	Bachman's Sparrow			G3 S3
Aramus guarauna	Limpkin		SSC	G5 S3
Falco sparverius paulus	Southeastern Kestrel		T	G5T4 S3
Grus canadensis pratensis	Florida Sandhill Crane		T	G5T2T3 S2S3
Haliaeetus leucocephalus	Bald Eagle	Т	Т	G4 S3
Mycteria americana	Wood Stork	E	E	G4 S2
Picoides borealis	Red-cockaded Woodpecker	E	Т	G3 S2
Picoides villosus	Hairy Woodpecker			G5 S3
Sitta carolinensis	White-breasted Nuthatch			G5 S2
Sitta pusilla	Brown-headed Nuthatch			NR
Speotyto cunicularia	Burrowing Owl		ssc	G4T3 S3
MAMMALS				
Lontra canadensis	River Otter			
Podomys floridanus	Florida Mouse		ssc	G3 S3
Sciurus niger shermani	Sherman's Fox Squirrel		ssc	G5T3 S3
Ursus americanus floridanus	Florida Black Bear	1	T*	G5T2 S2
			T	
Summary:			1	
E = Endangered		1		
T = Threatened			1	
T* = Threatened in all Florida counties e	xcept Columbia and Baker			
T/E = State threatened or endangered d		<u> </u>		
T(s/a) = Threatened due to similarity of a		 	t	
SSC = Species of Special Concern		1		
MC = Management Concern				
CE = Commercially Exploited		 		
	-State) - see code usage on FNAI website			
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Sources:	1 () ()			
FNAI Oct 2002: FNAI tracking nomencia		 	-	
	s List (www.doacs.state.fl.us/~pi/5b-40.htm).			
FWS: Federal Animal and Plant List (www		<u> </u>		
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this list.	<u> </u>	<u></u>	<u> </u>	
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(www.floridaconservation.org/pubs/enda	nger.pat).	ļ		
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