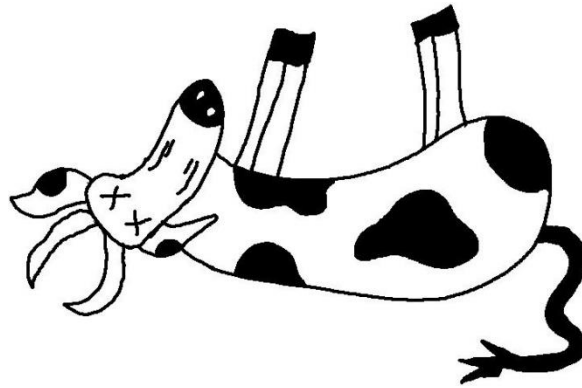


Animal Carcass Disposal



***Greg Christy, D.V.M.
Emergency Programs
Division of Animal Industry***



Difficult Subject

- *No easy solutions*
- *Limited options*
- *Involves multiple agencies*
- *Falls in the gaps*



Disposal Options in Florida

- ***On-Site Burial***
- ***Composting***
- ***Cremation/Incineration***
- ***Rendering***
- ***Transport to a Class I Landfill***



On-Site Burial



On-site Burial

- ***Cheap***
- ***Site suitability issues - need soil data/site assessment***
- ***Unlined burial has leachate issues***
- ***Possible health and liability issues from contamination***



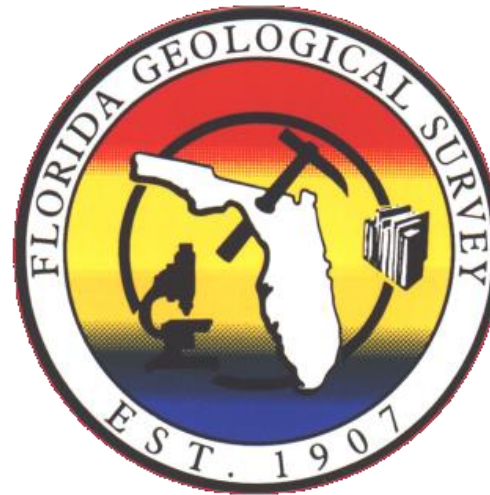
We Have a Problem in Florida

- We have a lot of water and it's all connected***

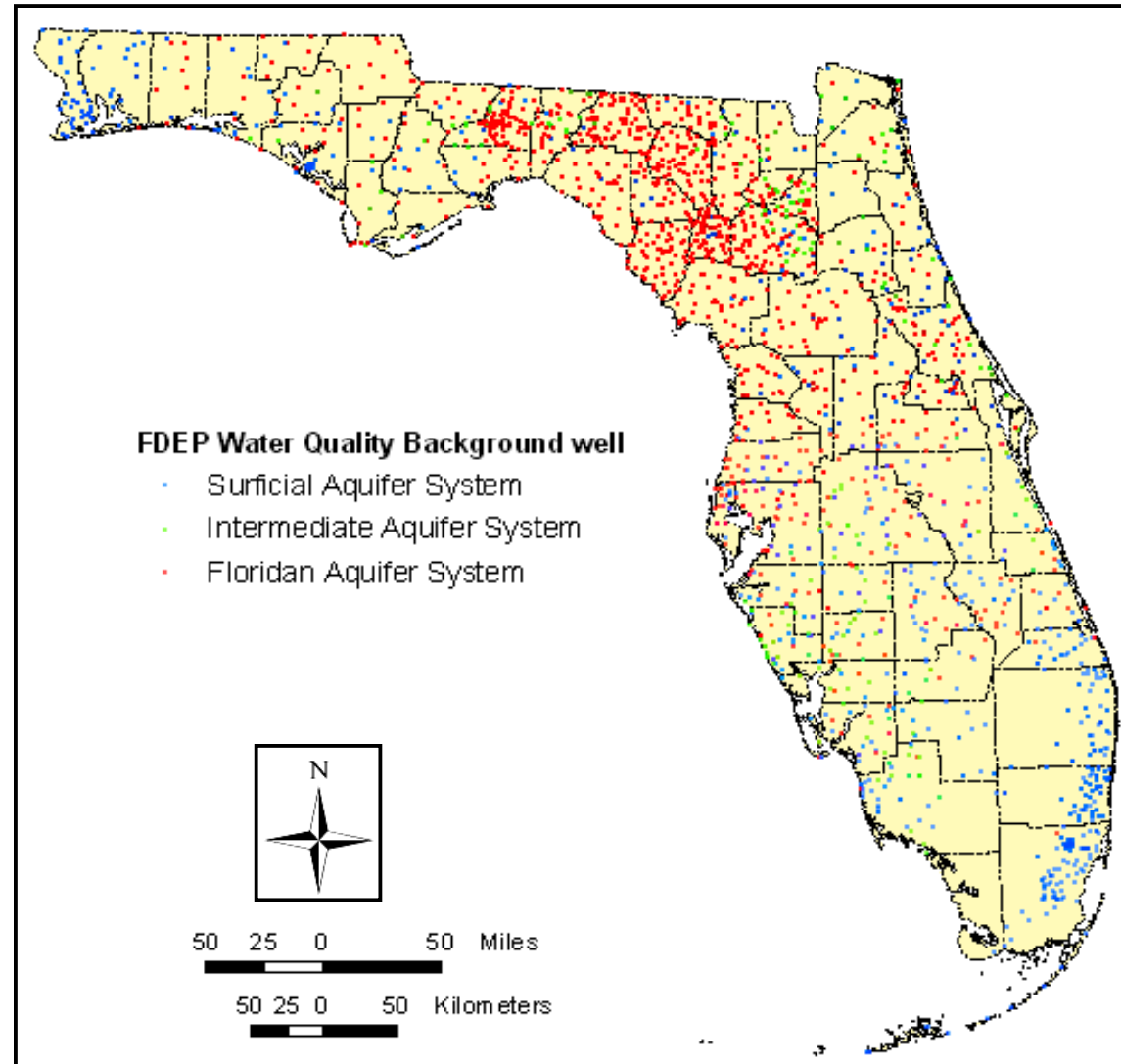


Florida Aquifer Vulnerability Assessment (FAVA)

***A model used to predict the vulnerability of Florida's aquifer
to contamination from land surface***

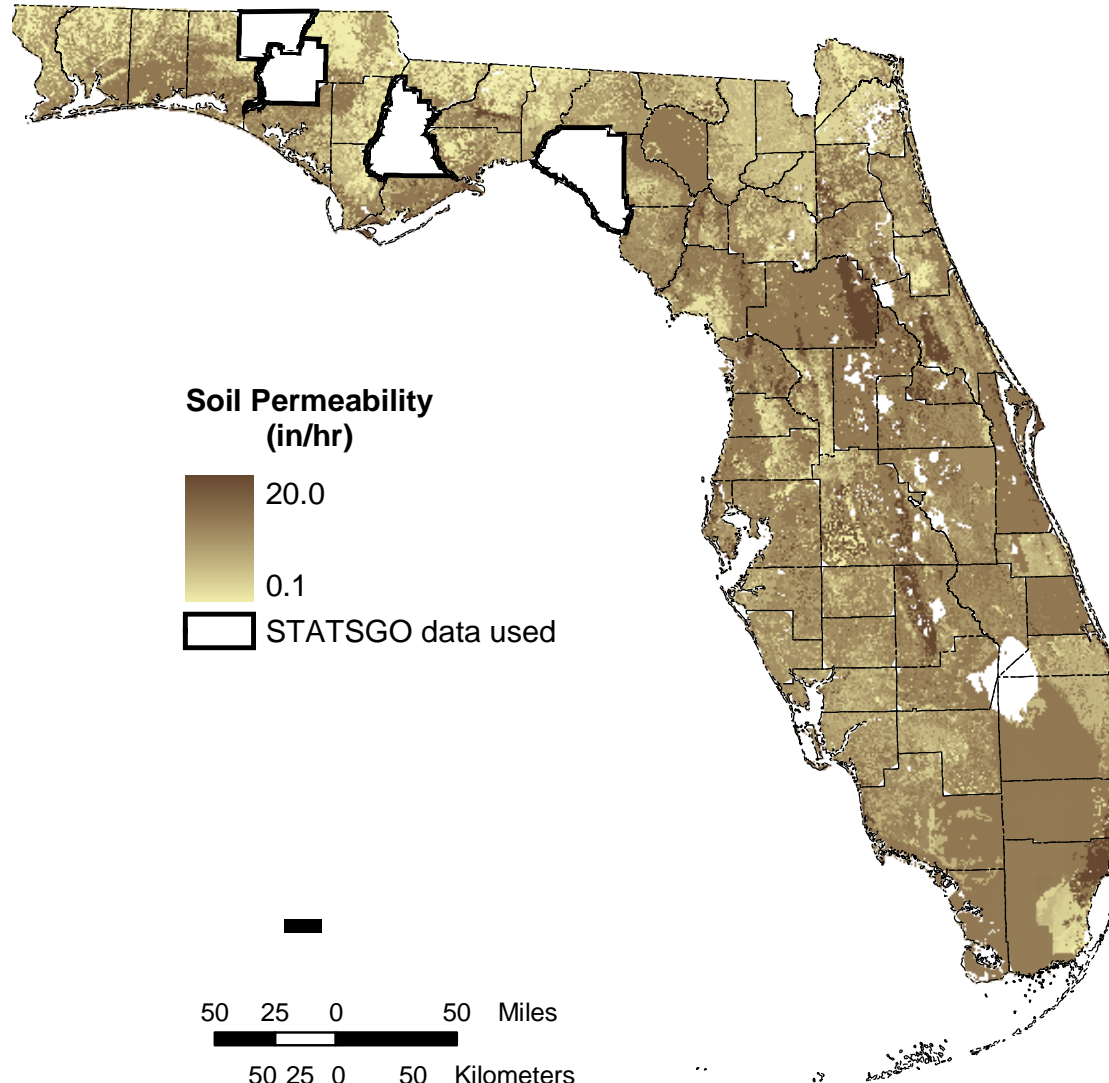


FAVA Uses Well Data

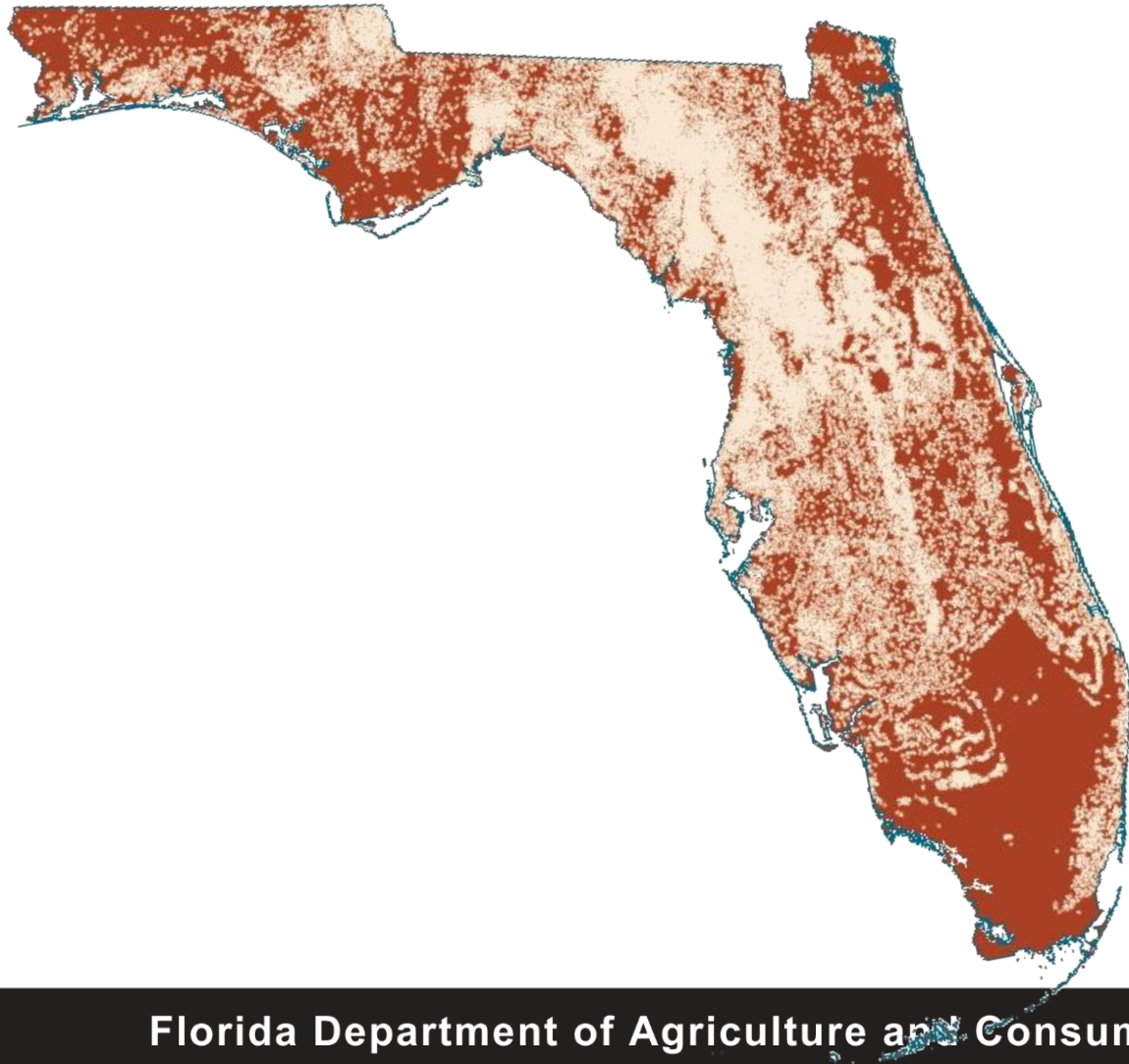




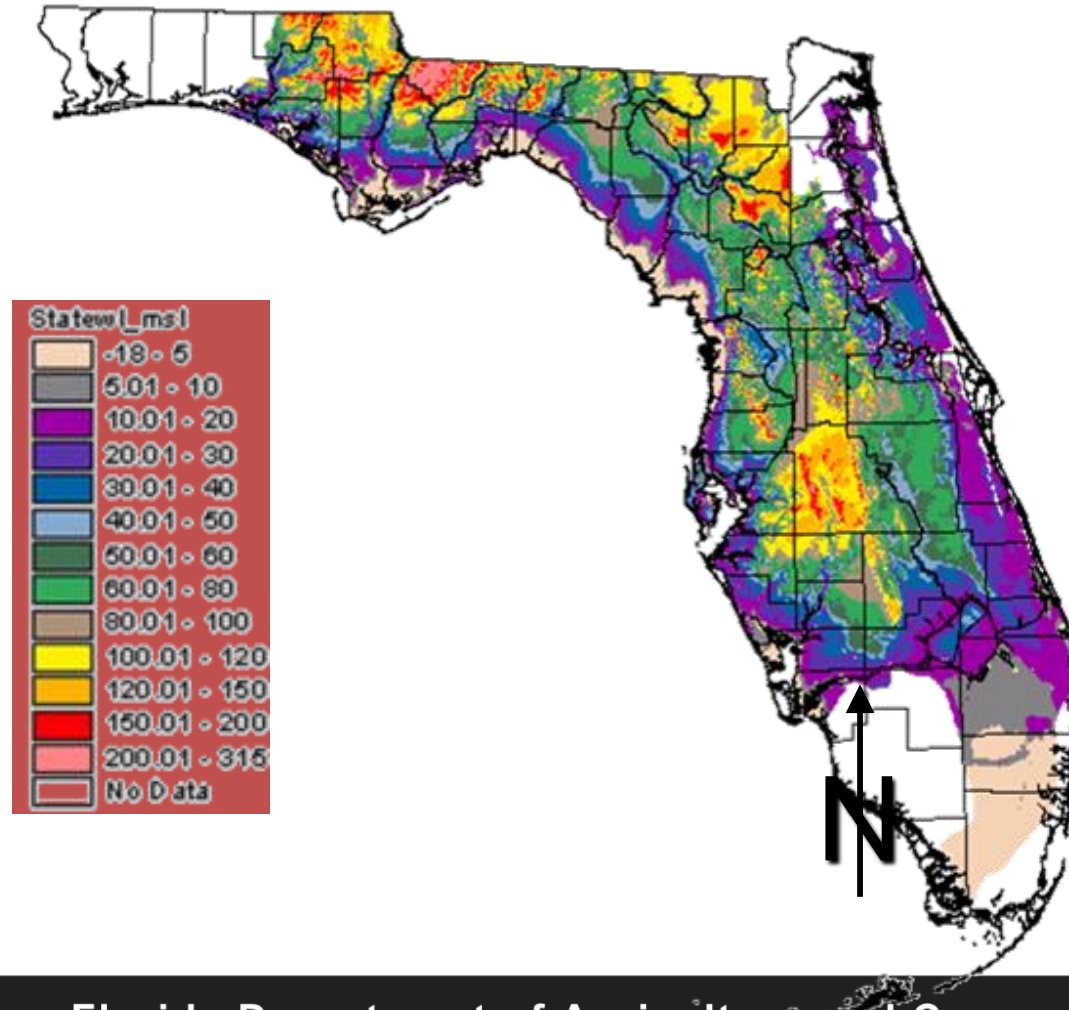
FAVA Uses Soil Permeability



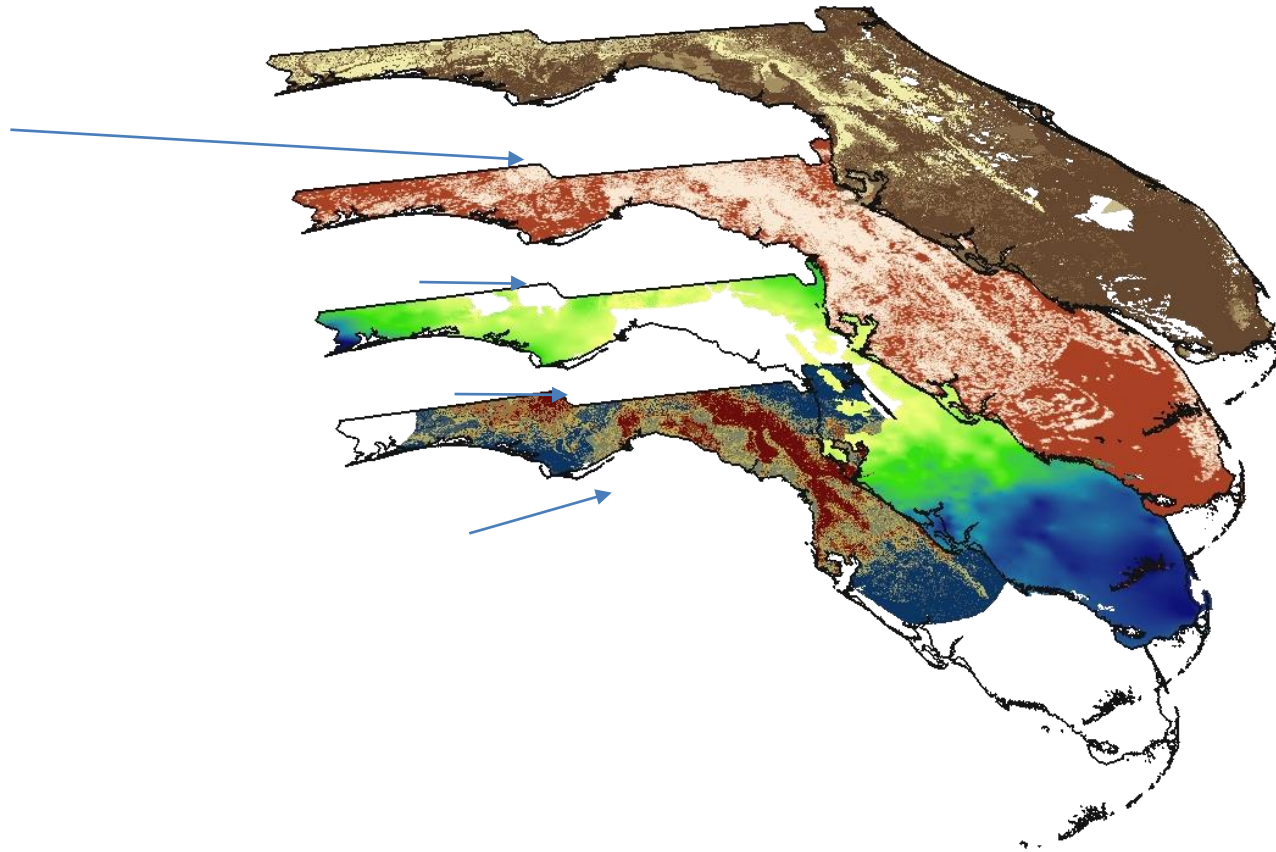
FAVA Uses Proximity to Karst Features



FAVA Uses Altitude of Water Table

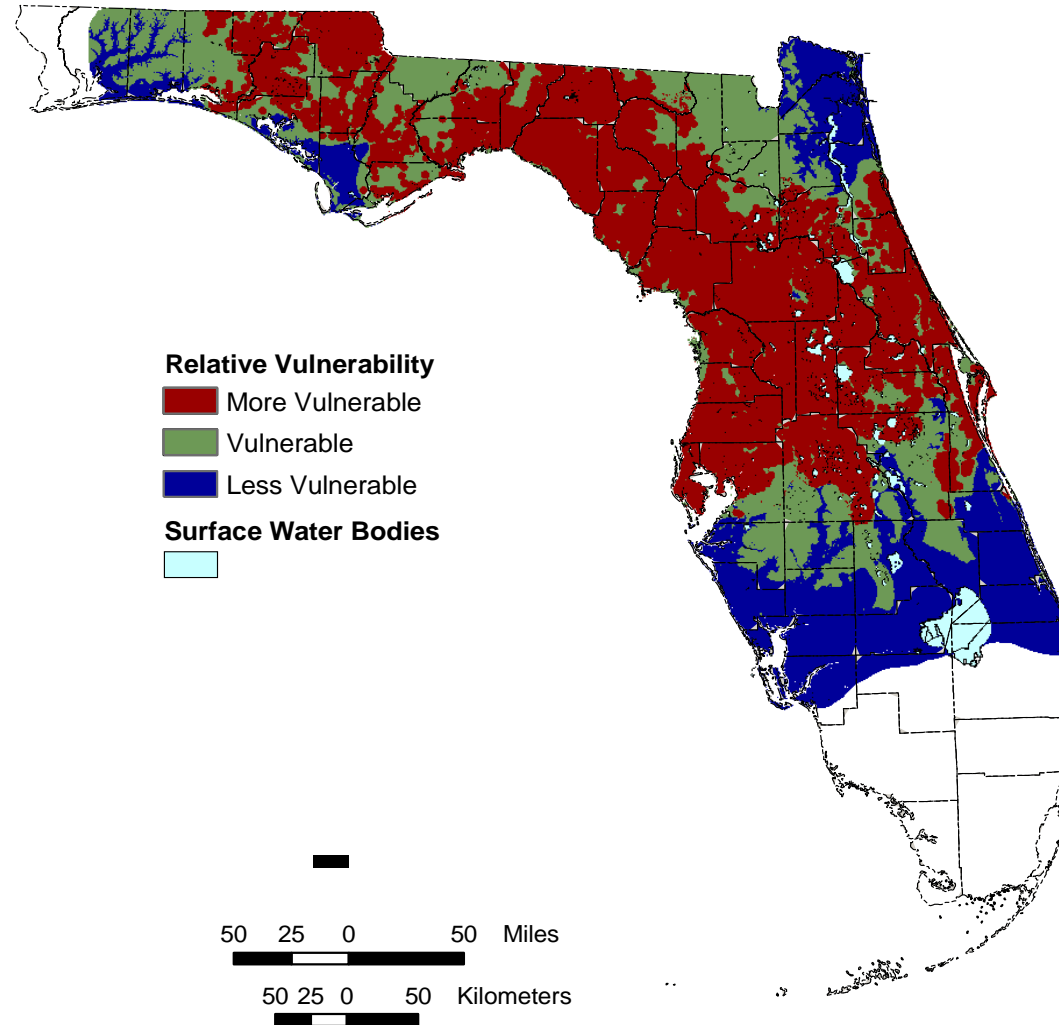


Conceptual Model



***FAVA output
for relative
vulnerability
to contamination
from land surface***

Red is bad!



Bottom Line

- ***We have sandy soils overlying porous limestone***
- ***We have a shallow water table***
- ***We have large rainfall totals***
- ***We have a lot of water and it's all connected***
- ***You just can't bury large numbers of animal carcasses in Florida***



Composting



Composting

- ***Space and carbon source needs can be extensive***
- ***Carbon source required - 3 pounds of carbon required per pound of carcass***
- ***Carbon sources are sawdust, wood chips or shavings, shredded paper***
- ***Average Holstein cow weighs 1500 pounds - needs 4500 pounds of carbon***
- ***Ecologically sound***



Incineration

- *Slow*
- *Expensive*
- *Transportation required*
- *Open air burning prohibited in Florida*
- *Municipal incinerators will not usually accept carcasses*
- *Limited number of commercial incinerators*



Air Curtain Incinerators



Commercial Incinerators



Rendering

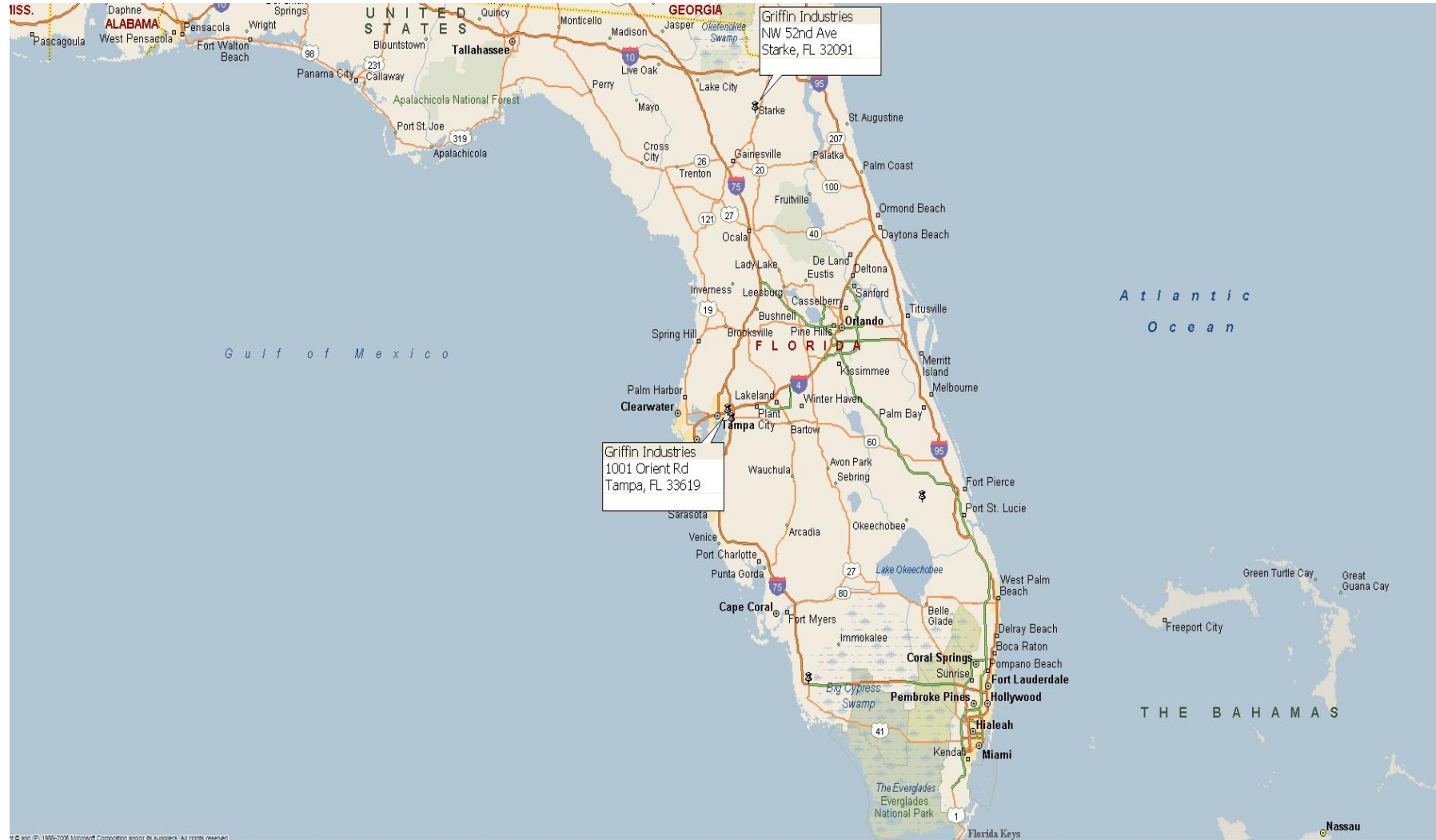


Rendering

- ***Expensive***
- ***Plant refusal is common***
- ***Will not take cattle carcasses because of BSE, or rotten carcasses***
- ***Transportation required***
- ***Limited number of commercial renderers***



Rendering



Rendering

- *Florida capacity - 120,000 lbs./hour or 2,880,000 lbs./day*



Transport to a Class I Landfill



Transport to a Commercial (Class I) Landfill

- ***Tipping fees can be expensive***
- ***Transportation required***
- ***Landfill prior permission typically required***
- ***Probably the best option in Florida***



Commercial Landfill

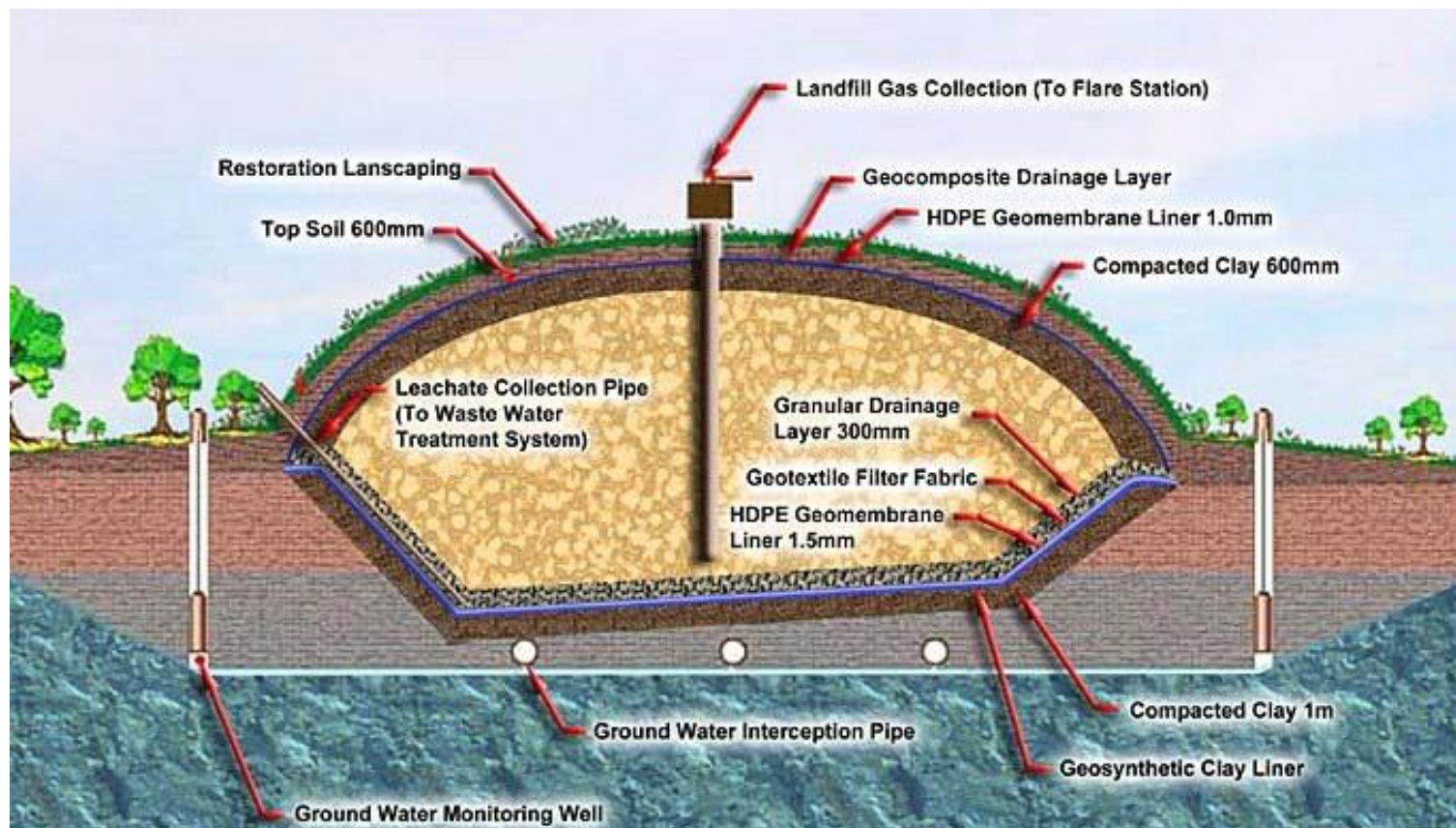
An engineering marvel!

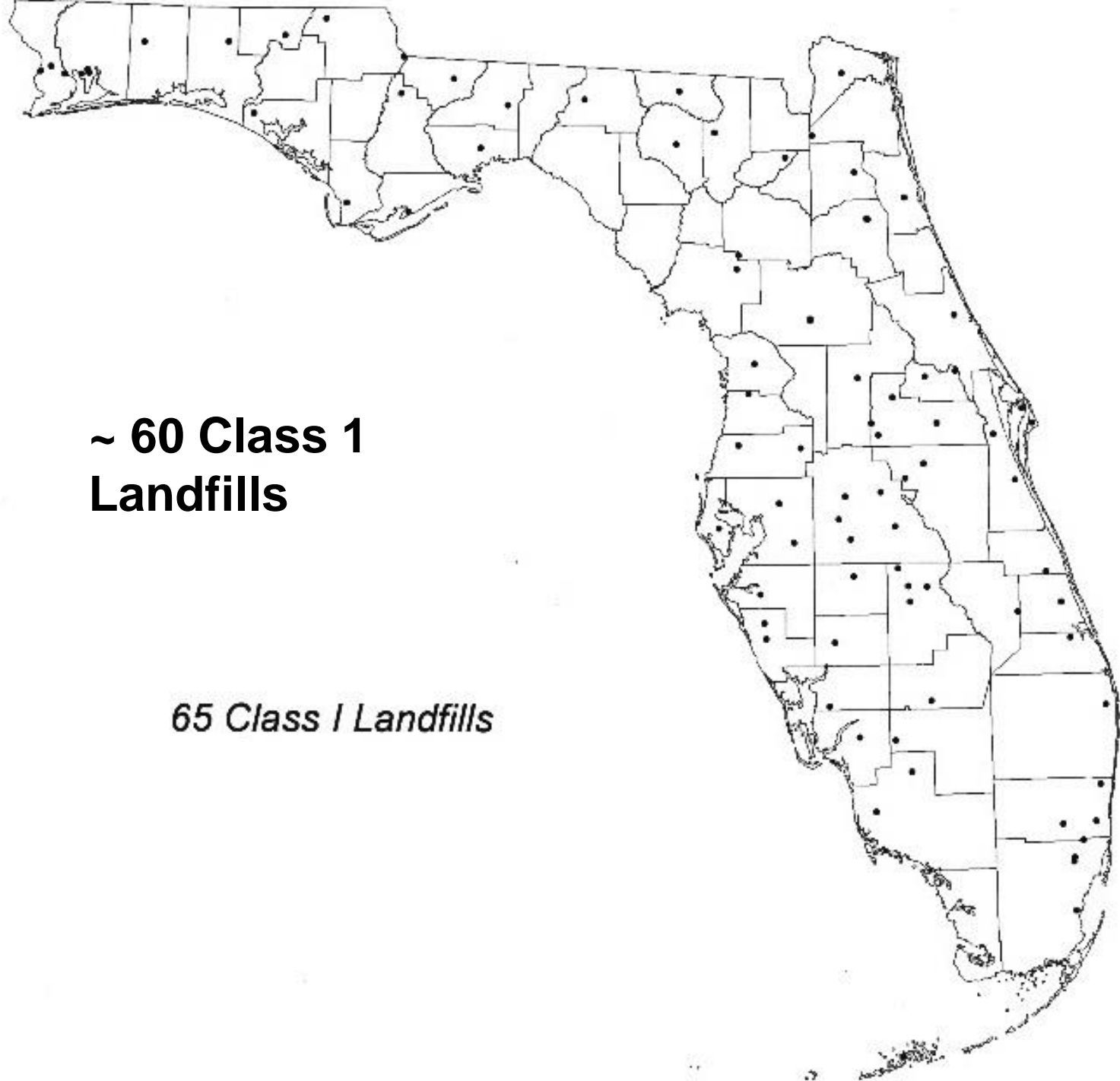
Is lined

Has groundwater monitoring wells

Leachate is collected

Gas is collected





**~ 60 Class 1
Landfills**

65 Class I Landfills



Holistic Weighting of Disposal Options

Weighting	Criteria	Off-Site Landfill	Rendering	Off-Site Incineration	Composting	Open Air Burning	On-Site Burial
Most Important (x3)	Public Health Risk (1)	9	9	9	9	6	3
	Biosecurity (2)	6	6	6	3	3	3
	Pathogen Inactivation (3)	3	6	9	6	9	3
	Environmentally Sustainable (4)	9	9	9	9	3	3
Important (x2)	Need to Transport Carcasses Offsite (5)	2	2	2	6	6	6
	Volume Reduction (6)	4	6	6	4	6	4
	Availability(7)	6	4	2	4	4	4
	Throughput (8)	6	6	2	4	4	4
	Speed to Implement (9)	6	4	4	4	4	4
	Public Acceptance (10)	6	4	6	4	2	4
Less Important (x1)	Cost Effectiveness (11)	3	2	1	1	1	3
	Efficiency (12)	3	3	3	2	1	2
	Operability (13)	3	3	3	2	1	3
	Regulatory limitations (14)	2	3	2	2	1	1
	Denial of use (15)	2	2	2	2	2	1
Total Points		71	69	66	62	53	48
Average Score		4.7	4.6	4.4	4.1	3.5	3.2



Payment



Payment

- *Under a Presidential Declaration, FEMA will reimburse for carcass disposal with restrictions*
- *Under an foreign animal disease emergency, USDA will pay for carcass disposal with restrictions*



FEMA Public Assistance



FEMA

Generally, FEMA will provide assistance for the removal and disposal, which may include open burning, incineration, or rendering, of animal carcasses resulting from a Presidentially declared major disaster . . .

. . . .when animal carcass removal and disposal is necessary to reduce or eliminate an immediate threat to life, protect public health and safety



FEMA Public Assistance

- ***FEMA Policy 9580.206 - Public Assistance for Animal Carcass Removal and Disposal (2014)***
- ***This assistance is authorized under Sections 403, 407, and 502 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act***
- ***Public Assistance Category A (debris removal) and/or Category B (emergency protective measures)***



Direct Federal Assistance

- ***FEMA may also provide direct federal assistance (DFA) through a mission assignment to another federal agency to perform carcass removal and disposal work***



Carcasses on Private Property



Carcasses on Private Property

- ***Removal and disposal of carcasses on private property is generally not eligible work***
- ***If the carcasses are determined to present an immediate threat to life, public health and safety, then removal and disposal may be eligible as an emergency protective measure***
- ***FEMA may require certification from the state or local health department, or the USDA, that a health threat exists***



OTHER FEDERAL AGENCY ASSISTANCE



OTHER FEDERAL AGENCY ASSISTANCE

- ***The USDA Natural Resources Conservation Service (NRCS) may be able to provide assistance to private landowners for the removal and disposal of animal carcasses***
- ***Private landowners should contact the NRCS State Office to receive assistance that may be available***



OTHER FEDERAL AGENCY ASSISTANCE

- ***U.S. Environmental Protection Agency (EPA) and U.S. Coast Guard (USCG) have the authority to respond to animal carcasses that are contaminated with oil, hazardous substances, pollutants, or contaminants***



Information



SART Website

www.flkart.org

The screenshot shows the top portion of the Florida SART website. On the left is the SART logo, which includes the text 'STATE AGRICULTURAL RESPONSE TEAM', 'S.A.R.T.', and 'FLORIDA'. To the right of the logo, the text 'FLORIDA SART' is displayed in large blue letters, with 'State Agricultural Response Team' in smaller text below it. Further right, there are links for 'Login', 'Register for SART Account', and a search icon labeled 'Search'. Below this is a dark navigation bar with dropdown menus for 'About Us', 'News & Media', 'Events & Meetings', 'Training', 'Resources', and 'Get Involved'. The main banner features a photograph of oranges on a tree with the text 'Coordinating Disaster Response for Animals and Agriculture' overlaid in white.



The SART Sentinel



County Contacts



Media Gallery



Events Calendar

2019 SART Planning Conference

May 29 - 31, 2019
St. Pete Beach, FL

[Click here for details](#)



Florida Department of Agriculture and Consumer Services

Important links

- *Links for Debris/Carcass Disposal Decision Support:*
<http://soils.usda.gov/survey/geography/hurricane/index.html>
- *EPA's debris disposal decision support tool suite:*
<http://www2.ergweb.com/bdrtool/login.asp>
- *Farm disaster assistance:* <http://www.fsa.usda.gov/>



Contact Us

- *Web EOC Mission request*
- *Contact a SART Partner*
- *Contact me*

Dr. Greg Christy

(850) 410-0902

Gregory.Christy@FreshfromFlorida.com



Questions?



Foot and Mouth Disease (FMD) – U.S.

- ***The most devastating FMD outbreak in the U.S. happened in 1914***
- ***It originated from Michigan, but entered the stockyards in Chicago***
- ***About 3,500 livestock herds with 170,000 cattle, sheep, and swine***
- ***The eradication cost was \$4.5 million, a huge sum of money in 1914***





Carcass Disposal in 1914

- ***Burial by steam shovels (only available in some areas)***
- ***Dumping down mine shafts***
- ***Blasting canyon walls to cover***
- ***Slaughter and consumption of exposed, but not diseased/ill animals***



Recent Disease Outbreaks

- *1971 U.S.- 8 million birds killed (END)*
- *1983 U.S. - 17 million birds killed (HPAI)*



Recent Disease Outbreaks

- ***1997 Taiwan - 4 million hogs killed (FMD)***
- ***1998 Netherlands - 11 million hogs killed (CSF)***



Recent Disease Outbreaks

- ***1999 Malaysia—1 million hogs killed (Nipah)***
- ***2001 UK – 10 million animals killed (FMD)***



Recent Disease Outbreaks

- ***2015 U.S.- Highly Pathogenic Avian Influenza (HPAI) - 50 million birds died or killed***



Recent Disease Outbreaks

- ***2019 East Asia - African Swine Fever (ASF) - 1.7 million swine died and euthanized***

