

Summary of Results

DRAFT

Walk the WBID Exercise for Gottfried Creek (WBID 2049)



September 2015

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Purpose and Contents

This report summarizes the results of the Walk the WBID exercise for the Gottfried Creek watershed, located in southern Sarasota County and northern Charlotte County, on February 28, 2012. This field reconnaissance and source elimination effort was carried out to gain a better understanding of conditions within the watershed, including the hydrology of the creek and its contributing ditches and branches, flood-prone areas, the locations of sewer and stormwater infrastructure, and potential sources that are contributing fecal coliform (FC) bacteria to the creek.

Basin Management Action Plans (BMAP) to address sources may be appropriate for some watersheds; however, they are both time and resource intensive. The Walk the WBID exercise is a low-cost, effective alternative to begin addressing fecal coliform pollution in Gottfried Creek so that it meets state water quality standards. This common-sense first step allows stakeholders to identify the location of suspected sources, establish a sampling plan to fill in knowledge gaps, carry out easy-to-implement management actions for the creek using existing programs and ongoing activities, and follow up on those actions to assess the degree of success and the additional effort needed. The exercise allows stakeholders to identify uncertainties and future options for more effective adaptive management. It also contributes to improved communication between and within agencies, and provides opportunities to increase public awareness.

The lead entity for the Walk the WBID exercise is Sarasota County; other participants are Englewood Water District (EWD), Charlotte County, the City of North Port (CONP), the Florida Department of Health, Sarasota County (DOH-Sarasota), the Florida Department of Transportation (FDOT), the Florida Department of Agriculture and Consumer Services (FDACS), Thomas Ranch, the Lemon Bay League, the Coastal Wildlife Club, the Charlotte Harbor Aquatic Preserve (CHAP), and other stakeholders.

This report includes the following information:

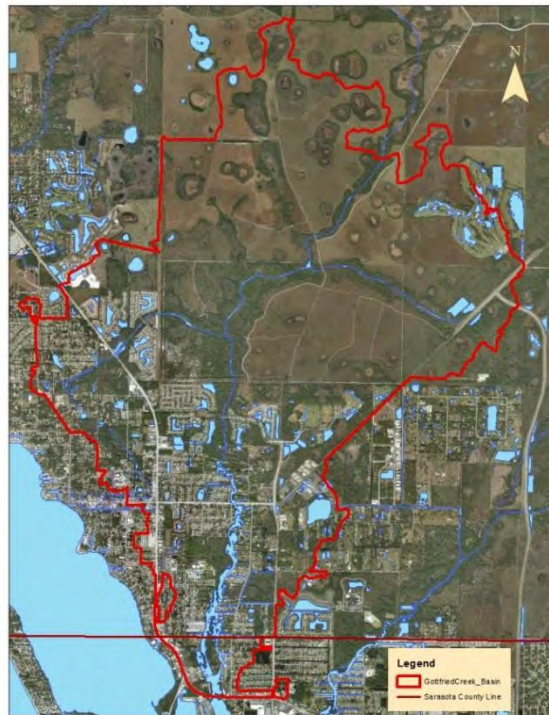
- 1. Identification of the WBID;*
- 2. Results of any preliminary investigation or issues identified;*
- 3. List of entities and staff participating in the field efforts or other operations;*
- 4. Sources and potential sources observed;*
- 5. Immediate next steps and follow-up actions taken;*
- 6. Follow-up actions still needed;*
- 7. Sources eliminated or investigated;*
- 8. Water quality results from samples taken in the field;*
- 9. Monitoring sites identified or proposed; and*
- 10. Any other pertinent information.*

Background

Description of the Gottfried Creek Watershed

Gottfried Creek is located in the southern portion of Sarasota County and extends into the northern portion of Charlotte County, within the Charlotte Harbor Basin (**Figure 1**). Gottfried Creek discharges into Lemon Bay, which was designated an Outstanding Florida Water (OFW) in 1987 and is classified as a Class II waterbody with shellfish propagation or harvesting as its designated use. Gottfried Creek (WBID 2049) is a Class III waterbody, with a designated use of recreation, propagation, and maintenance of a healthy, well-balanced population of fish and wildlife. Although the creek flows into Lemon Bay in Charlotte County, over 90% of the drainage area is in Sarasota County. The topography of the Gottfried Creek WBID 2049 watershed encompasses 7,229 acres. The dominant land use categories are urban land (urban and built-up; low-, medium-, and high-density residential) and rangeland, which accounts for about 52 percent of the total WBID area. Urban and built-up land use occupies about 1,690 acres or about 23 percent of the total WBID area. Of the 1,690 acres of urban lands, residential land use occupies about 1,156 acres. Rangeland land use occupies about 2,088 acres or about 29 percent of the total WBID area. The physiography of the Gottfried Creek watershed reflects its location within the Southwestern Florida Flatwoods or Southern Coastal Plains Eco region. Elevations in the watershed range from around 0-10 feet above sea level (FDEP, 2010). The predominant soil type is shelly sand and clay (FDEP, 2008). A major human population center exists in the southern portion of the watershed, which is the unincorporated town of Englewood.

Figure 1. Aerial map showing the boundary of the Gottfried Creek watershed and major hydrologic features in the area.



Fecal Coliform Impairment of Gottfried Creek

Gottfried Creek (WBID 2049) was verified impaired for fecal coliform bacteria in March 2010, based on the state's Impaired Surface Waters Rule (IWR) (see box at right), and Total Maximum Daily Loads (TMDLs) were adopted for both fecal and total coliform in June 2006. However, the TMDL is now only applicable to fecal coliform, since total coliform is no longer a water quality standard regulated by the state.

A TMDL represents the maximum amount of a given pollutant that a waterbody can assimilate and still meet water quality standards, including its applicable water quality criteria and its designated uses. TMDLs are developed for waterbodies that are verified as not meeting their water quality standards. They are a critical step in the watershed restoration process because they provide the targets for measuring progress in subsequent water quality restoration efforts.

The fecal coliform TMDL calls for a 74% percent reduction in in-stream concentrations for Gottfried Creek to meet state water quality standards. Currently, no point sources are permitted to discharge into the creek. Wasteload allocations have been assigned to three municipal separate storm sewer system (MS4) permittees: Sarasota County, the City of North Port, and the Florida Department of Transportation (FDOT), District 1.

Florida's Water Quality Standard for Fecal Coliform

For determining impairment for fecal coliform bacteria, the IWR states that the most probable number (MPN) or membrane filter (MF) counts per 100 milliliters (mL) of fecal coliform bacteria shall not exceed a monthly average of 200, nor exceed 400 in 10 percent of the samples, nor exceed 800 on any one day. The criteria state that monthly averages shall be expressed as geometric means based on a minimum of 10 samples taken over a 30-day period. However, there were insufficient data (fewer than 10 samples in a given month) available to evaluate the geometric mean criterion for fecal coliform bacteria. Therefore, the criterion selected for the TMDL was not to exceed 400.

Walk the WBID Exercise

Participants

All agencies with jurisdictional authority collaborated before, during, and after the event. Team members included representatives from the FDEP, Sarasota County, EWD, Charlotte County, CONP, DOH – Sarasota, FDOT, and FDACS.

Costs

The only costs to the participants in the Walk the WBID exercise were staff time and potential management actions. Processing the water quality samples associated with this effort was funded by Sarasota County.

Future management actions associated with existing city and county programs will require scheduling, coordination, and follow-up on behalf of the participating agencies. Examples of follow-up activities that may result in additional costs include system maintenance, repair, and investigation; however, it is

important to note that these activities generally correspond with jurisdictional missions and already-established programs.

Initial Steps

Before going into the field, the stakeholders met and exchanged information through a meeting organized by Sarasota County; these included Sarasota County, EWD, Charlotte County, the CONP, DOH-Sarasota, FDOT, FDACS, Thomas Ranch, the Lemon Bay League, the Coastal Wildlife Club, the Charlotte Harbor Aquatic Preserve, and interested citizens.

In preparation for these meetings, each entity provided information about Gottfried Creek to better acquaint themselves with the conditions in the watershed. The information was provided in advance to FDEP, which created multiple copies of large-format maps for use in the maps on the table exercise and the field event. The information that was collected and assimilated included the following:

- *Geographic information system (GIS) data;*
- *Stormwater infrastructure maps showing the locations of inlets and outfalls, ponds, ditches, and underground conveyances;*
- *Stormwater best management practices (BMPs) being implemented;*
- *Maps of private and public sewer infrastructure showing the locations of pump stations and force and gravity mains, as well as the location and number of sanitary sewer overflows (SSOs);*
- *Locations of septic tanks and repair permits issued;*
- *Locations of specialty farms, kennels, and other animal operations;*
- *Water quality sampling information such as sampling stations, frequency, and results;*
- *Hydrology, including wetlands, streams, and ponds; and*
- *Locations of known issues or areas of special concern such as homeless populations, dog parks, landfills, and transfer stations.*

Maps on the Table Session

With a representative present from each participating agency, team members held the Maps on the Table session to identify areas of concern to visit during the Walk the WBID event, based on field knowledge from staff and a synthesis of the available information. The team members marked areas of concern on their maps and elected field representatives with infrastructure knowledge and access to facilities, and who were familiar with sampling equipment and standard operating procedures (SOPs).

Subsequently, FDEP and Sarasota County carried out a preliminary field reconnaissance to identify areas of focus, determine appropriate routes for the participants, and identify any access issues and safety concerns requiring coordination with local law enforcement.

Field Event

The Walk the WBID team used the large-format maps while conducting the field investigations. A documentation team was designated, with a team member assigned to record global positioning system (GPS) points with the coordinates of potential sources, another person to take pictures, and a primary note taker to record the information. Water quality sampling equipment was used to collect water quality information about potential sources identified in the field.

The team explored the entire waterbody while in the field, referring to the maps to follow the creek above and below ground. Team members looked at Gottfried Creek banks and in the vicinity of the waterbody for potential sources. Canals/ditches that intersected the waterbody were also walked to ensure that the waterbody and its associated branches were all included within the WBID boundary. Care was taken to ensure that only appropriate entity representatives accessed private property, unless the property owner had granted access to the entire team. Potential sources that were investigated included the following:

- *Potential illicit connections (PICs) or discharges;*
- *Public and private sanitary sewer infrastructure (such as manholes and pump stations);*
- *Signs of recent SSOs, or areas with multiple SSOs;*
- *Wastewater infrastructure located close to surface waters and/or stormwater inlets, including pump stations, manholes, and air release valves (ARVs);*
- *Septic tanks located close to surface waters and/or stormwater inlets;*
- *Failing septic tanks (as indicated by ponding and a strong smell of sewage);*
- *Evidence of homeless populations;*
- *MS4 conveyances requiring cleaning;*
- *Accumulated trash and debris on streets and parking lots;*
- *Accumulated trash and debris near to or inside stormwater drains and catch basins;*
- *Clogged or broken stormwater grates;*
- *Stormwater drains undergoing repairs;*
- *Stormwater outfalls discharging from underground conveyances or into ponds;*
- *Sewage smell from stormwater drains, indicating possible cross-connections;*
- *Unusual odors;*
- *Evidence of illegal dumping or discharge of liquids;*
- *Signs of oil and grease;*
- *Excessive sediments and signs of erosion or wash out;*
- *Stagnant water;*

- *Debris in inlets, or inlets located near wastewater infrastructure;*
- *Exposed pipes of unknown origin;*
- *Flood-prone areas;*
- *Pet waste or evidence of high-traffic pet areas;*
- *Presence of horses, cattle, or other ruminants in the water or close to the water;*
- *Evidence of wildlife such as raccoons and waterfowl;*
- *Evidence of chickens or other hobby animals;*
- *Areas with heavy tree cover and vegetated ditches preventing ultraviolet (UV) light penetration.*

Any discharges that were observed were sampled both downstream and upstream. Potential sources or other issues identified while in the field were reported to the proper jurisdiction and cataloged while in the field. A record was kept of major findings, including observations about the waterbody, potential sources, followed-up items and the responsible entity, and any areas that should be added to the monitoring plan or that required additional investigation.

Results

Figures 2 through 52 summarize the water quality issues and potential fecal coliform sources that the team observed during the Walk the WBID exercise on February 28, 2012, as well as the results of the water quality sampling that was carried out on that date.

Figure 2. Private Lift Station – Provision Eye Center.



WTW Team inspecting lift station.

Figure 3. Private Lift Station – Provision Eye Center



Action Item: Lock needed on pump well.

Figure 4. Private Lift Station – Provision Eye Center.



Action Item: Emergency signage needed

Private lift station for Provision Eye Center, located at 473 S. Indiana Avenue needed a lock on the pump well cover and contact information for notification in case of an emergency. All of the lift stations inspected are included in Appendix B.

Figure 5. Open Stormwater Canal, 201 Selma Avenue – Aerial View.



Canal collects stormwater runoff from commercial and residential district and flows eastward into Gottfried Creek (blue circle).

Figure 6. WTW Team inspecting open stormwater canal.



Canal is well maintained, open to UV light, and flows at low velocity except during significant rainfall events. No action item was necessary.

Figure 7. Aerial Crossing – Rusted out old raw water lines across open stormwater canal.



Action Item: Check to see if raw water lines been capped.

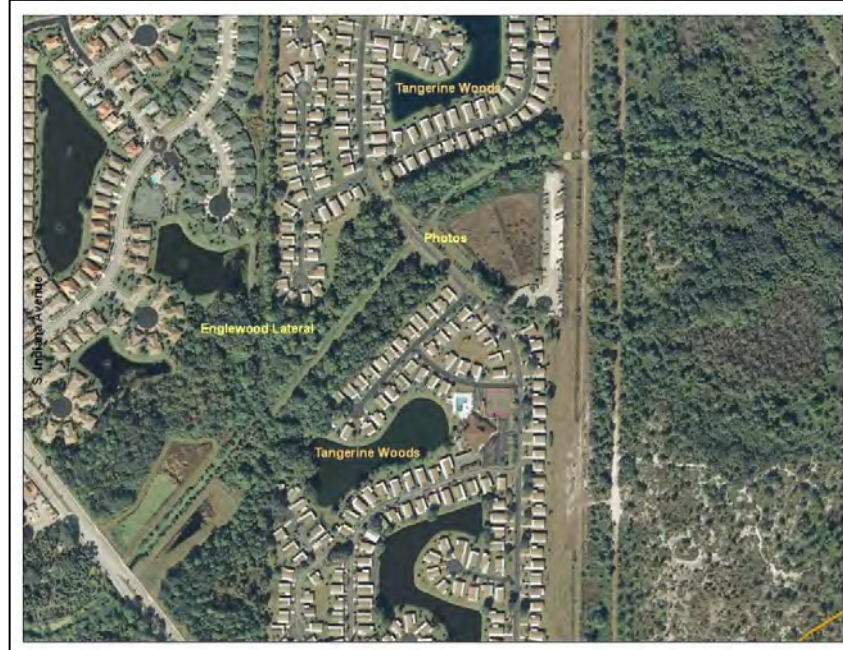
Figure 8. FDOT Stormwater Ponds.



Action Item: Notify FDOT to remove cattails.

The ponds were overgrown with cattails which could impair treatment capacity and efficiency.

Figure 9. Englewood Lateral Stormwater Canal at Tangerine Woods - Aerial View.



Englewood Lateral flows through Tangerine Woods, a 368 manufactured home community, from southwest to northeast and joins Gottfried Creek on the Thomas Ranch property.

Figure 10. Englewood Lateral at Tangerine Woods Boulevard – Upstream.



The canal is county maintained, open to sunlight, and shallow with low flow.

Figure 11. Englewood Lateral at Tangerine Woods Boulevard – Downstream.



Surface covered with duckweed.

Figure 12. WTW Team Inspecting Englewood Lateral.



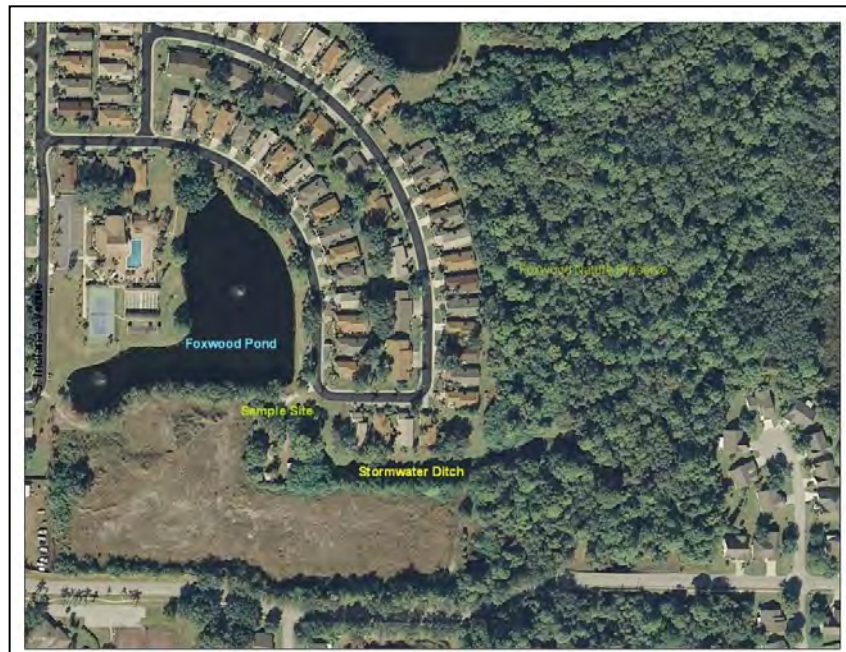
The community, previously serviced by a package plant, was connected to the EWD central sanitary sewer system in 2001. No issues were observed. No action item was necessary.

Figure 13. Open Pasture – N. Indiana Avenue – Aerial View.



No cattle present; cattle routinely rotated to other pastures; property bermed; no cow patties observed.
Action Item: Determine if runoff flows to Gottfried Creek.

Figure 14. Foxwood Development – Aerial View.



The stormwater ditch flows from the stormwater pond through a natural area to Gottfried Creek.

Figure 15. Foxwood Stormwater Pond.



Ducks and wading birds observed in and around pond.

Figure 16. Foxwood Stormwater Ditch – View Toward Upstream.



The stormwater pond overflows into the ditch; irrigation pipes observed (foreground).

Figure 17. WTW Team Collecting Fecal Coliform Sample.



Action Item: Sample ditch because of strong pet waste odor.

Figure 18. Foxwood Stormwater Ditch – View Toward Downstream.



Ditch flows to through Foxwood Nature Preserve to Gottfried Creek.

Figure 19. Foxwood Stormwater Ditch.



Ditch just upstream of nature preserve.

Figure 20. Foxwood Stormwater Ditch-Wildlife Tracks.



Deer or Hog Tracks

Figure 21. Foxwood Stormwater Ditch-Wildlife Tracks.



Deer or Hog Tracks

Figure 22. Foxwood Stormwater Ditch.



Raccoon Tracks

Figure 23. Foxwood Nature Preserve Creek – View Downstream.



Foxwood stormwater ditch merges with creek at this point.

Figure 24. Foxwood Nature Preserve Creek – Large School of Mullet.



Creek is tidally influenced.

Figure 25. Foxwood Nature Preserve Creek.



Creek is shallow and heavily shaded. This segment flows to Gottfried Creek.

Figure 26. Foxwood Nature Preserve.



Evidence of wild hog activity.

Figure 27. Oak Forest Subdivision, N. Indiana Avenue.



Proper pet waste management

Figure 28. Park Forest Development, N. Indiana Avenue– Aerial View.



Sarasota County conducts monthly water quality sampling at the bridge on Gottfried Creek.

Figure 29. WTW Team at Park Forest Bridge. Air-Release Valve.



Action Item: Is ARV manually or automatically operated?

Figure 30. Gottfried Creek at Park Forest Bridge.



View Facing Upstream. : Heavily Shaded

Figure 31. Gottfried Creek at Park Forest Bridge – Mullet in Creek.



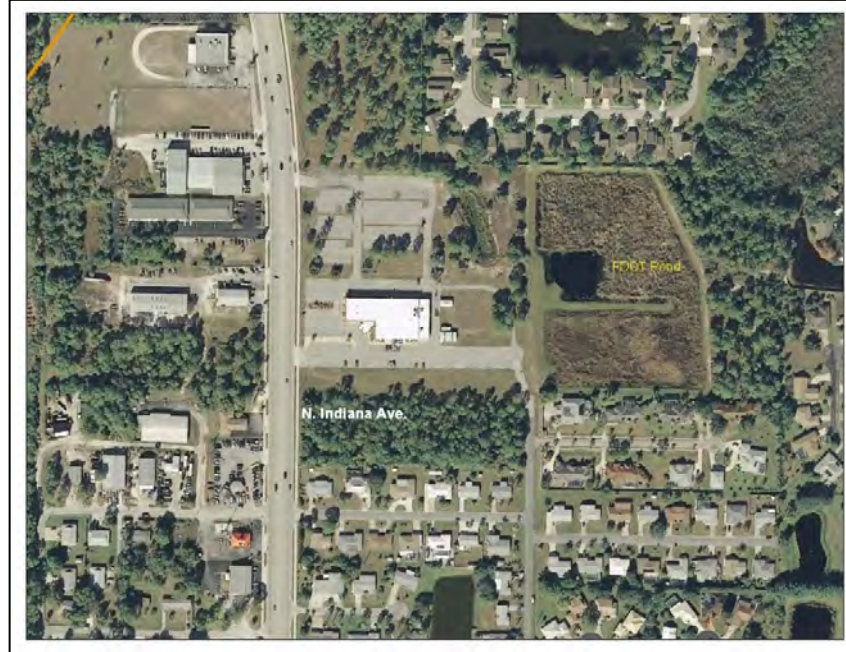
Action Item: Determine tidal stage and salinity during collection of samples.

Figure 32. Gottfried Creek at Park Forest Bridge.



View Facing Downstream: Heavily Shaded

Figure 33. FDOT Stormwater Pond Behind the Elk's Lodge, 401 N. Indiana Avenue.



Ponds are overgrown with cattails (Figures 35 and 35).

Action Item: Notify FDOT to remove cattails.

Figure 34. FDOT Pond DP35-6 Behind the Elks Lodge – Northern Arm.



Pond Overgrown with Cattails.

Figure 35. FDOT Pond DO35-6 Behind Elks Lodge – Southern Arm.



Pond Overgrown with Cattails.

Figure 36. Horse Pasture on North Pine Street – Aerial View.



Improper manure disposal could impact Gottfried Creek.
Action Item: Determine if runoff could flow to the creek.

Figure 37. Horse Pasture on North Pine Street.



Overview of Pasture – View to East

Figure 38. Horse Pasture on North Pine Street.



Overview of Pasture – View to Southeast

Figure 39. Horse Pasture on North Pine Street.



Overview of Pasture – View to East

Figure 40. Horse Pasture on North Pine Street.



WTW Team

Figure 41. E. Riverview Ave. and Liberty St. – Aerial View.



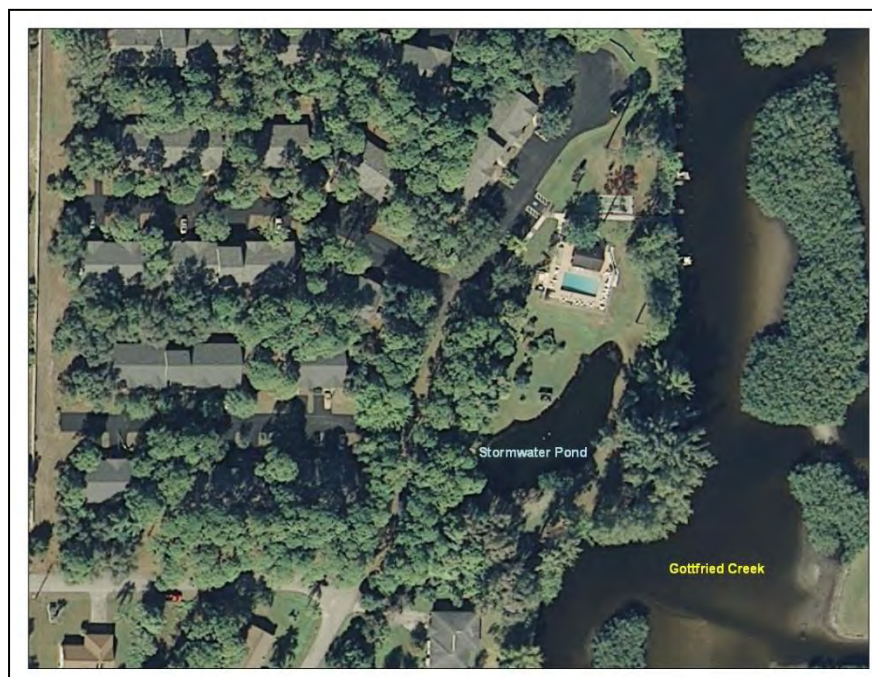
The ditch, flowing from S. Indiana Avenue to Gottfried Creek is on the Sarasota/Charlotte County line.

Figure 21. Drainage Ditch South of E. Riverview Ave. and West of Liberty St.



Action Item: Contact appropriate agency for maintenance.

Figure 43. Gasparilla Condominium Complex, 131 Jose Gaspar Dr. – Aerial View.



Complex property is adjacent to Gottfried Creek.

Figure 44. Gasparilla Condominium – Private Lift Station.



No Violations Noted.

Figure 45. Gasparilla Condominium Stormwater Pond.



WTW Team Inspecting Berm Around Pond.

Figure 46. Gasparilla Condominium Stormwater Pond.



Pond Overflows Berm Directly to Creek.

Figure 47. Gasparilla Condominium Stormwater Pond.



Alligator Inhabiting Pond

Figure 48. Gasparilla Condominium Stormwater Pond.



Flock of White Ibis on Pond Berm
No issues observed. No Action Item necessary.

Figure 49. South Oxford Stormwater Ditch.



Ditch runs parallel to S. Oxford then flows west to Gottfried Creek

Figure 50. South Oxford Stormwater Ditch.



Evidence of Hog Activity in Ditch

Figure 51. North Oxford Stormwater Ditch-Aerial View.



Figure 52. North Oxford Stormwater Ditch.



Action Item: Contact appropriate agency for maintenance.

Pre-Field Event Inspections

Prior to the Walk the WBID event, pre-field event inspections were carried out of several areas that could not be walked on February 28, 2012 because of access and/or time limitations.

On December 16, 2011, FDEP and Sarasota County staff conducted a shoreline inspection via boat of areas of the creek not accessible by land (**Appendix A- Figures A.1. – A.31.**). The purpose was to identify existing and potential sources of fecal coliform bacteria. Stormwater outfalls and pipes and hoses of unknown origin or purpose were documented and photographed. Two sites appeared to be potential sources of bacteria, and samples were collected for fecal coliform. The bacteria values results were 120 cfu/100mL (below the water quality standard of 400 cfu/100mL) and 550 cfu/100mL (slightly above the water quality standard of 400 cfu/100mL). The low results were not an indication of a significant bacteria source. A portion of a canal at the mouth of the creek was not inspected because of time limitations. A shoreline inspection of that canal was conducted on July 2, 2012 (**Appendix A – Figures A.32.-A.57.**). During this inspection, staff spoke to the resident of 300 Bay Heights Rd. regarding the private lift station located on the property. Staff spoke about the importance of properly maintaining the lift station to prevent bacterial contamination of the creek. The resident assured staff that the lift station was properly maintained and a contractor would be called immediately if any problems arose.

During December 2011 and January 2012, Sarasota County staff conducted inspections of all known public and private lift stations (L/S) in the Gottfried Creek Basin. Locations were verified and documented, photos were taken, and obvious violations were noted. Inspection notes and photographs are contained in **Appendix B**. Seven private lift stations were found to lack emergency signage and one private lift station was missing a lock on the lid. Sarasota County Air and Water Quality was contacted on March 12, 2012 and provided the locations of the lift stations, photos, and property ownership. Property owners were notified via letters to install appropriate emergency signage and a lock on the one lift station lid. Follow-up inspections were conducted to confirm compliance. Two public lift stations were found to lack emergency signage. Contact was made with EWD on March 13, 2012 and signs were ordered and installed immediately.

Additional Post-Field Event Inspections

Subsequent to the original Walk the WBID event, a post-field event inspection was carried out of two areas that were not walked on February 28, 2011.

Thomas Ranch

On May 10, 2012, representatives from the FDEP, Sarasota County, FDACS, and Thomas Ranch conducted a tour of the ranch (**Figure 53**), a portion of which (about 2088 acres) occupies the upper third of the Gottfried Creek Basin. Thomas ranch, an 11,000 acre working ranch, runs a low-density livestock grazing operation with approximately 800 head of cattle. The remaining acreage is located in the City of North Port where a portion contains residential, commercial, and retail development. There were no immediate plans for further development of the ranch property during the inspection.

The headwaters of Gottfried Creek originate in a wetland system in the northern portion of the ranch and within the City of North Port. The main stem (#38-424) flows in a southerly direction through the ranch and is intersected by two branches. The first branch (east branch #38-463) collects stormwater runoff from South River Road and flows westward until it meets the main stem about 1.4 miles downstream. A broadcast weir structure was constructed downstream of this confluence to control the base flow of the creek (**Figure 59**). The second branch (Englewood Lateral #36-461) originates west of North Indiana Avenue near the downtown district and flows to the northwest then eastward through the Tangerine Woods manufactured home development where it intersects the main stem on the ranch property just downstream of the weir structure. The stormwater conveyance system for that branch consists mainly of roadside ditches/swales and driveway culverts.

The purpose of the tour was to view the expanse of the ranch property, identify areas of any intense wildlife concentrations, view stream characteristics of the main stem and branches, inspect the weir structure, and learn about the cattle operation. The area of the ranch within the watershed boundaries is undeveloped, fenced rangeland with areas of open pasture, scrub, grassland, wetlands, and forests. The main stem of the creek and branches were very narrow and shallow with access almost totally restricted by heavy tree, shrub, and vegetation growth. All were completely dry above the weir structure. The Englewood Lateral and the main stem below the weir structure contained less than 1 foot of water. Information gained from the Maps on the Table exercise about the weir structure was that the water retained by the weir might become so stagnant that it could provide a suitable medium for the growth of bacteria that would be flushed to the creek during a significant rainfall event. As a result of drought conditions, the creek was completely dry upstream of the weir, preventing observation of the water quality or sampling of any water retained upstream of the weir.

While no evidence was found of any sizeable wildlife populations inhabiting the ranch, evidence was found of feral hog activity both on the property and in several areas of the creek (**Figures 56 and 66-69**). No bird colonies were found in the areas of the ranch that were visited.

The Cattle operation includes approximately 800 head of cattle that are separated into smaller herds and routinely rotated among different pastures. The vegetation along the banks of the creek is so thick that access to the creek by the cattle is greatly restricted. The creek bed is also dry most of the year, limiting its availability as a water supply. Therefore, fresh water is provided in round troughs dispersed throughout the ranch (**Figures 74 and 75**).

Florida Department of Agriculture and Consumer Services staff made an appointment to meet with ranch staff at a later date to offer details about the FDACS BMP Program for ranch operations and enlist the ranch into the program. Several attempts were made by FDACS staff to meet with ranch staff to provide information about the BMP program; however, no meeting was ever scheduled. Subsequently, ranching activities ceased on the property in May 2014 when the ranch was sold to a developer who plans to construct 11,000 homes on the 9,650 acre tract over the next 20 to 25 years (**Appendix E**). Protection of the water quality of Gottfried Creek will be a county priority during development of the property.

Figure 53. Thomas Ranch Aerial Overview.



Figure 54. Mulching and Chipping Operation.



Figure 55. Thomas Ranch Rangeland.



Figure 56. Thomas Ranch – One of Many Wetlands.



Figure 57. Thomas Ranch – Feral Hog Activity.



Figure 58. Thomas Ranch -Tree Line along Main Creek.



Figure 59. Thomas Ranch- Weir on Main Stem.



Figure 60. Thomas Ranch Aerial – Location of Weir.

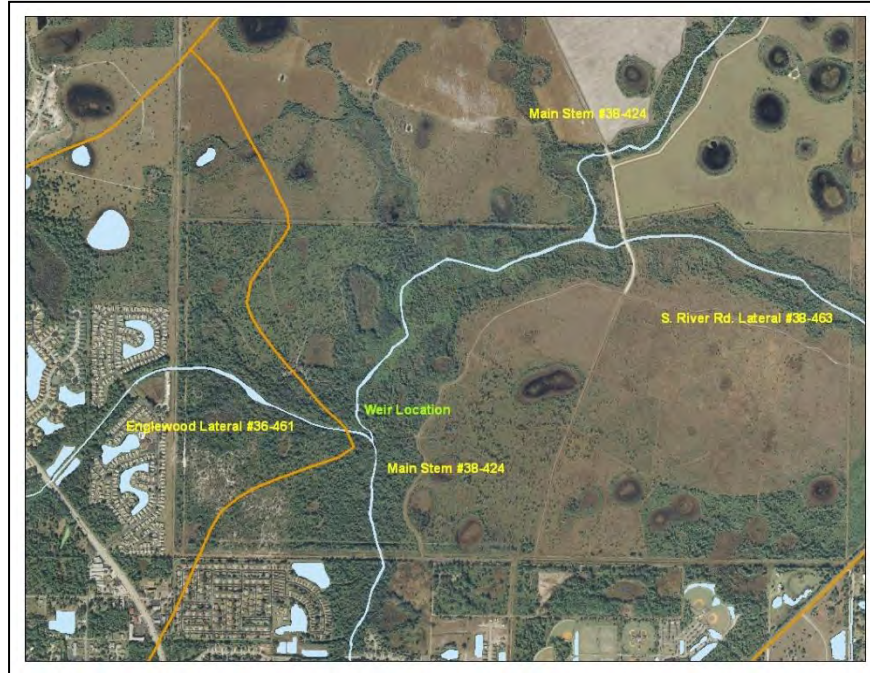


Figure 61. Thomas Ranch-Creek Upstream of Weir.



Figure 62. Thomas Ranch-View Farther Upstream of Weir.



Figure 63. Thomas Ranch-Creek Downstream of Weir.



Figure 64. Englewood Lateral at Confluence with Gottfried Creek-Below Weir.



Figure 65. Gottfried Creek Downstream of Confluence with Englewood Lateral.



Figure 66. Thomas Ranch-Banks of Creek Heavily Vegetated.



Figure 67. Thomas Ranch-Evidence of Feral Hogs Rubbing on Tree.



Figure 68. Thomas Ranch-Animal Scat.



Figure 69. Thomas Ranch-Evidence of Hogs Rooting in Creek.



Figure 70. Thomas Ranch-Evidence of Hogs Rooting in Creek.



Figure 71. Thomas Ranch-Gottfried Creek Upstream of Park Forest Bridge.



Figure 72. Thomas Ranch-Scrub Land.



Figure73. Thomas Ranch-Small Herd of Cattle.



Figure 74. Thomas Ranch-Pole Barn, Corrals, Watering Trough.



Figure 75. Thomas Ranch-Round Watering Trough for Livestock.



Figure 76. Thomas Ranch-Anita Nash, Beth Alvi, Kathy Meaux, Noel Marton.



Figure 77. Thomas Ranch-Eric Anderson – Ranch Manager.



Ranchettes/Small Farms

On May 10, 2012, after the tour of Thomas Ranch, representatives from the FDEP, Sarasota County, and FDACS conducted a tour of an area of small ranchettes and horse farms in the southeastern portion of the WBID (**Figure 78**) on Crestwood Rd. and Morningside Dr. The lots range in size from 5 to 10 acres, and some property owners provide boarding services, horseback riding lessons, trail rides, horsemanship and dressage training, jumping instruction, horse training and sales, or maintain private horse facilities (**Figures 79-81 and 84-89**). There is also a cat and dog kennel (**Figure 82**) on Morningside Dr. and an exotic bird breeder (**Figure 83**) on Crestwood Rd. Stormwater runoff from the properties, which could contain fecal coliform bacteria, flows westward through a large open stormwater canal to Gottfried Creek. The large pond on the north side of Crestwood Rd. collects stormwater runoff from several parcels and discharges to the open stormwater canal previously mentioned. During the survey, no obvious issues were observed. However, it was determined that the community could benefit from a public meeting conducted by FDACS and Sarasota County to provide information about the importance of proper manure management and waste disposal. The workshop was added as a follow-up WTW action item.

Figure 78. Crestwood Rd. and Morningside Dr. Ranchettes – Aerial View.



Ranchette Parcels Are Highlighted in Blue

Figure 79. Morningside Dr. Ranchette.



Figure 80. Morningside Dr. Barn.



Figure 81. Morningside Dr. Barn and Pasture.



Figure 82. Critter Cottage Cat and Dog Kennel.



Figure 83. Exotic Bird Breeder.



Figure 84. Saddle Up Equestrian Center.



Figure 85. Branded Heart Stables.



Figure 86. Branded Heart Stables Barn.



Figure 87. Crestwood Stables Entrance.



Figure 88. Crestwood Stables Barn.



Figure 89. Crestwood Stables Training Arena.



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Next Steps and Follow-up Actions

Intractable Contributions and Natural Conditions

- Figures 15, 20, 21, 22, 26, 47, 48, 50, 56, 66, 67, and 68 show evidence of wildlife in close proximity to the Gottfried Creek watercourse, including: raccoon prints, waterfowl, feral hogs, and feces.
- Bacterial re-growth is probable in ditches and natural watercourses given the sediments observed. See Figures 18, 20, 21, 22, 25, 64, 66, 69, 70, and 71.
- Natural canopy cover is not a contributor, but does prevent UV rays from reaching the water column. UV rays kill pathogens and fecal coliforms. See Figures 23, 25, 31 and 32.
- Natural tannins from decomposing plant material in the water also shade out UV rays. See Figures 10, 11, 12, 16, 23, 25, and 32.

Follow-Up Actions, Results, and Plans for Future Proactive Prevention Actions

The recommended next steps and follow-up actions in the Gottfried Creek watershed are shown in Table 2.

Table 1. Next steps and follow-up actions for reducing fecal coliforms in Gottfried Creek.

No.	Related Figure(s)	Action Item	Entity	Date Initiated/Completed	Outcome
1	2,3	Lift Station Lock & Signage	Sarasota County Air & Water Quality	3-1-2012/9-1-2012	Inspected by staff; letter sent 8-13-2012; follow up inspection 9-15-2012
2	7	Raw Water Lines	EWD	2-28-2012/3-12-2012	Raw water lines had been capped
3	8	Stormwater Ponds	FDOT	2-28-2012/4-1-2012	Cattails removed from ponds; regular maintenance
4	13	15 acre parcel on N. Indiana Ave. Determine cattle rotation schedule	FDOT	2-28-2012	Cattle graze only a few months during the year
5	13	15 acre parcel. Determine direction of stormwater runoff flow and discharge point	Sarasota County	2-28-2012/7-16-2012	Runoff percolates or flows through Arlington Cove in shallow swales; No direct discharge to Gottfried Creek.
6	17	Foxwood stormwater ditch - sample	Sarasota County	2-28-2012	Sample results: 10 cfu/100mL
7	28	Air Release Valve	EWD	2-28-2012/2-28-2012	ARV - manual and not automatic
8	29	Park Forest sample site: Compare fecal coliform data to salinity, turbidity, and TSS	Sarasota County	2-28-2012/9-14-2012	Data compared; See Action Item #8 Section
9	33	Stormwater ponds – Elk’s Lodge		2-28-2012/4-30-2012	FDOT cleaned out ponds
10	36-40	Horse Pasture – N. Pine; Determine if runoff would reach creek	Sarasota County	2-28-2012/4-1-2012	Runoff treated by retention ponds and wetlands
11	41	Unmaintained ditch	Charlotte County	2-28-2012/5-1-2012	Ditch cleaned out.
12	51	Unmaintained ditch – N. Oxford	Sarasota County	2-28-2012/4-15-2012	Ditch cleaned out; regular maintenance schedule established
13	53	Thomas Ranch - BMP Program	FDACS	6-14-2012	FDACS unsuccessful in meeting with Ranch Manager; Ranch sold 5-2014.
14	78-89	Ranchettes – manure management	Sarasota County-FDACS	5-10-2012/1-23-2013	Workshop held
15	A-8	Stormwater Pipe - sample	Sarasota County	Sampled 12-16-2011	Results: 120 cfu/100mL
16	A-9	Stormwater ditch – Deer Creek MHP	Sarasota County	Sampled 12-16-2011	Results: 550 cfu/100mL
17	90-100	Follow up action – volunteer monitoring station bacteria levels	Sarasota County	7/2, 7/16, 7/30, 2012	See Sampling Investigation Section
18		Follow up action – volunteer monitoring station	Sarasota County	10/5/2012	See Sampling Investigation Section
19		Follow-up action – volunteer monitoring station	Sarasota County	4/23/2013	See Sampling Investigation Section
20		Follow-up action – volunteer monitoring station	Sarasota County	6/3/2013	See Sampling Investigation Section
21	N/A	Public Education – Pet Waste	Sarasota County	1-1-2013/5-30-2013	Pet waste brochure designed and distributed; replaced on “as-needed basis.
22	A-60	Private Lift Station @ 300 Bay Hts. Rd.	Charlotte County Sarasota County	2-28-2012/7-2-2012	Staff spoke with resident about proper maintenance of lift station.
23	29	County sampling site @ Park Forest Blvd. – protocol when fish present	Sarasota County	2-28-2012/4-1-2012	Document numbers and location of fish; sample upstream to avoid sampling stirred up sediments.

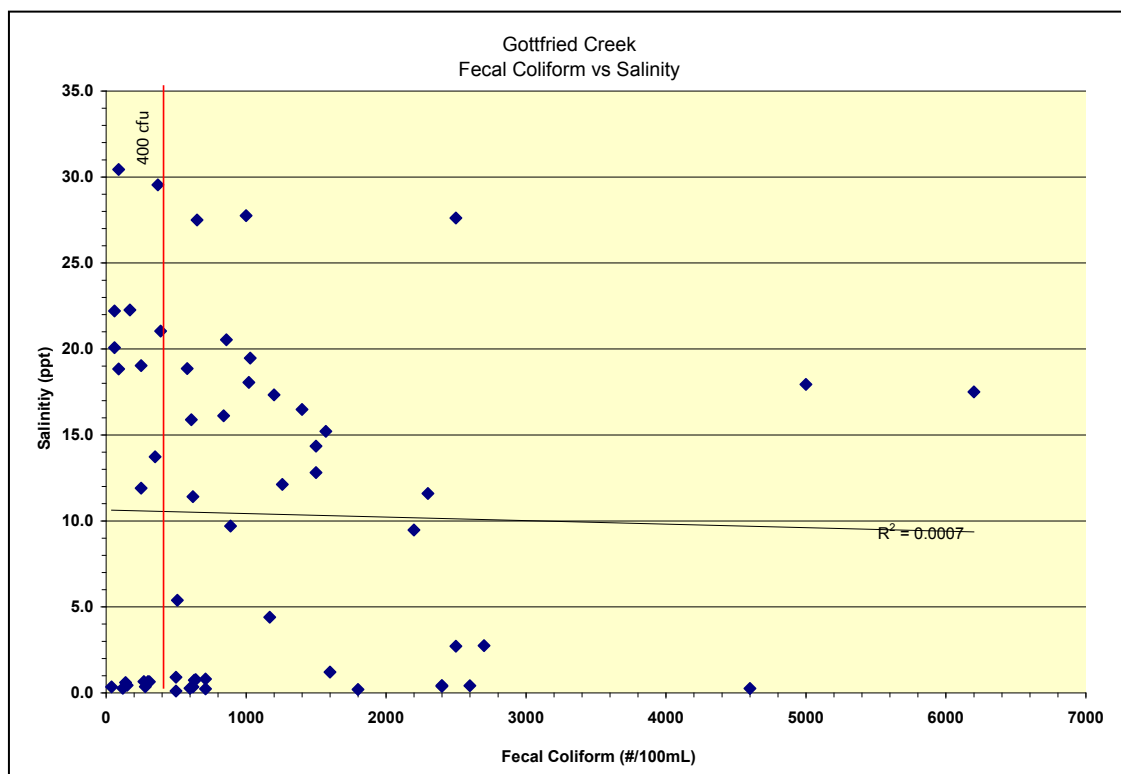
Action Item 8 – Park Forest Data Comparison

Sarasota County conducts monthly sampling at station 21FLFTM SARABY0022FTM, which is also one of the stations sampled by the FDEP to establish impairment and adopt the fecal coliform TMDL. During the WTW Field Exercise on February 28, 2012, the site was inspected by the WTW Team. While observing a large school of mullet at the site (**Figure 31**), the team realized that creek waters were tidally influenced up to and possibly upstream of that point. Since the creek is very narrow and shallow at the site, it was suggested that large schools of fish such as mullet reaching the site during a high tide could potentially stir up sediments causing a spike in fecal coliform values.

The Action Item #8 Task entailed analyzing the data and comparing fecal coliform values to salinity, turbidity, and total suspended solids in order to determine if a correlation existed among the parameters. Fecal coliform was also compared to rainfall.

There is no significant correlation between fecal coliform and salinity (**Figure 108**). While there are a couple of high fecal coliform values at a higher tide (6200 fecal/17.50 ppt; 5000 fecal/17.94 ppt), there is an inverse relationship between fecal coliforms and salinity most of the time. In addition, fecal coliform bacteria do not survive very long in salt water. The results are an indication that marine life is probably not a factor in causing re-suspension of fecal coliform enriched sediments into the water column.

Figure 90. Fecal Coliform vs. Salinity



There is a closer correlation between fecal coliform and turbidity (**Figure 109**). Forty percent of the samples displayed a positive relationship, while 60% displayed an inverse relationship.

Figure 91. Fecal Coliform vs. Turbidity

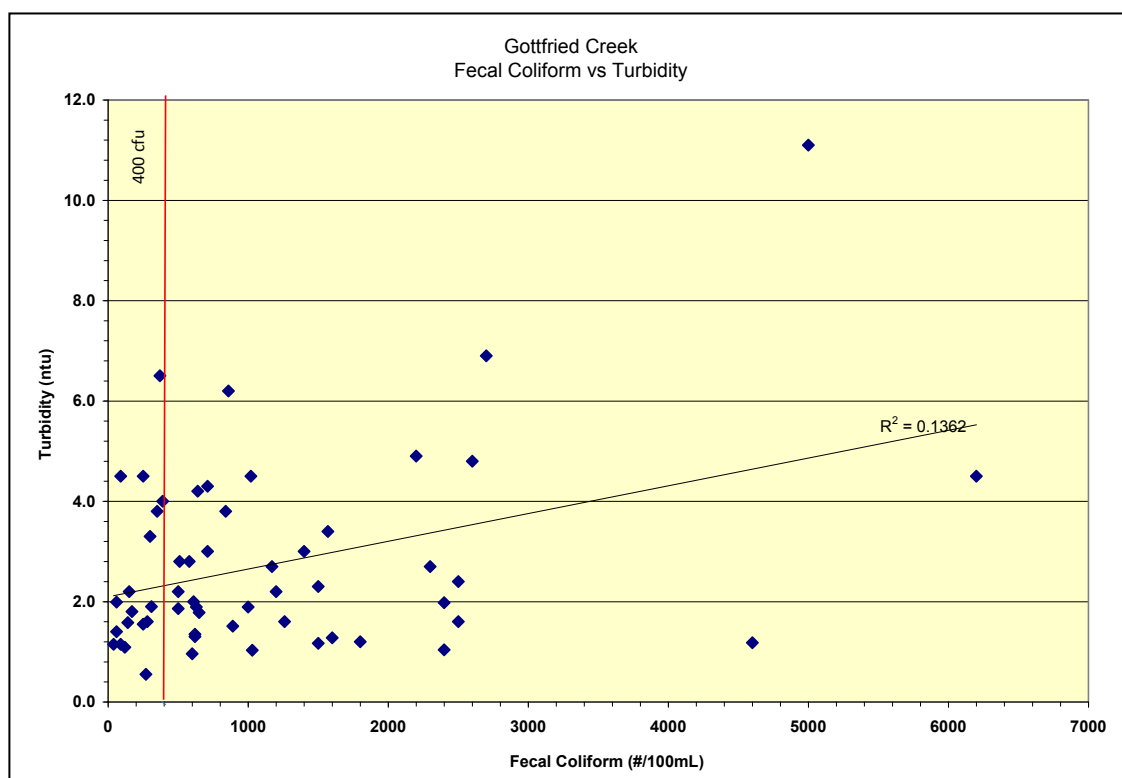
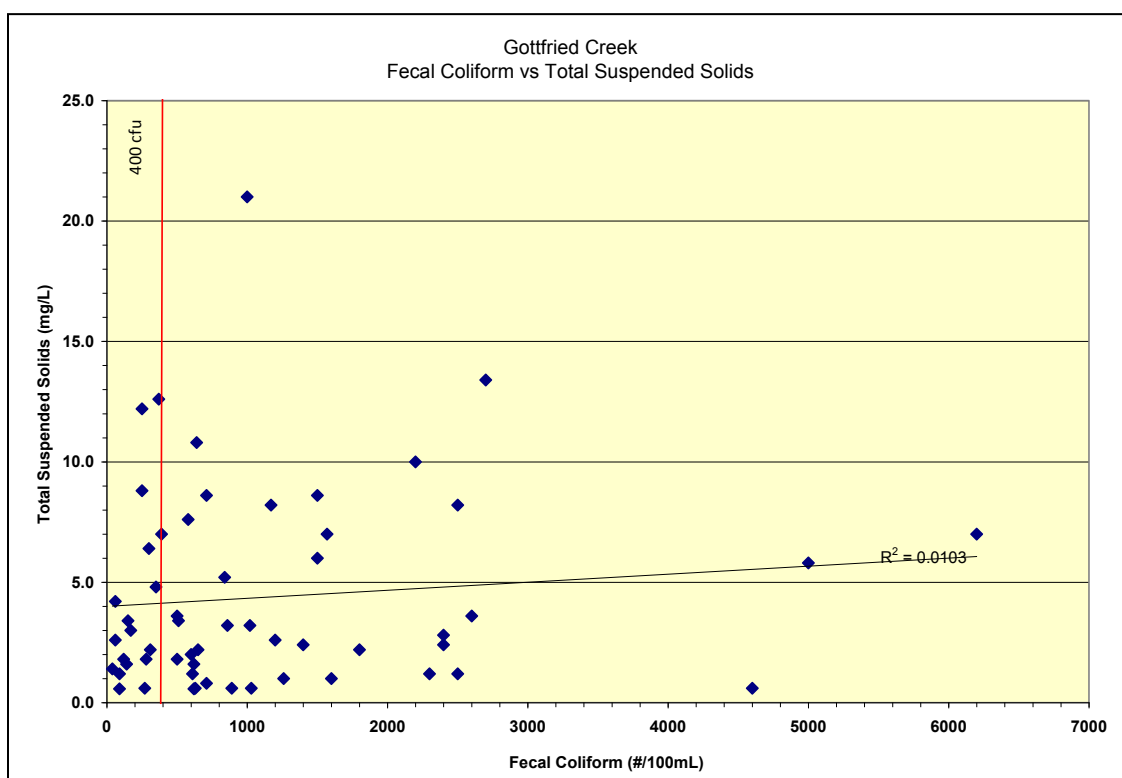
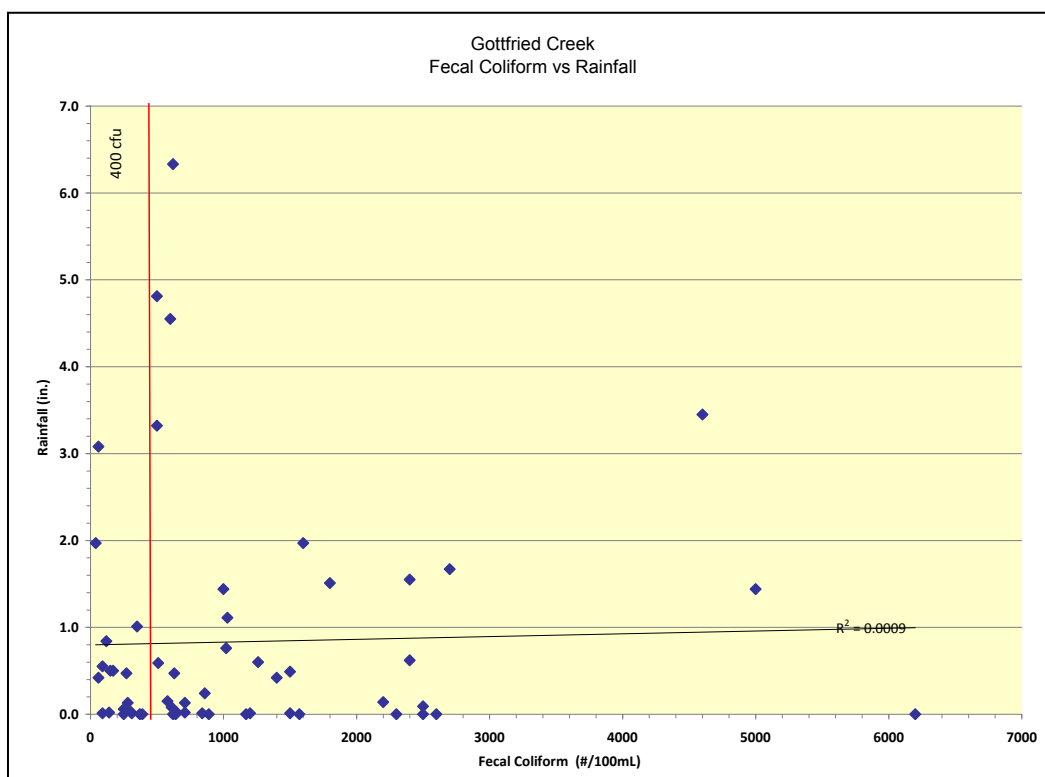


Figure 92. Fecal Coliform vs. Total Suspended Solids



There is also a closer relationship between fecal coliform and TSS (**Figure 110**). Thirty-five percent of the samples displayed a positive relationship, while 65% displayed an inverse relationship.

Figure 93. Fecal Coliform vs. Rainfall



Fecal coliform values did not correlate well with rainfall (**Figure 111**). Only 30% of the samples that exceeded 400 cfu were collected after a 7-day antecedent rainfall period where rainfall amounts were ≥ 1 inch; 70% of the samples that exceeded 400 cfu were collected after a 7-day antecedent rainfall period where rainfall amounts were ≤ 1 inch.

Gottfried Creek is very narrow, shallow, and heavily shaded at the sampling station. While it is tidally influenced, there isn't much flushing that high up in the system. The dense canopy doesn't afford adequate UV light treatment. Fecal coliform values did not correlate well with rainfall or salinity. They did correlate slightly with TSS and turbidity, which is an indication that fecal coliform enriched sediments that are re-suspended into the water column during sampling could be contributing to the higher bacteria levels.

Action Item 14 - Ranchette and Small Farm Workshop

As a result of the inspection conducted on May 10, 2012, a workshop was held on January 23, 2013 to provide property owners information about proper waste management and disposal. An invitation/flyer was sent directly to each property owner and posted in the immediate area one-month prior to the workshop. A second reminder was sent out one week before the workshop. County staff provided an introductory presentation that provided the purpose of the workshop, background TMDL information,

Information about the Gottfried Creek fecal coliform TMDL, and both natural and manmade bacteria sources, etc. Dr. Robert Kluson, UF/IFAS Sarasota County Extension, was the guest speaker and provided an excellent presentation about Best Management Practices for small farms and ranchettes. The following educational literature was also available: Property sketch sheet with instructions for documenting potential bacteria sources; Good Neighbor Guidelines for On-farm and Offsite Application of Livestock Waste; Small Acreage Farm & Ranch BMPs for Protecting Florida's Water; Good Horse Sense – Protecting Water Resources; and Managing Horse Manure by Composting. Unfortunately, turnout was lower than expected. Consequently, post-workshop letters with the property sketch sheet and all of the brochures were sent out to all property owners inviting them to contact staff with questions or assistance in completing the property sketch sheet. **Appendix C** contains copies of the invitations/flyers, presentations, informational brochures, and follow-up letter to the property owners.



Action Items 17-20– Volunteer Sampling Site Investigation

In addition to the preceding post-inspections, Sarasota County was asked to conduct an investigation to determine a possible explanation for consistently elevated fecal coliform values at a FDEP volunteer sampling station (LBGOT-2). The station is located at the volunteer's residence which is on a corner lot bordered by Gottfried Creek and canal CH38-185 which flows from the west to the creek (**Figure 90**).

Figure 94. Volunteer Water Quality Monitoring Station



On July 2, 2012 Sarasota County staff collected 4 samples during an outgoing tide: GOT-7 downstream of the volunteer station; GOT-8 upstream of the sampling station; GOT-9 in CH38-185 approximately 50 ft. upstream of the Creek; and GOT-10 farthest accessible point upstream in CH38-185 (**Figures 91-96**).

Figure 95. Gottfried Creek Sample Sites 7-2-2012



The sample results were: GOT-7: 60 cfu/100mL; GOT-8: 250 cfu/100mL; GOT-9: 200 cfu/100mL; and GOT-10:300 cfu/100mL. The values did not exceed surface water quality standards on that date. It was determined that further investigation of the surrounding area was needed to try to determine a potential bacteria source.

Figure 96. Sample Site GOT-7.



Figure 97. Sample Site GOT-8



Figure 98. Sample Site GOT-9.



Figure 99. Sample Site GOT-10.



Figure 100. County Staff Collecting Sample.



A review of aerial maps showed that stormwater pond DP38-5 located adjacent to and north of canal CH38-185 collected and treated stormwater runoff from the surrounding area that ultimately discharged to the canal near the western end. Also, a stormwater ditch CH38-184, upstream of the pond and canal, flowed from the west to pond CP38-5 during periods of high flow. It bypasses pond DP38-5 during periods of low flow and flows directly into the west end of canal CH38-185. On July 16, 2012 county staff collected samples from stormwater pond P38-5 (GOT-11), ditch CH38-184 (GOT-13) upstream of the pond, and Gottfried Creek (GOT-12) upstream of the volunteer station (**Figure 97**).

Figure 101. Gottfried Creek Sample Sites 7-16 and 7-30-2012.



Figures 98-107 include photos of the sample site location. The water level in the pond (Figure 101) was low and aquatic vegetation, including hydrilla, an exotic invasive aquatic plant, had almost completely overtaken the pond bottom. The surface was covered with duck weed, which is indicative of high nutrient low flow conditions. A number of wading birds that included 2 Great Blue Herons, 1 Little Blue Herons, 2 Glossy Ibis, and 12 (4 adults and 8 juveniles) moorhens inhabited the pond. No alligators or other wildlife were observed. Sample GOT-12 was taken directly from the creek (Figure 107) upstream of the volunteer station. The water level in the ditch (Figure 98) was very, and there was little flow. The west end of the canal is completely shaded and overgrown with heavy, entangled vegetation that consists mostly of Brazilian Pepper. A resident also reported that the canal was home to a large alligator that could be a contributor by stirring up bacteria laden sediments.

Figure 102. Stormwater Ditch DP38-184.



Sample Site GOT-13

Figure 103. Stormwater Pipe from DP38-184 to Vault.



Figure 104. Stormwater Vault



Figure 105. Stormwater Pond DP38-5



Figure 106. Stormwater Pond DP38-5.

Sample Site GOT-11. View West to East

Figure 107. Stormwater Pond DP38-5



View East to West

Figure 108. Stormwater Pond DP38-5.



Pond Outlet Structure

Figure 109. Outfall to Canal



Pond outlet structure. Sample Site GOT-17



Flow from outlet structure to canal

Figure 110. Ditch Downstream of Pond Outfall



Sample Site GOT-16

Figure 111. Gottfried Creek Upstream of Canal



Sample Site GOT-12

The sample results were: GOT-11: 6000 cfu/100mL; GOT-12: 700 cfu/100mL; and GOT 13: 12000 cfu/100mL. These indicated that the bacteria could be coming from ditch CH38-184 and pond DP38-5. The bacteria values at GOT-12 site upstream of the volunteer station were relatively low.

Since the origin of ditch CH38-184 was unknown, staff surveyed the area and determined that the ditch originated in a stormwater pond (P38-20) located on Dearborn Avenue at Sandy's Island Circle; then flowed north and eastward to pond DP38-5 and CH38-185 (**Figure 108**). The residential area around the pond had previously been serviced by OSTDs; however, central sewer service became available and most of the residences had connected. Staff put the pond on the schedule to be sampled during the next sampling event, which was on 7/30/2012. Samples were collected from ditch CH38-184 (GOT-13) upstream of pond P38-20 (**Figure 98**); the canal (GOT-16) downstream of the pond discharge site (**Figure 106**); and directly from the pond outfall structure FOT-17 (**Figures 102-104**).

An attempt was made to collect a sample from the pond P38-20; however, heavy vegetation blocked access and staff could not find any residents home that could grant permission to sample from their property.

The sample results were: GOT-13: 2700 cfu/100mL; GOT-16: 2800 cfu/100mL; and GOT-17: 19000 cfu/100mL. These results appeared to indicate that birds and wildlife in the pond could be contributing to the higher fecal coliform values. It also appears that the pond is providing some treatment since the levels in the ditch were 2,800 cfu/100mL. The shoreline on both sides of the ditch from the pond to approximately 525 upstream of Gottfried Creek is so heavily vegetated that very little sunlight can penetrate the canopy to afford adequate UV light treatment of the bacteria. This could be also contributing to the bacteria spikes in the volunteer samples. Approximately 1.41 inches of rain had also fallen in the area since July 2, 2012.

Figure 112. All Sample Sites.



Staff could not return until October to take additional samples. Samples were again collected from GOT-13, GOT-16, and GOT 17. An additional station (GOT-18) was added since staff was able to collect a sample from the stormwater pond P38-20 on Dearborn Avenue (**Figure 109**). The sample results were: GOT-13: 1700 cfu/100mL; GOT-16: 450 cfu/100mL; GOT-17: 200 cfu/100mL; and GOT-18: 170 cfu/100mL.

The bacteria levels in pond P38-20 were below standards; however, they increased in ditch CH38-134. The levels in pond P38-5 were also below standards which is an indication that runoff is receiving sufficient treatment for bacteria reduction. The levels increased slightly in canal CH38-185.

Figure 113. Pond 38-20; Sample Site GOT-18



In February 2013, FDEP staff advised that the department was considering the use of sucralose as a potential indicator of human fecal bacteria in surface water. Research has shown that sucralose (an artificial sweetener marketed as Splenda®) could be an effective indicator since it is not broken down by the body and, therefore, is released into the sanitary sewer system. It is also not broken down by the wastewater treatment process and could enter surface water at advanced wastewater treatment effluent discharge sites. It could also enter surface waters via SSOs and failing OSTDs. One study found 47-2900 nanograms per liter (ng/L) of sucralose in domestic wastewater after treatment. FDEP staff collected sucralose samples at station LBGOT-2 during the monthly sampling event on April 19, 2013. The sample results were: LBGOT-2: 0.14 ug/L = 140 ng/L; LBGOT-2 REP: 0.15 ug/L = 150 ng/L; LBGOT-2 Blank: 0.0097 ug/L = 9.7 ng/L. The value of 140 ng/L appeared to indicate a human sewage impact. But, since there was a trace amount of sucralose in the blank sample these sample results were not considered entirely reliable.

County staff conducted sampling on April 25, 2013 to determine if there were any significant changes in the bacteria levels. The sample results were: GOT-12: 220 cfu/100mL; GOT-13: 230 cfu/100mL; GOT-16: 3700 cfu/100mL; GOT-17: 10(U) cfu/100mL; and GOT-18: 50 cfu/100mL. Only one of the sites (canal CH38-185) exceeded water quality standards. Again, this site is so heavily shaded that very little sunlight can penetrate the canopy to afford adequate UV light treatment of the bacteria.

After discussing the various sample results with FDEP staff, County staff determined that it would be prudent to coordinate efforts and collect replicate samples during the June 3, 2013 volunteer sampling event. County staff also collected sucralose samples to be analyzed by the FDEP Laboratory. During the sampling event, the volunteer advised that the next door neighbor on the canal had not yet connected to central sewer. She also stated that occasionally she could see a blue stream coming down the canal that smelled like detergent. Someone could have a washing machine discharging directly into the canal. The volunteer bacteria results were: LBGOT2-Creek: 50 cfu/100mL and LBGOT-2 Canal: 26 cfu/100mL. The county replicate results were: GOT-9 - Creek: 110 cfu/100mL and LBGOT2-Canal: 80 cfu/100mL. All results were comparable and well below water quality standards.

County staff also collected samples from previous sampling sites. Those results were: GOT-12: 70 cfu/100mL; GOT-13: 5400 cfu/100mL; GOT-16: 2200 cfu/100mL; GOT-17: 10 cfu/100mL; and GOT-18: 40 cfu/100mL. Again, the results indicate that the bacteria could be entering the canal from the upstream ditch (CH38-184) and growing in the canal (GOT-16).

The results from the sucralose samples collected by county staff and analyzed by the FDEP were: LBGOT2 Canal: 370 ng/mL; GOT-17: 10 ng/L(U); and GOT-13: 10 ng/L(U). No sucralose was detected in the ditch upstream of the canal or the stormwater pond.. This is an indication that the bacteria in the ditch upstream of the canal and the stormwater pond are most likely from nonhuman sources. The bacteria in the canal could be from a human source. Sample results of all county sampling events are shown in **Table 2**.

Table 2. Sarasota County Gottfried Creek Fecal Coliform Sampling Results

Gottfried Creek Sample Results			
Date	Station_ID	Site_Desc	Fecal Col CFU/100mL
July 2, 2012	GOT-7	Gottfried Creek	60
July 2, 2012	GOT-8	Gottfried Creek	200
July 2, 2012	GOT-9	Canal CH38-185	250
July 2, 2012	GOT-10	Canal CH38-185	300
July 16, 2012	GOT-11	Pond P38-5	6000
July 16, 2012	GOT-12	Gottfried Creek	700
July 16, 2012	GOT-13	Ditch CH38-184	12000
July 30, 2012	GOT-13	Ditch CH38-184	2700
July 30, 2012	GOT-16	Canal CH38-185	2800
July 30, 2012	GOT-17	Pond P38-5	19000
October 5, 2012	GOT-13	Ditch CH38-184	1700
October 5, 2012	GOT-16	Canal CH38-185	450
October 5, 2012	GOT-17	Pond P38-5	200
October 5, 2012	GOT-18	Pond P38-20	170
April 25, 2013	GOT-12	Gottfried Creek	220
April 25, 2013	GOT-13	Ditch CH38-184	230
April 25, 2013	GOT-16	Canal CH38-185	3700
April 25, 2013	GOT-17	Pond P38-5	10
April 25, 2013	GOT-18	Pond P38-20	50
June 3, 2013	GOT-9	Gottfried Creek	110
June 3, 2013	GOT-12	Gottfried Creek	70
June 3, 2013	GOT-13	Ditch CH38-184	5400
June 3, 2013	GOT-16	Canal CH38-185	2200
June 3, 2013	GOT-17	Pond P38-5	10
June 3, 2013	GOT-18	Pond P38-20	40

Investigation Summary

An exact source of the elevated fecal coliform bacteria levels at the bacteria station could not be determined. Below is summary of the results.

- Stormwater pond P38-20 on Dearborn Avenue (farthest point upstream) did not appear to be a source. Most of the residences are on central sewer, and sample results were well below water quality standards.
- Bacteria are entering and being transported downstream by ditch CH38-184, which connects P38-20 with pond P38-5 and canal CH38-185. The sucralose sample collected on June 3rd appears to indicate nonhuman sources.
- Bacteria levels occasionally spike in pond P38-5 most likely in response to rainfall events. Since 60% of the samples were well below water quality standards, the pond appears to provide highly effective treatment.

- Bacteria levels in Gottfried Creek upstream and downstream of the volunteer site are consistently low, which indicates that the canal may be the source.
- Bacteria levels are consistently elevated in canal CH38-185 (80% of samples). Four potential sources or reasons were identified: 1) The neighbor's septic system. The sucralose sample appeared to indicate a human source. Even though the septic system was not obviously failing, it could be a source through groundwater migration because of its close proximity to the creek. 2) Gray water from an upstream washing machine. Studies have shown that washing machines harbor large numbers of fecal bacteria that are discharged in the rinse water. 3) The heavily shaded west end of the canal may not allow adequate UV light penetration to kill the bacteria, allowing it to re-grow and persist in the sediments. 4) Bacteria laden sediments could be stirred up by the resident alligator, birds, fish, or other wildlife.

Since the investigation, one potential source was eliminated: the volunteer's next door neighbor connected to the sanitary sewer in 2014. The volunteer was also asked to contact county staff immediately when observing any suspected washing machine discharge so the matter can be investigated and samples taken while it is occurring.

Action Item 21 - Pet Waste Campaign

The significant impact of bacteria on of improper pet waste disposal on surface water quality has come to

the forefront in the last ten years. Recent research studies have found that non-human waste (domestic pets, farm animals, and wildlife) constitutes a major source of bacterial pollution in urban watersheds. To protect water quality and public safety, many communities have established

pet waste programs to educate the public about the importance of picking up after pets. Others have enacted Pet Waste Ordinances that mandate proper disposal of pet waste. During the WTW exercise, no serious pet waste disposal issues were observed. The team even observed a resident carrying a pet waste bag while walking his dog (**Figure 27**).



Unfortunately, everyone is not as responsible as that pet owner. Since pet waste has been identified as a potential source of fecal coliform impairments in County waterbodies, launching a pet waste campaign in the Gottfried Creek watershed was identified as a WTW action item. A brochure was designed and distributed to appropriate businesses such as the county library, county sports complex, pet stores, animal shelters, veterinarian offices, human society, etc. **Appendix D** contains copies of the brochure and distribution list. Supplies are replenished on an as-needed basis.

Presentations

Sarasota County staff gave the following presentations (**Appendix F**) to inform the public about the WTW process: Stormwater Environmental Utility Advisory Committee, 4-12-2012; CHNEP Technical Advisory Committee, 7-11-2012; Florida Stormwater Association Conference, 12-6-2012; and the County Board of County Commissioners meeting, 6-10-2013.

Results

The Walk the Waterbody event for the Gottfried Creek fecal coliform TMDL was highly successful. It brought all of the stakeholders together to work cooperatively toward the common goal of finding and eliminating and/or minimizing sources of fecal coliform bacteria. Below is a summary of the results:

- No sources were identified during the pre-event shoreline inspection. Two suspected sites were sampled and were not a source.
- No public or private lift stations were malfunctioning or overflowing. Seven private and two public lift stations were lacking emergency signage and a lock was missing from a private lift station pump station lid. All violations were corrected.
- No point sources were found. One stormwater ditch was sampled and no issues were found
- The creek is fenced off preventing access to cattle on the Thomas Ranch.
- No obvious issues were observed during the inspection of an area of ranchettes and small farms. A post-event workshop was held to inform and educate the property owners about proper waste management and disposal.
- The entire basin, except for a small area at the southeast corner, is on central sanitary sewer.
- No SSOs were discovered during the event, and the EWD has reported no major SSOs.
- Pet waste and farm animals such as horses, cattle, chickens, hogs, and goats are probable sources of the bacteria.
- A pet waste brochure specific to Gottfried Creek was prepared and distributed throughout the basin to educate the public about the importance of proper pet waste disposal.
- Natural sources such as birds and wildlife are most likely the major contributors of fecal coliform bacteria to the creek.

Future Proactive Prevention Actions

Future proactive prevention actions by stakeholders are:

- Sarasota County will continue to collect monthly water quality samples from the creek.
- Sarasota County will continue to properly maintain the stormwater system which consists of open stormwater ditches, stormwater ponds, pipes, inlets, etc.
- Sarasota County will continue to respond to citizen concerns about fecal pollution issues in the basin and collect samples as needed.
- The EWD will continue to properly maintain the wastewater collection system and report SSOs according to FDEP regulations.
- The FDOT will continue to properly maintain its stormwater ponds in the basin.
- Sarasota County and the City of North Port will oversee future development of Thomas Ranch.
- The CONP will continue to properly maintain the wastewater collection and report SSOs according to FDEP regulations.
- Charlotte County will continue to properly maintain its stormwater and wastewater collection systems.
- The pet waste campaign will continue through distribution of the pet waste brochure and staff participation in public outreach events in the basin.

Special thanks to the individuals who participated in this event; your dedication is appreciated!

Figure 114. WTW Team.



Front row from left to right: Leilani Farrell (Esciencas-FDOT); Kathy Meaux (Sarasota County); Jennifer Thera (FDEP); Joanne Vernon (Charlotte County). Back row from left to right: Anita Nash (FDEP); Edgar Saint Amand (City of North Port); Tim Kirby (Sarasota County); Jay Linden (EWD); Rob Wright (Sarasota County); Hector Mendez (DOH).

Additional questions on this event should be directed toward:

Anita Nash
Environmental Consultant
Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection
Office: (850) 245-8517
Email: anita.nash@dep.state.fl.us

Kathy Meaux
Senior Environmental Scientist
Water Quality Planning
Sarasota County Public Utilities, Stormwater
Office: (941) 650-1640
Email: kmeaux@scgov.net

List of Acronyms and Abbreviations

ARV	Air Release Valve
AWTF	Advanced Wastewater Treatment Facility
BMAP	Basin Management Action Plan
BMP	Best Management Practice
CC	Charlotte County
CFU	Colony Forming Unit
CHAP	Charlotte Harbor Aquatic Preserve
CONP	City of North Port
DOH-Sarasota	Florida Department of Health, Sarasota County
EWD	Englewood Water District
F.A.C.	Florida Administrative Code
FC	Fecal Coliform
FDACS	Florida Department of Agricultural and Consumer Services
FDEP	Florida Department of Environmental Protection
FDLE	Florida Department of Law Enforcement
FDOT	Florida Department of Transportation
GIS	Geographic Information System
GPS	Global Positioning System
SC	Sarasota County
SCPW	Sarasota County Public Works
IFAS	University of Florida Institute of Food and Agricultural Sciences
IWR	Impaired Waters Rule
L/S	Lift Station
MF	Membrane Filter
MGD	Million Gallons per Day
MHP	Mobile Home Park
mL	Milliliters
MPN	Most Probable Number
ng/L	Nanograms per Liter
MS4	Municipal Separate Storm Sewer System
OSTDS	Onsite Sewage Treatment and Disposal System
PIC	Potential Illicit Connection
PVC	Polyvinyl Chloride
ROW	Right of Way
SOP	Standard Operating Procedure
SR	State Road
SSO	Sanitary Sewer Overflow
U	Undetected
TMDL	Total Maximum Daily Load
ug/L	Micrograms per Liter
UV	Ultra-Violet
WBID	Waterbody Identification
WTW	Walk the Waterbody
WWTP	Wastewater Treatment Plant

Appendix A

Gottfried Creek Shoreline Inspection

December 16, 2011 and July 2, 2012

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Figure A.1.



GC-1: 18" Concrete Stormwater Pipe
26.93582/-82.34287

Figure A.2.



GC 2: 30" Concrete Stormwater Pipe
26.93642/-82.34315

Figure A.3.



GC-3: 18" Concrete Stormwater Pipe
26.93681/-82.34322

Figure A.4.



GC-4: 4" PVC Pipe in Bulkhead
26.93706/-82.34344

Figure A.5.



GC-4: 4" PVC Pipe crushed on inside of
bulkhead; No connection to anything.

Figure A.6.



GC-5: 1" PVC pipes; Green box; Above-
ground swimming pool on property. 300 Bay
Heights Ave., Englewood, FL
26.94417/-82.34788

Figure A.7.



GC-6: 5-6 Free-Roaming Chickens
300 Bay Heights Ave., Englewood, FL
26.94443/-82.34705

Figure A.8.



GC 7: 30" Concrete Culvert Pipe; Discharge
has surface scum and stale odor; Collected
GOT-1 grab sample for fecal coliform;
26.94497/-82.34716
Sample Results 120 col/100mL

Figure A.9.



GC-8: Open Stormwater Ditch; White/Gray
Slime at Outfall; Collected GOT-2 grab
samples for fecal coliform.
26.94584/-82.34699
Sample Results 550 col/100mL

Figure A.10.



GC-9: 30" Concrete Stormwater Pipe
26.94641/-82.34728

Figure A.11.



GC-10: Wildlife – Baby Raccoon
26.94641/-82.34728

Figure A.12.



GC-11: 18" Concrete Pipe; Deer Creek MHP
26.94672/-82.34560

Figure A.13.



GC-12: 30" Concrete Stormwater Pipe
26.96346/-82.34303

Figure A.14.



GC-13 & GC-14: Wildlife – Flock of White
Ibis; Creek Narrow & Shallow; Not
Navigable; 26.96523/-82.34736

Figure A.15.



GC-15: 30" Concrete Stormwater Pipe
26.96305/-82.34315

Figure A.16.



GC-16: Roof Downspouts Flow to Canal
26.96151/-82.34081

Figure `A.17.



GC-16: 5-2" PVC Pipes Stuck in Ground;
26.96151/-82.34081

Figure A.18.



GC-17: 12" Concrete Pipe in Seawall;
4 Large Dogs
26.95395/-82.34314

Figure A.19.



GC-18: 4'-5' Culvert Pipe Connects
Large Open Stormwater Ditch to Canal
26.95320/-82.34142

Figure A.20.



GC-19: 6" Black Plastic Pipe in RipRap
26.95321/-82.34270

Figure A.21.



GC-20: 4" Metal Pipe with PVC Extension
26.98323/-82.34335

Figure A.22.



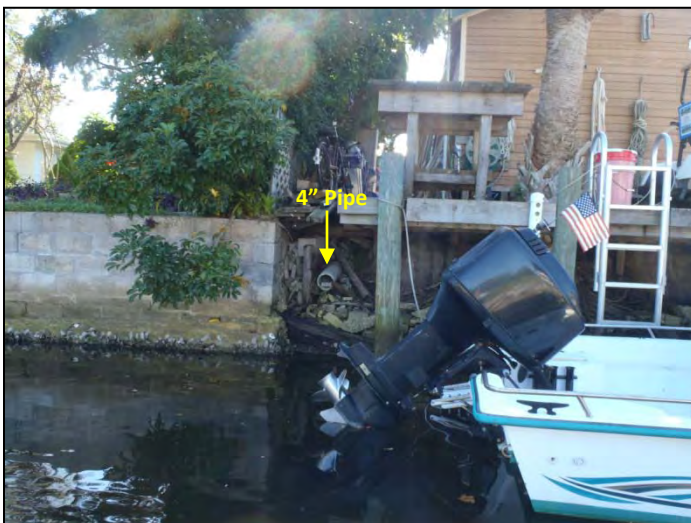
GC-21: 4" PVC Pipe in Bulkhead
26.95273/-82.34412

Figure A.23.



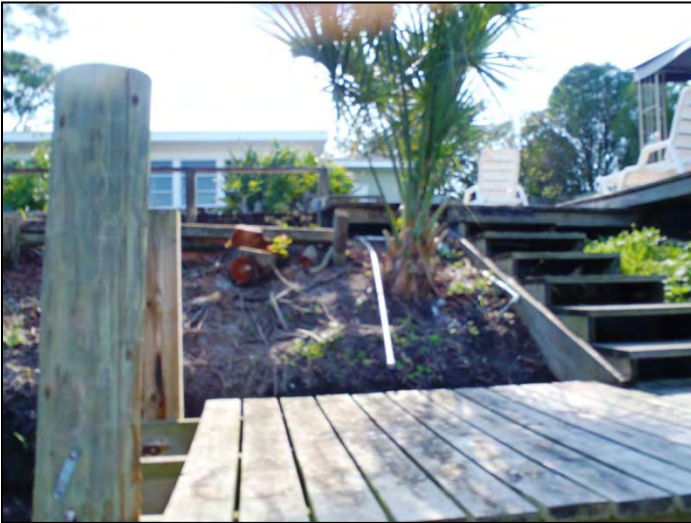
GC-22: 20" Concrete Stormwater Pipe
26.95273/-82.34412

Figure A.24.



GC-23: 4" PVC Pipe under Dock
26.94971/-82.34447

Figure A.25.



GC-24: 1" PVC Pipe. Swimming Pool on
Property
26.94966/-82.34418

Figure A.26.



GC-24: 1" Garden Hose with Red Stripe
26.94966/-82.34418

Figure A.27.



GC-24: 1" Garden Hose with Red Stripe
26.94966/-82.34418

Figure A.28.



GC-25: 5" Black Plastic Pipe under
Concrete Hood
26.94970/-82.34465

Figure A.29.



GC-26: 2" PVC Pipe with Gray Elbow
26.94407/-82.34459

Figure A.30.



GC-27: 18" Metal Pipe Under Dock
26.94375/-82.34364

Figure A.31.



GC-28: 4" PVC Pipe in Bulkhead
26.94320/-82.34423

Figure A.32.



GC-29: 18" Metal Stormwater Pipe; 4" PVC
Pipe in Bulkhead
26.94297/-82.34415

Figure A.33.



GC-30: 1-3" and 1-6" Pipes in Bulkhead
26.94104-82.24448

Figure A.34.



GC-31: 4 PVC and 2 Clay Pipes in Bulkhead
26.94069/-82.34470
Property owner advised that they were
connected to roof drains, but they now have
been disconnected.

Figure A.35.



GC-32: 18" Concrete Stormwater Pipe
26.93804/-82.34581

Figure A.36.



GC-33: 4" PVC Pipe in Bulkhead
26.93778/-82.34574

Figure A.37.



GC-34: 4" PVC Pipe in Bulkhead
26.93730/-82.34557

Figure A.38.



GC-35: 6" Plastic Pipe in Bulkhead
26.93696/-82.34526

Figure A.39.



GC-36: 4" Pipes in Bulkhead
26.93640/-82.34512

Figure A.40.



GC-37: 2-3" Pipes in Bulkhead
26.93559/-82.34482

Figure A.41.



GC-38: 3" Metal Pipe in Bulkhead
26.93532/-82.34482

Figure A.42.



GC-39: 3" PVC Pipe in Bulkhead
26.93466/-82.34489

Figure A.43.



GC-40: 6" Black Plastic Pipe – Roof Drain
26.93454/-82.34542

Figure A.44.



GC-41: 2" & 4" PVC Pipes; 4" could be roof drain
26.93530/-82.34596

Figure A.45.



GC-42: Stormwater Outfall
26.93626/-82.34625

Figure A.46.



GC-43: 4" PVC Pipe – Angled Down; In line
with roof drain
26.93648/-82.34631

Figure A.47.



GC-44: 4" Metal Pipe
26.93664/-82.34638

Figure A.48.



GC-45: 4 PVC Pipes
26.93688/-82.34645

Figure A.49.



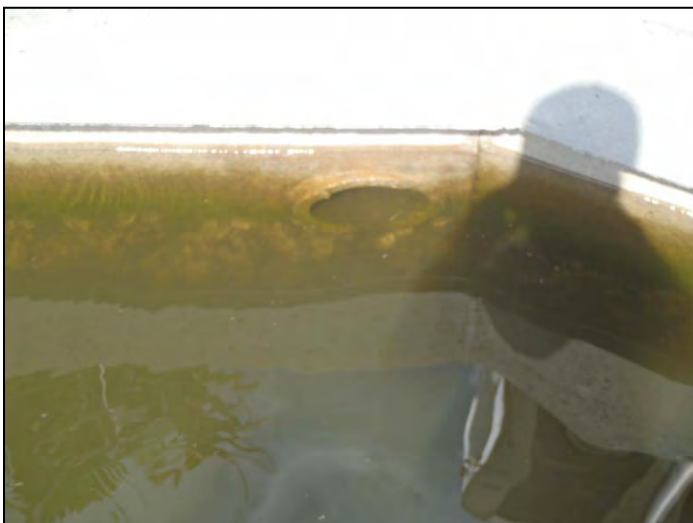
GC-46: 4" PVC Pipe
26.93692/-82.34647

Figure A.50.



GC-47: Five 6" PVC Pipes in Bulkhead;
Middle could be roof drain
26.93702/-82.34657

Figure A.51.



GC-48: 8" Concrete Stormwater Outfall
26.93759/-82.34672

Figure A.52.



GC-49: 6" Plastic and 3" Clay Pipe
26.93577/-82.34621

Figure A.53.



GC-50: 8" Concrete Stormwater Pipe
26.93511/-82.34600

Figure A.54.



GC-51: 6" Black Pipe; Stormwater Runoff
26.93511/-82.34600

Figure A.55.



GC-52: 6" Black and 2-20" Green Pipes;
Stormwater Runoff
26.93541/-82.34534

Figure A.56.



GC-53: 6" Black Pipe; Stormwater Runoff
26.93543/-82.34521

Figure A.57.



GC-54: 3" PVC Pipe in Bulkhead
26.93455/-82.34508

Figure A.58.



GC-55: 3" PVC Pipe; May be overflow
from cistern
26.93463/-82.34508

Figure A. 59.



GC-56: 3" PVC Pipe; Roof Drain
26.96419/-82.34338

Figure A. 60.



GC-57. Private Lift Station.
300 Bay Heights Ave., Englewood, FL
26.94434/-82.34797

Appendix A
Shoreline Inspection Maps Downstream to Upstream

Figure A.61 Shoreline Inspection Map 1.



Figure A.62 Shoreline Inspection Map 2.



Figure A.63. Shoreline Inspection Map 3.

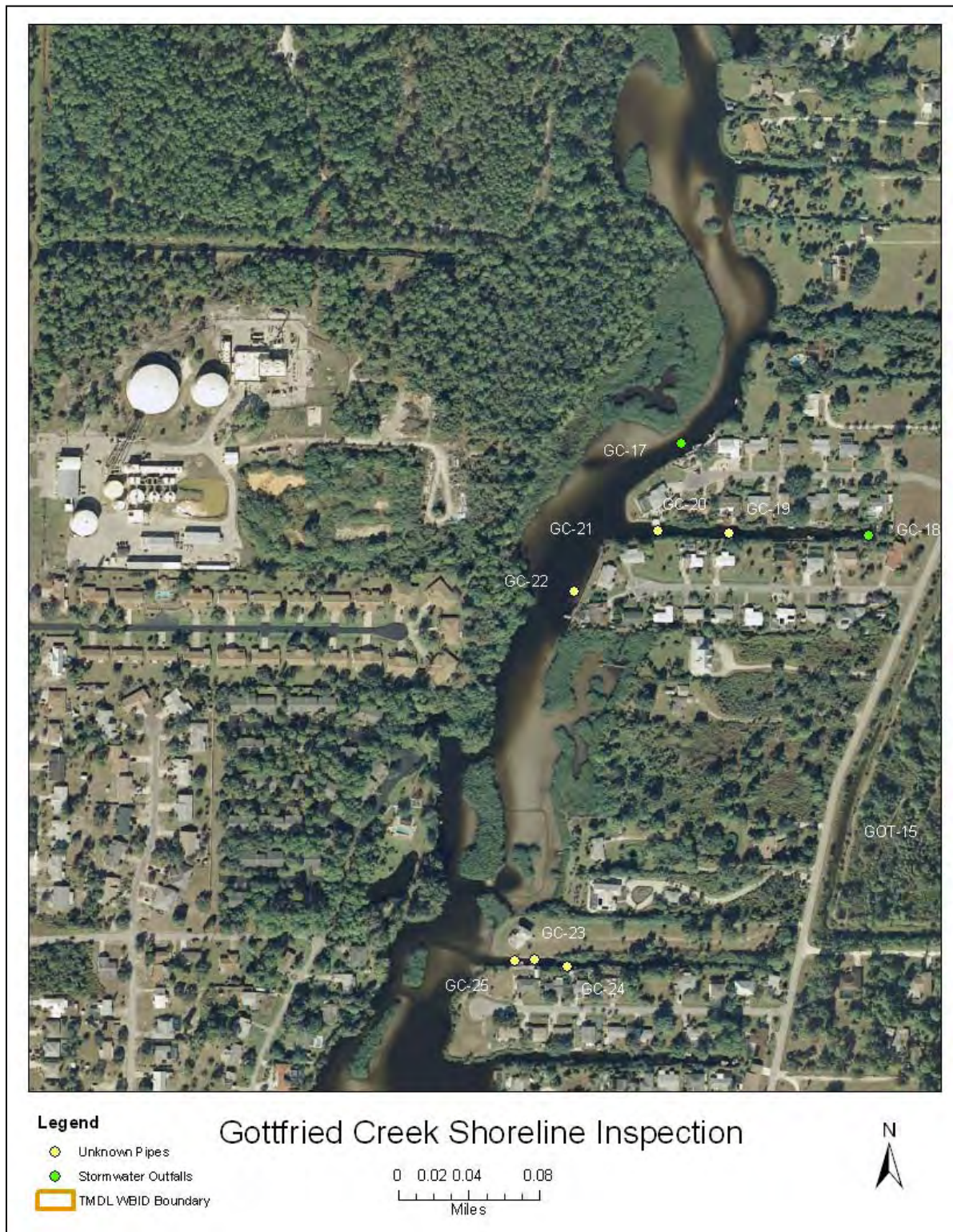


Figure A.64. Shoreline Inspection Map 4.



Figure A.65 Shoreline Inspection Map 5.



APPENDIX B

Private and Public Lift Stations

Gottfried Creek Basin

WBID 2049



Sarasota County Lift Station P-48; Englewood Sports Complex
Main Building



Sarasota County Lift Station P-48A; Englewood Sports Complex
Soccer Field Behind Restroom Facility



Sarasota County Lift Station P-48B; Englewood Sports Complex
Adult Softball Fields Behind Restroom Facility



Private Lift Station P-48C; Englewood Sports Complex
Concession Stand



Private Lift Station P-48C: Englewood Sports
Complex Concession Stand; Emergency Signage



Private Lift Station P-48C Cover; Englewood Sports Complex Concession stand



Sarasota County Lift Station P-48D; Englewood Sports Complex
Cal Ripken Field Behind Restroom Facility



Sarasota County Lift Station P-48D; Englewood Sports Complex
Cal Ripken Field Behind Restroom Facility; Emergency Signage



Private Lift Station P-71; Jones Fogelman Pool & Spa Services
858 S. River Rd.; No Emergency Signage



EWD Lift Station 129; Stiver's Tire & Auto
850 S. River Rd.



Private Lift Station P-67; Storage Units
916 S. River Rd.; No Emergency Signage



Private Lift Station P-80; Firehouse Practice Facility
13400 Haligan Way; No Emergency Signage



Private Lift Station P-38; Suncoast Worship Center
881 S. River Road



Private Lift Station P-38; Suncoast Worship Center
881 S. River Road; No Emergency Signage



EWD Lift Station P-116; Englewood United Methodist Church
700 E. Dearborn



EWD Lift Station P-116; Englewood United Methodist Church
700 E. Dearborn



Private Lift Station P-66; Publix Shopping Center
55 N. Indiana Avenue; No Emergency Signage



EWD Lift Station 142; BPOE Englewood Lodge 2378
401 N. Indiana Avenue



EWD Lift Station 142; BPOE Englewood Lodge 2378
401 N. Indiana Avenue



EWD Lift Station 134; 248 Park Forest Blvd.
Park Forest



EWD Lift Station 133; Wekiva River Ct. at Indian Key Way
Park Forest



EWD Lift Station 132; 320 Indian River Lane
Park Forest



EWD Lift Station 132; 320 Indian River Lane
Park Forest; No Emergency Signage



Private Lift Station P-31; 601 Linden Dr.
Foxwood



EWD Lift Station LP-685; Northside Christian Church
685 N. Indiana Avenue



Private Lift Station; Charles Eagar, MD Office
655 N. Indiana Avenue; No Emergency Signage



EWD Lift Station LP 701A; Christ Lutheran Church
701 N. Indiana Avenue; No Emergency Signage



EWD Lift Station LP 701B; Christ Lutheran Church
701 N. Indiana Avenue; No Emergency Signage



EWD Lift Station 126; Tangerine Woods Blvd. @ Seabrooke Dr.
Tangerine Woods



EWD Lift Station 127; Tangerine Woods Blvd. @ Watersedge
Tangerine Woods



EWD Lift Station 135; Yosemite Dr. @ Club House
Oak Forest



EWD Lift Station 137; Arbroath Blvd. @ Ipswich Dr.
Arlington Cove



EWD Lift Station 137; Arbroath Blvd. @ Ipswich Dr.
Arlington Cove; No Emergency Signage



EWD Lift Station
Old Englewood Rd. & Pablo Picasso Dr.



Private Lift Station P-27; Englewood Elementary School
150 N. McCall; No Emergency Signage in View



Private Lift Station P-72; Café 776;
138 N. Indiana Ave.



Private Lift Station P-29; Sassy Snapper Restaurant
70 N. Indiana Avenue
Restaurant is Closed



EWD Lift Station 112
Pine Hollow Condominiums; Pine Hollow Circle



EWD Lift Station 112; Pine Hollow Condominiums;
Near 309 Pine Hollow Circle; Emergency Signage



EWD Lift Station 28; Quails Run Condominium;
Quails Run Boulevard; No Emergency Signage



EWD Lift Station 28; Quails Run Condominium;
Quails Run Boulevard; No Emergency Signage



EWD Lift Station 111
Quails Run Condominium; Quails Run Boulevard



Private Lift Station P-3; Englewood Laundry
100 S. Indiana Ave.; No Emergency Signage



Private Lift Station P-3; Englewood Laundry
100 S. Indiana Ave.; No Emergency Signage



EWD Lift Station 19
St. David's Episcopal Church, 401 Broadway Ave.



Private Lift Station P-62; Englewood Center
200 S. Indiana Ave @ Palm Grove Avenue
South end of shopping center; No Emergency Signage



Private Lift Station P-1; Englewood Bowl
299 S. Indiana Avenue
In front parking lot; No Emergency Signage



Private Lift Station P-61; Provision Eye Center
473 S. Indiana Avenue; No Emergency Signage; No Lock



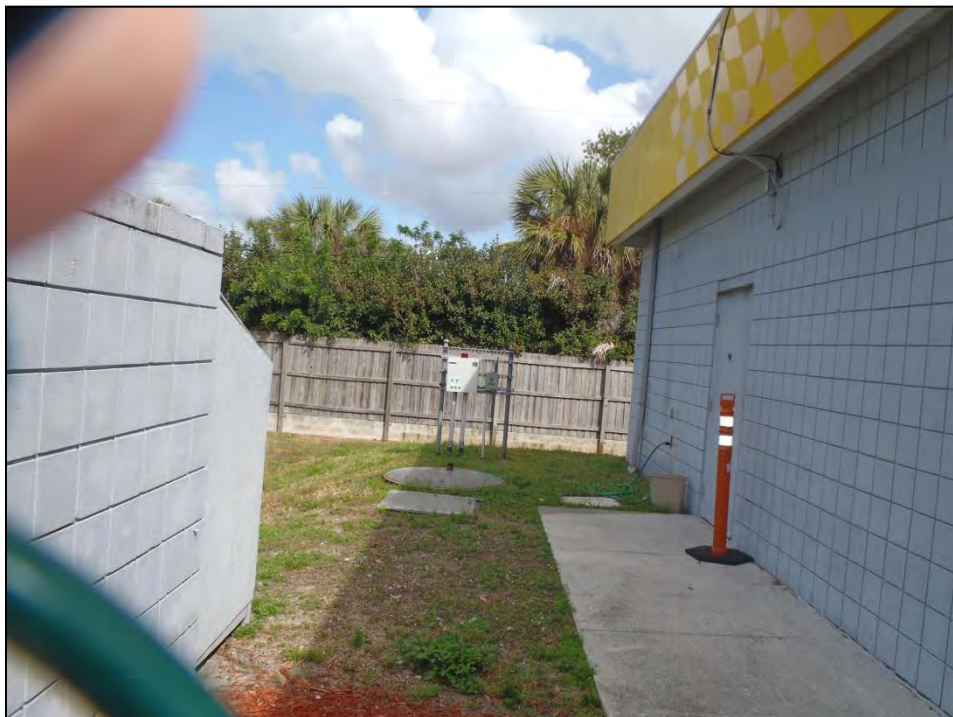
EWD Vacuum Pump Station V-1
446 Alta Vista Avenue



EWD Lift Station 7
Spruce and Hosmer; No Emergency Signage



Private Lift Station P-45; Lemon Bay Breeze Condominium
1401 S. McCall Rd.



Private Lift Station P-84; Sunoco
1680 S. McCall Rd.



Private Lift Station P-84; Sunoco; 1680 S. McCall Rd.;
Emergency Signage; LS Fenced and Locked



Private Lift Station P-50; BP Gasoline Station
1800 S. McCall Rd.; Station Closed;
Under Renovation; No Emergency Signage



Private Lift Station P-59; Venetian Cleaners
1900 S. McCall Rd



Private Lift Station P-59; Venetian Cleaners
1900 S. McCall Rd; Emergency Signage



Private Lift Station P-9; Denny's Restaurant
1912 S. McCall Road; No Emergency Signage



EWD Vacuum Pump Station V-6
1025 Kathleen



EWD Lift Station 122
Englewood Community Hospital; E. Medical @ Doctors Dr.



EWD Lift Station 122
Englewood Community Hospital; E. Medical @ Doctors Dr.

LIFT STATION VIOLATION LETTERS



SARASOTA COUNTY

"Dedicated to Quality Service"

August 13, 2012

Richard D. Cormier, Property Owner
751 Buckskin Ct.
Englewood, FL 34223

Subject: Courtesy Notice Regarding a Private Wastewater Lift Station
916 S. River Road, Englewood, Florida 34223; PID 0850-05-0003

Dear Mr. Cormier:

One of the reasons that Sarasota is such a special place to live is our water resources. The hundreds of waterways, streams, canals, and ponds all connect and eventually drain into our bays and estuaries. Simply put, what goes on the ground eventually ends up in our water. Every resident and visitor has a role to play in protecting our resources, and what you do on your property does make a difference.

The purpose of this letter is to remind you of your responsibility to properly operate and maintain the privately-owned wastewater lift station at the property indicated above.

Air and Water Quality personnel conducted a site visit and confirmed that the on site privately-owned lift station did not have the required emergency contact information posted. This information is very important should a malfunction occur.

In accordance with the regulations, Air and Water Quality personnel advise you to post a 24-hour emergency contact number on the lift station.

In addition, should a discharge or spill of wastewater occur, Air and Water Quality should be notified at 941-861-5000 and spills in excess of 1,000 gallons must be reported to the STATE WARNING POINT TOLL FREE NUMBER 800-320-0519 as soon as practical, but no later than 12 hours from the time that you become aware of the circumstances.

I am sure you will agree that it is important to prevent pollution. Please help us keep our water clean and safe by properly operating and maintaining the lift station. Our goal is to protect our water resources, and together we can do it.

Please contact me to schedule a follow-up site visit after the sign is posted and if you have any questions, I can be reached at 941-232-8397 or dpouso@scgov.net.

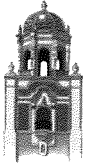
Sincerely,

David Pouso
Environmental Specialist III
Air and Water Quality
C12PC.106



Storage Units
916 S. River Rd.; Englewood, Florida
PID 0850-05-0003
No Emergency Signage

Photograph taken by: Kathy Meaux, Environmental Specialist
Sarasota County
Date: February 2, 2012



SARASOTA COUNTY

"Dedicated to Quality Service"

August 13, 2012

Suncoast Worship Center Church of God Englewood
Joseph Taylor TTEE, Tom Laipply TTEE, Richard Dignazio TTEE, Property Owners
881 S. River Road
Englewood, FL 34223

Subject: Courtesy Notice Regarding a Private Wastewater Lift Station
881 S. River Road, Englewood, Florida 34223; PID 0850-12-0002

Dear Sir or Madam:

One of the reasons that Sarasota is such a special place to live is our water resources. The hundreds of waterways, streams, canals, and ponds all connect and eventually drain into our bays and estuaries. Simply put, what goes on the ground eventually ends up in our water. Every resident and visitor has a role to play in protecting our resources, and what you do on your property does make a difference.

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In addition, should a discharge or spill of wastewater occur, Air and Water Quality should be notified at 941-861-5000 and spills in excess of 1,000 gallons must be reported to the STATE WARNING POINT TOLL FREE NUMBER 800-320-0519 as soon as practical, but no later than 12 hours from the time that you become aware of the circumstances.

I am sure you will agree that it is important to prevent pollution. Please help us keep our water clean and safe by properly operating and maintaining the lift station. Our goal is to protect our water resources, and together we can do it.

Please contact me to schedule a follow-up site visit after the sign is posted and if you have any questions, I can be reached at 941-232-8397 or dpouso@scgov.net.

Sincerely,

David Pouso
Environmental Specialist III
Air and Water Quality
C12PC.107



Suncoast Worship Center
881 S. River Road, Englewood, Florida
PID 0850-12-0002
No Emergency Signage

Photograph taken by: Kathy Meaux, Environmental Specialist
Sarasota County
Date: February 2, 2012



SARASOTA COUNTY

"Dedicated to Quality Service"

August 13, 2012

Fairway Investments LLC, Property Owner
4524 Southlake Parkway, STE 2
Birmingham, AL 35244

Subject: Courtesy Notice Regarding a Private Wastewater Lift Station
55 N. Indiana Avenue, Englewood, Florida 34223; PID 0852-13-0007

Dear Sir or Madam:

One of the reasons that Sarasota is such a special place to live is our water resources. The hundreds of waterways, streams, canals, and ponds all connect and eventually drain into our bays and estuaries. Simply put, what goes on the ground eventually ends up in our water. Every resident and visitor has a role to play in protecting our resources, and what you do on your property does make a difference.

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Sincerely,

David Pouso
Environmental Specialist III
Air and Water Quality
C12PC.108



Publix Shopping Center
55 N. Indiana Avenue; Englewood, Florida
PID 0852-13-0007
No Emergency Signage

Photograph taken by: Kathy Meaux, Environmental Specialist
Sarasota County
Date: February 2, 2012



SARASOTA COUNTY

"Dedicated to Quality Service"

August 13, 2012

Edward A. Joseph and Julissa Joseph, Property Owners
13383 Ingraham Boulevard
Pt. Charlotte, FL 33981

Subject: Courtesy Notice Regarding a Private Wastewater Lift Station
100 S. Indiana Avenue, Englewood, Florida 34223; PID 0503-08-0015

Dear Mr. and Mrs. Joseph:

One of the reasons that Sarasota is such a special place to live is our water resources. The hundreds of waterways, streams, canals, and ponds all connect and eventually drain into our bays and estuaries. Simply put, what goes on the ground eventually ends up in our water. Every resident and visitor has a role to play in protecting our resources, and what you do on your property does make a difference.

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Sincerely,

David Pouso
Environmental Specialist III
Air and Water Quality

C12PC.109



Englewood Laundry
100 S. Indiana Ave.; Englewood, Florida
PID 0503-08-0015
No Emergency Signage

Photograph taken by: Kathy Meaux, Environmental Specialist
Sarasota County
Date: February 2, 2012



SARASOTA COUNTY

"Dedicated to Quality Service"

August 13, 2012

Royal Consolidation Properties, Inc., Property Owner
802 NW First Street
South Bay, FL 33493

Subject: Courtesy Notice Regarding a Private Wastewater Lift Station
200 S. Indiana Avenue, Englewood, Florida 34223; PID 0503-09-0051

Dear Sir or Madam:

One of the reasons that Sarasota is such a special place to live is our water resources. The hundreds of waterways, streams, canals, and ponds all connect and eventually drain into our bays and estuaries. Simply put, what goes on the ground eventually ends up in our water. Every resident and visitor has a role to play in protecting our resources, and what you do on your property does make a difference.

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Sincerely,

David Pouso
Environmental Specialist III
Air and Water Quality

C12PC.110



Englewood Center
200 S. Indiana Ave.; Englewood, Florida
PID: 0503-09-0051
No Emergency Signage

Photograph taken by: Kathy Meaux, Environmental Specialist
Sarasota County
Date: February 2, 2012



SARASOTA COUNTY

"Dedicated to Quality Service"

August 13, 2012

S & K Durrett LLC, Property Owner
11367 Dancing River Drive
Venice, FL 34292

Subject: Courtesy Notice Regarding a Private Wastewater Lift Station
473 S. Indiana Avenue, Englewood, Florida 34223; PID 0853-13-0002

Dear Sir or Madam:

One of the reasons that Sarasota is such a special place to live is our water resources. The hundreds of waterways, streams, canals, and ponds all connect and eventually drain into our bays and estuaries. Simply put, what goes on the ground eventually ends up in our water. Every resident and visitor has a role to play in protecting our resources, and what you do on your property does make a difference.

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Sincerely,

David Pouso
Environmental Specialist III
Air and Water Quality
C12PC.111



Provision Eye Center
473 S. Indiana Avenue; Englewood, Florida
PID: 0853-13-0002
No Emergency Signage

Photograph taken by: Kathy Meaux, Environmental Specialist
Sarasota County
Date: February 2, 2012



SARASOTA COUNTY

"Dedicated to Quality Service"

August 13, 2012

Charles Egar and Diana Egar, Property Owners
655 N. Indiana Avenue
Englewood, FL 34223

Subject: Courtesy Notice Regarding a Private Wastewater Lift Station
655 N. Indiana Avenue, Englewood, Florida 34223; PID 0496-08-0003

Dear Sir or Madam:

One of the reasons that Sarasota is such a special place to live is our water resources. The hundreds of waterways, streams, canals, and ponds all connect and eventually drain into our bays and estuaries. Simply put, what goes on the ground eventually ends up in our water. Every resident and visitor has a role to play in protecting our resources, and what you do on your property does make a difference.

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Sincerely,

David Pouso
Environmental Specialist III
Air and Water Quality
C12PC.112



Charles Eagar, MD Office
655 N. Indiana Avenue; Englewood, Florida
PID: 0496-08-0003
No Emergency Signage

Photograph taken by: Kathy Meaux, Environmental Specialist
Sarasota County
Date: February 2, 2012



SARASOTA COUNTY

"Dedicated to Quality Service"

August 13, 2012

Mark Grossenbacher, Principal
Englewood Elementary School
150 N. McCall Road
Englewood, FL 34223

Subject: Courtesy Notice Regarding a Private Wastewater Lift Station
150 N. McCall Road, Englewood, Florida 34223; PID 0497-10-0001

Dear Mr. Grossenbacher:

One of the reasons that Sarasota is such a special place to live is our water resources. The hundreds of waterways, streams, canals, and ponds all connect and eventually drain into our bays and estuaries. Simply put, what goes on the ground eventually ends up in our water. Every resident and visitor has a role to play in protecting our resources, and what you do on your property does make a difference.

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Sincerely,

David Pouso
Environmental Specialist III
Air and Water Quality

C12PC.113



Englewood Elementary School
150 N. McCall; Englewood, Florida
PID: 0497-10-0001
No Emergency Signage in View

Photograph taken by: Kathy Meaux, Environmental Specialist
Sarasota County
Date: February 2, 2012

Appendix C

Ranchette and Small Farm Workshop

January 13, 2013

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You're invited to a Ranchette and Small Farm Workshop!

January 23, 2013

**Englewood Sports Complex
1300 S. River Road**

5:30 to 7:30 PM

**Guest Speaker: *Dr. Robert Kluson of
UF/IFAS Sarasota County Extension***



Appropriate Fencing

Did you know?

The Florida Department of Environmental Protection has determined Gottfried Creek to be impaired for fecal coliform bacteria.

What are fecal coliform bacteria?

Indicator bacteria that live in the digestive systems of humans and other warm-blooded animals.

Where do they come from?

Fecal coliform come from a variety of sources such as failing septic systems, stormwater runoff, human sewage, birds, wildlife, and farm animals such as chickens, cows, and horses.

What can we do?

Attend the workshop to learn recommended Best Management Practices (BMPs) for ranchettes and small farms to prevent fecal coliform bacteria from manure and other agricultural sources from entering Gottfried Creek Watershed and other water bodies.

Refreshments will be served.

Pasture Management



Waste Management



*Disconnect
from Water Bodies*



Just a Reminder. Hope to see you there!

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Pasture Management



Waste Management



*Disconnect
from Water Bodies*



AGENDA

Gottfried Creek
Ranchette and Small Farm Workshop
January 23, 2013
5:30 – 7:30 PM

- 5:30 – 5:35 Welcome and Introductions – Kathy Meaux, Sarasota County
- 5:35 – 5:50 Purpose of Workshop – Kathy Meaux, Sarasota County
- 5:50 – 6:00 Noel Marton – Florida Department of Agriculture and Consumer Services
- 6:00 – 6:45 Best Management Practices for Ranchettes and Small Farms
Dr. Robert Kluson – UF/IFAS Sarasota County Extension
- 6:45 – 7:00 Questions
- 7:00 – 7:15 BMP Sketch Sheet – Noel Marton and Kathy Meaux
- 7:15 – 7:30 Questions
- 7:30 Adjourn

Welcome to the Ranchette and Small Farm Workshop!

January 23, 2013



Gottfried Creek Ranchette and Small Farm Workshop

January 23, 2013

***Hosted by Sarasota County and the Florida Department of
Agriculture and Consumer Services***

***Kathryn L. Meaux
Sarasota County Water Resources***

Why Are We Here?

- *The Florida Department of Environmental Protection determined that Gottfried Creek is impaired for fecal coliform bacteria and adopted a TMDL*
- *Because we care about the water quality of Gottfried Creek*
- *To learn about how we can protect and improve the water quality of Gottfried Creek*

Gottfried Creek Watershed

- An area of land that drains to a common waterway such as a stream, lake, estuary, bay, and ocean
- Gottfried Creek watershed relatively undeveloped
- Thomas Ranch occupies the upper third of the watershed
- Most of the development is in the lower two third
- Gottfried Creek drains to Lemon Bay



What is a TMDL?

- *TMDL stands for Total Maximum Daily Load*
 - *The maximum amount of a given pollutant that a surface water can take in and still meet water quality standards that protect human health and aquatic life.*
 - *Water bodies that do not meet water quality standards for a specific pollutant are considered impaired for that pollutant.*
 - *TMDLS must be developed and implemented to reduce the pollutants and clean up the water body.*

Evolution of TMDLs

- 1962 – Beginning of the Environmental Movement
 - Rachel Carson's *Silent Spring* was published
 - Led to creation of the Environmental Protection Agency
- 1972 – Clean Water Act
 - Goal of eliminating releases of toxic pollutants into surface waters
 - Established numerical values for pollutants to protect surface waters
 - Required states to develop a list of impaired waters
- 1986 - Department of Environmental Protection
 - State Agency
 - Created to coordinate and carry out pollution prevention and control activities

Evolution of TMDLs

- 1998 - List of Impaired Waters Created
 - 5-year cycles
 - Adopt TMDLs
- 2005-2008
 - Gottfried Creek samples
 - 5 stations
 - Fecal Coliform values exceeded WQ standard (400)
- 2010 – Gottfried Creek Fecal Coliform TMDL adopted
 - Local stakeholders work with DEP to identify and eliminate direct sources and identify potential sources and reduce or minimize bacteria in Gottfried Creek

What are Fecal Coliform Bacteria and where do they come from?

- *Non-pathogenic indicator bacteria that live in the intestinal tract of humans and other warm-blooded animals*
- *Co-exist with pathogenic bacteria and can indicate their presence in the environment*
- *Cheaper to sample and analyze for indicator bacteria than the many pathogenic bacteria in existence*

How do fecal coliform bacteria get into the environment?



Sanitary Sewer Overflows



Pet Waste



Failing Septic Systems

Human Sources



Stormwater

Natural Sources of Fecal Coliform Bacteria



Wildlife



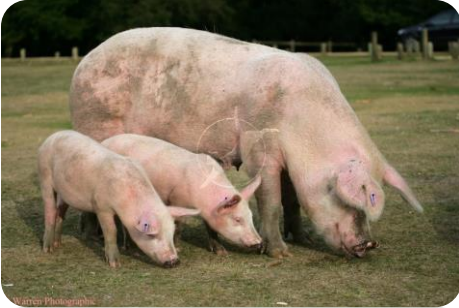
Natural Sources of Fecal Coliform Bacteria



Birds



Other Sources of Fecal Coliform Bacteria



Farm Animals



Purpose of Workshop

- *Provide ranchette and small acreage farm owners with assistance and information about Best Management Practices (BMPs) for managing their property to protect the water quality of Gottfried Creek*

Questions?

UF/IFAS Extension

The Journey to Sustainability Begins with Education



Ranchette & Small Farm Workshop

*Gottfried Creek Basin,
Sarasota County, FL
January 23, 2013*

Robert A. Kluson, Ph.D.

Agriculture/Natural Resources Agent III
UF/IFAS Extension Sarasota County

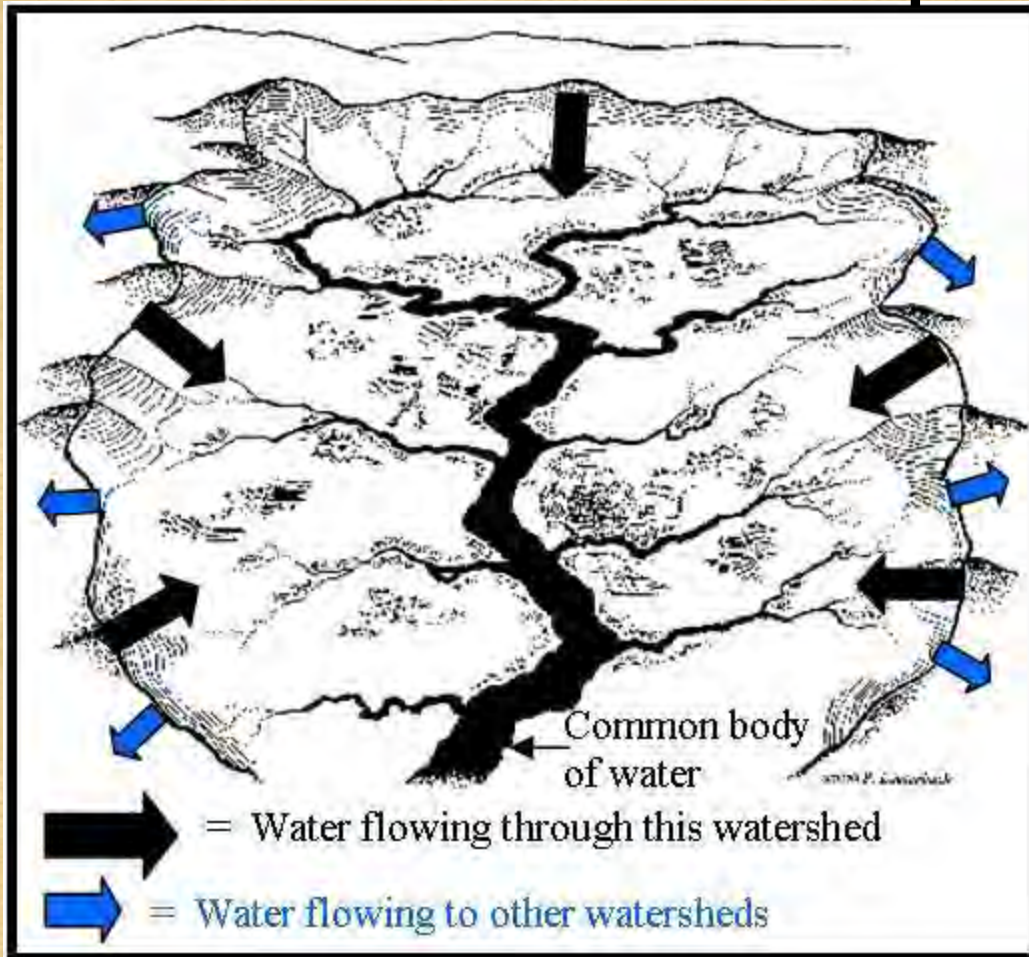
Outline

- **Watersheds**
- **Best Management Practices (BMPs)**
- **Whole Farm Planning**
- **Manure Management**
- **Pasture Management**
- **Resources**

Watershed

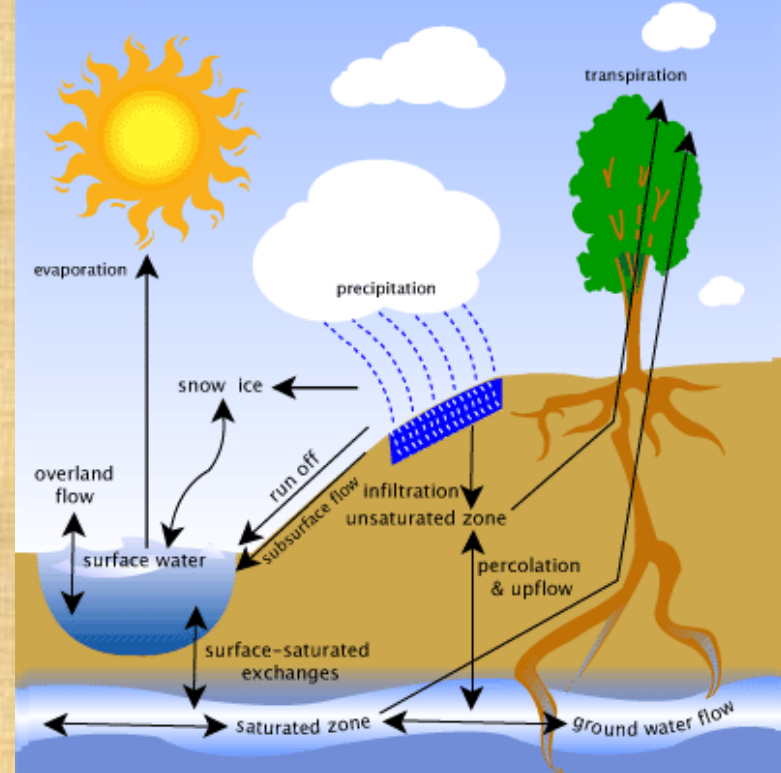
- **Question:** What is a watershed?
- **Answer:** A watershed is an area of land that water flows across as it moves toward a common body of water, such as a stream, river, lake or coast.

Watershed Concept



Water Movement

Hydrologic (water cycle)



Other Names for Watersheds

- A river or lake basin
- A drainage
- A catchment area
- A greater (river) valley
- A river and its tributaries
- The headwaters area (for upper watershed)

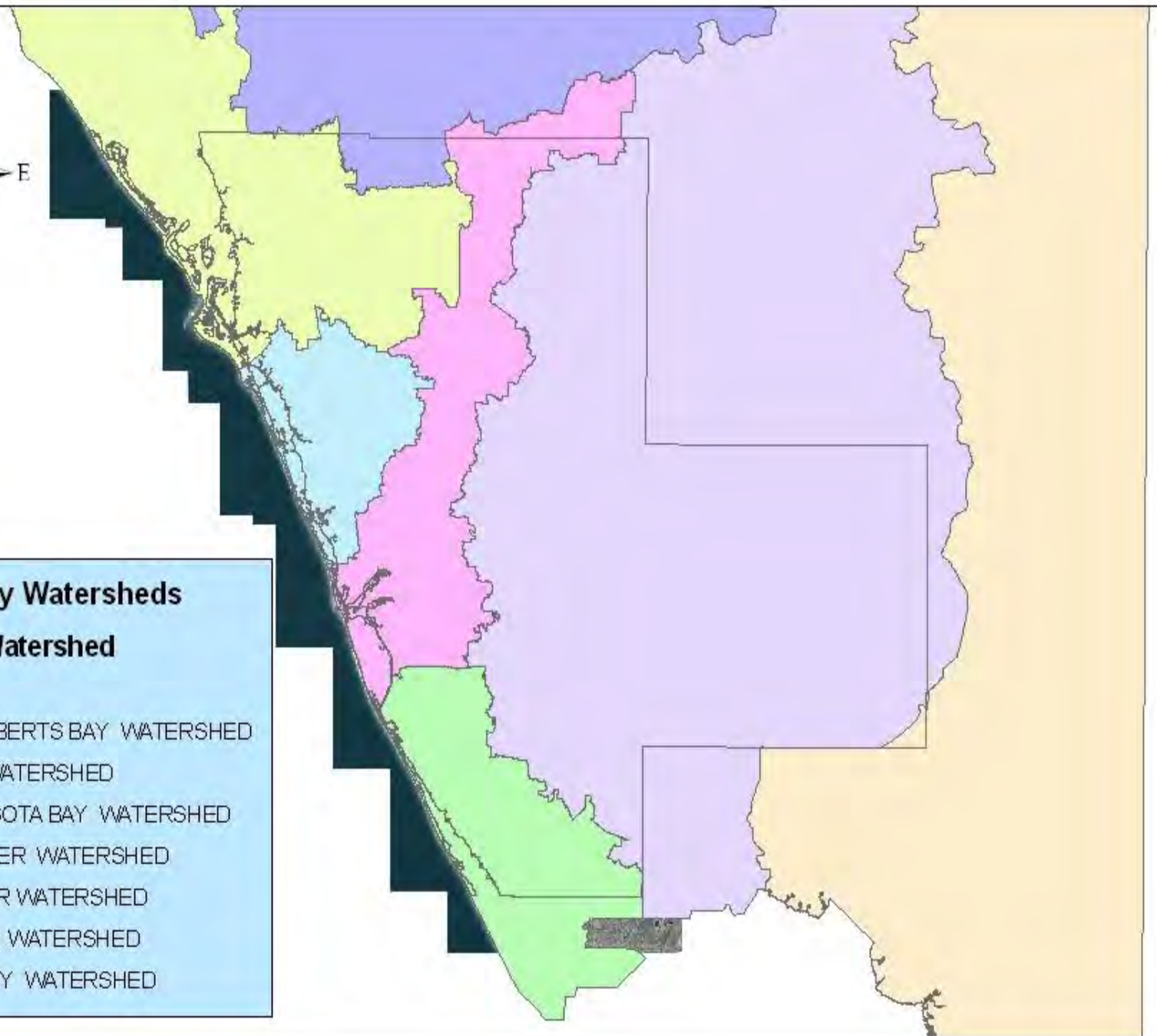


Sarasota County Watersheds

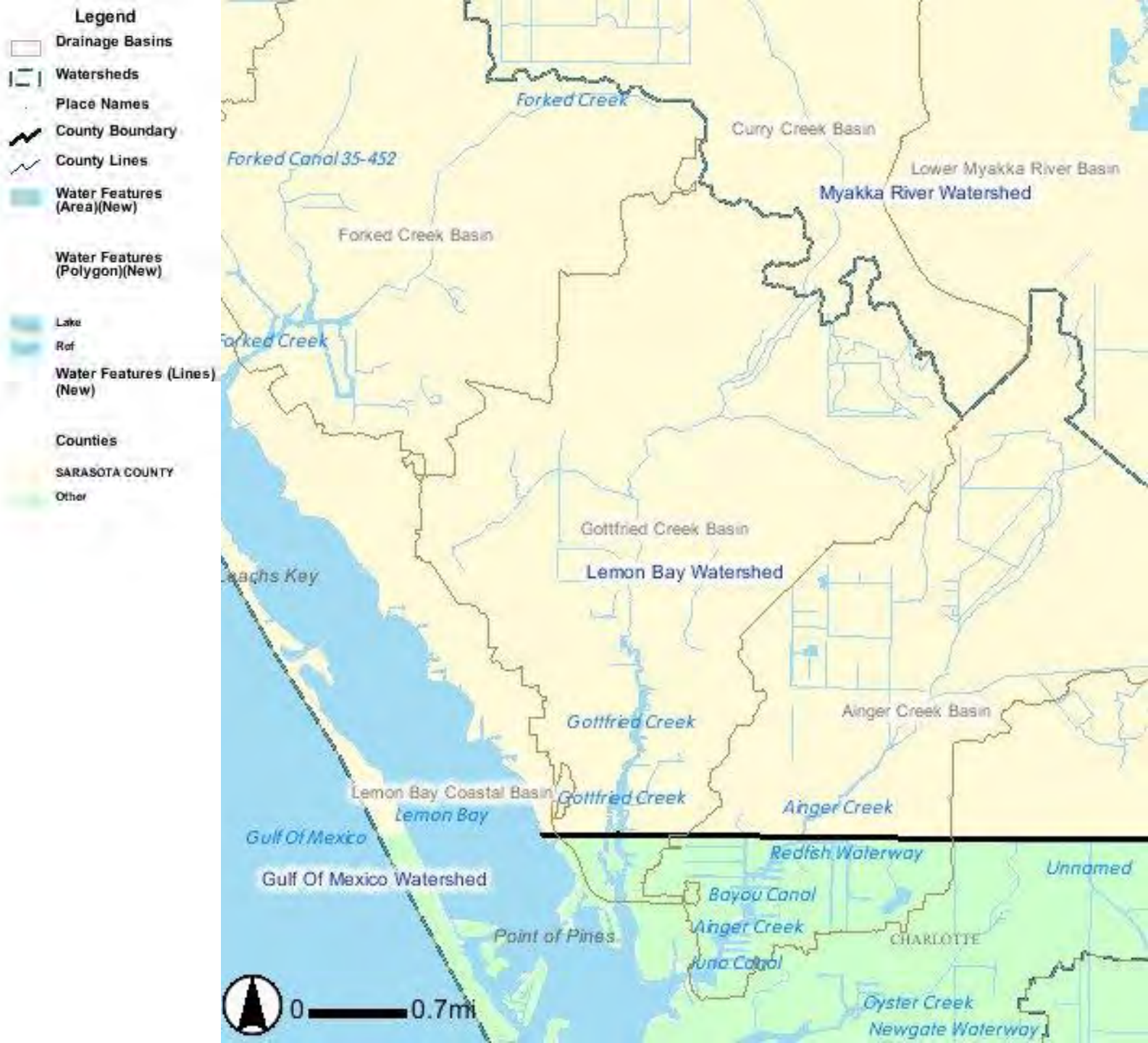
GIS.WaterAtlasWatershed

BAYSHED

-  DONA and ROBERTS BAY WATERSHED
-  LEMON BAY WATERSHED
-  LITTLE SARASOTA BAY WATERSHED
-  MANATEE RIVER WATERSHED
-  MYAKKA RIVER WATERSHED
-  PEACE RIVER WATERSHED
-  SARASOTA BAY WATERSHED



Gottfried Creek Basin





❖ The Sarasota County Water Atlas is designed to provide

- comprehensive and current water quality, hydrologic, and ecological data

- information about recreational opportunities

- a library of scientific and educational materials on water resource issues

❖ See <http://www.sarasota.wateratlas.usf.edu/new/>

Florida Best Management Practices (BMP) Program

- **BMP definition**
 - a practice or combination of practices determined by the coordinating agencies, based on research, field-testing, and expert review, to be the most effective and practicable on location means, including economic and technological considerations, for improving water quality in agricultural and urban discharges”.

Florida Best Management Practices (BMP) Program

- **Related issue**
 - the Total Maximum Daily Load (TMDL), which specifies the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and allocates pollutant loadings among point and non-point pollutant sources to meet the requirements of the federal Clean Water Act
- **BMPs are used as a voluntary program to meet the TMDLs**

Historical Perspective

- BMP program concept accelerated with passage of the Florida Watershed Restoration Act in 1999.
- FDEP became the lead agency in charge of establishing TMDLs.
- 10 years later, BMPs have become “quasi-regulatory” in watersheds with a Basin Management Action Plan.

Agricultural Best Management Practices (BMP) Program

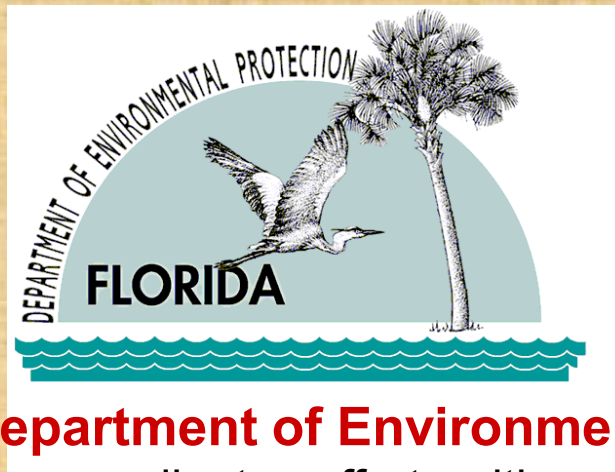


- Agricultural BMPs are guidelines advising producers how to manage the water, nutrients, and pesticides they use in order to minimize agriculture's impact on Florida's natural resources.
- BMPs are needed because agricultural activity is linked to the contamination of watersheds, water sources, and water bodies with nutrients.

Best Management Practices (BMP) Program



- **Sources of agricultural nutrient contamination**
 - Fertilizers – both chemical and organic (e.g., nitrogen and phosphorus)
 - Livestock wastes – both commercial and recreational
- **Types of agricultural nutrient contamination**
 - Point source pollution comes from a single source such as a pipe or ditch
 - Nonpoint pollution is the result of many small pollution sources – often called ‘runoff’



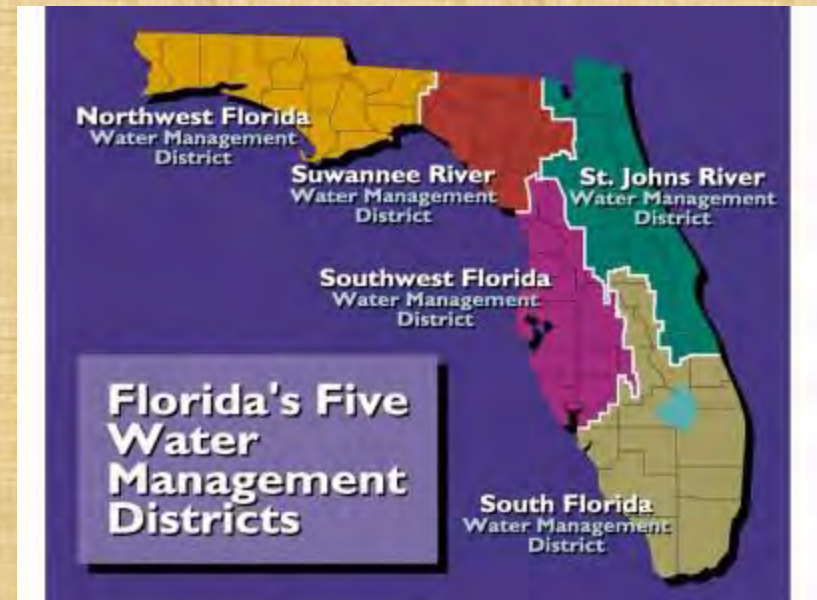
Lead Agency: **Department of Environmental Protection**

coordinates efforts with

Department of Agriculture
Office of Ag Water Policy

Water Management Districts

Leadership role for agriculture



Plus... Soil and Water Conservation Districts, Environmental groups, Local govt., Stakeholders, etc.

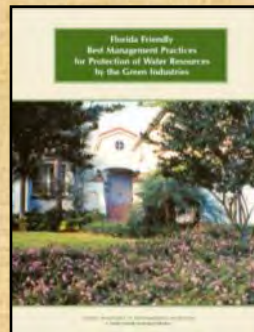
Best Management Practices (BMP) Program



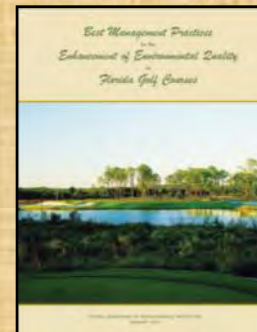
- BMP manuals are based on research
- Available for many forms of agriculture, as well as non-agriculture operations
- Online downloads – see <http://bmp.ifas.ufl.edu/commodities.shtml>

FDEP

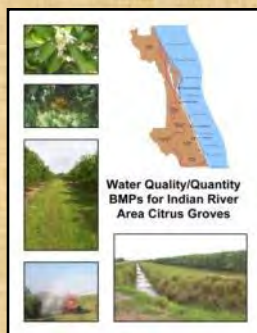
Green industries



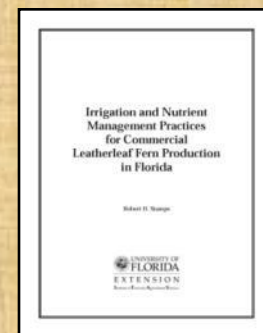
Golf courses



Citrus

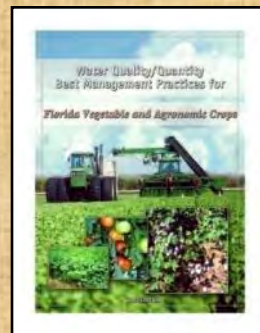
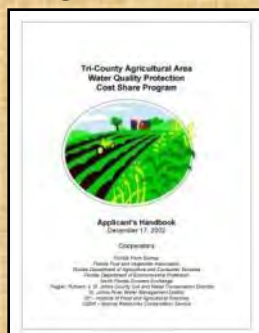


Nursery and Ferns

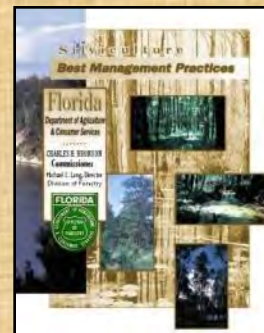


F D A C S

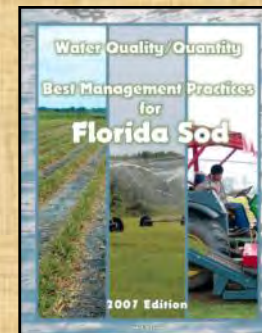
Vegetables and Row Crops



Silviculture



Sod



Cow/calf



Why BMPs for Ranchettes and Small Farms?

- **Small and hobby farms and livestock operations**
— farms with minimal acreage and a few animals for recreation or for side income — are often owned by people who have little or no farming experience.
- **Small livestock operations are increasing**
 - According to the USDA 2007 Census, almost 300,000 new farms have begun operation since 2000.
 - More than 36% of farms are classified as “residential/lifestyle farms”—having sales of less than \$250,000 and operators with a primary occupation other than farming. Another 21% are operated by individuals who are retired.

Why BMPs for Ranchettes and Small Farms?

- Traits of an increasing number of small livestock operations
 - located in suburban and urbanizing areas close to high density residential developments and water resources
 - the amount of land per animal unit is typically very small, often leading to problems associated with improper manure storage, handling, and use.
 - typically these operations are minimally regulated at the state & local level and lack access to information
- Education projects prove that small land owners and livestock owners want to do the right thing and learn how to better manage the manure from their operations

Manure Happens

- Valuable resource—if well managed.
- If Improperly managed—
 - ❑ Source of water pollution.
 - ❑ Can contaminate drinking water.
 - ❑ Odor issues.
 - ❑ Flies, parasites, & other nuisances.
 - ❑ Can harm livestock & wildlife.

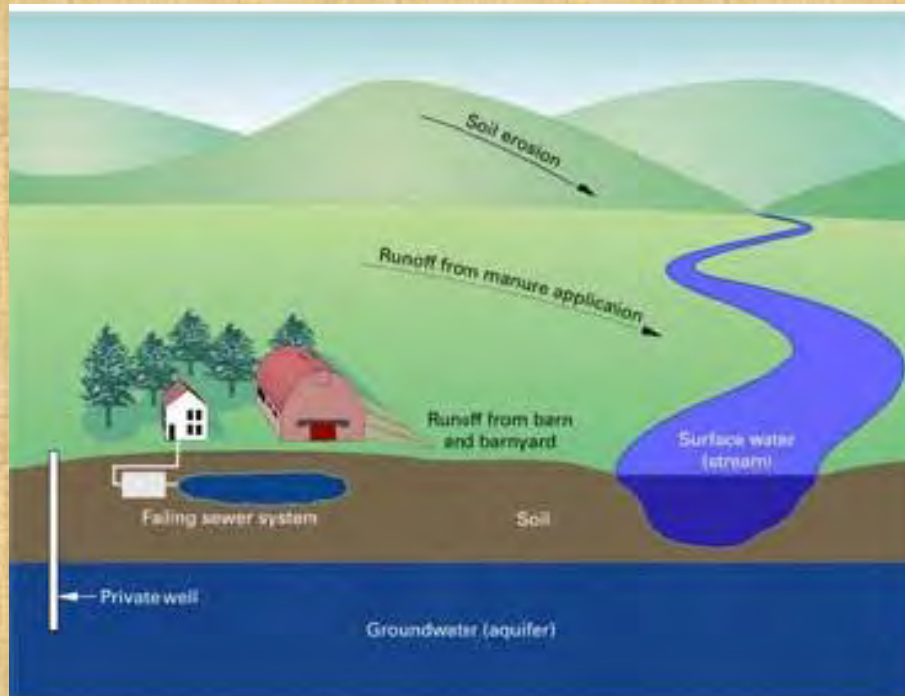


Manure Really Happens!

4 horses in stalls = 160,000 pounds of manure & wet bedding per year.



Potential Sources of Manure Contamination of Watersheds



- Excessive field applications
- Soil erosion
- Runoff
- Septic systems



- Over grazing
- Fallow (bare) fields

Goals of Manure Management

- Utilize manure nutrients for enhancing soil.
- Protect health and safety of the public and livestock.
- Prevent surface and ground water contamination.



Whole Farm Planning

- A holistic approach to farm management involving the following steps:
 - inventory of onfarm soil/water resources and farm sketch of structure/operation locations
 - identify and prioritize environmental issues on and adjacent to a farm
 - careful structural planning & BMP implementation to reduce or avoid the transport of agricultural runoff offsite to farm watershed
 - monitoring and record keeping
 - annual review and repeat process

Whole Farm Planning Example

- Full Circle of Tasks & Processes -



Example Solutions to Livestock Manure Contamination of Watersheds



- fencing



limited access -

Example Solutions to Nutrient Contamination of Watersheds



- grass buffers along streams

agroforestry
riparian
forest
buffers -



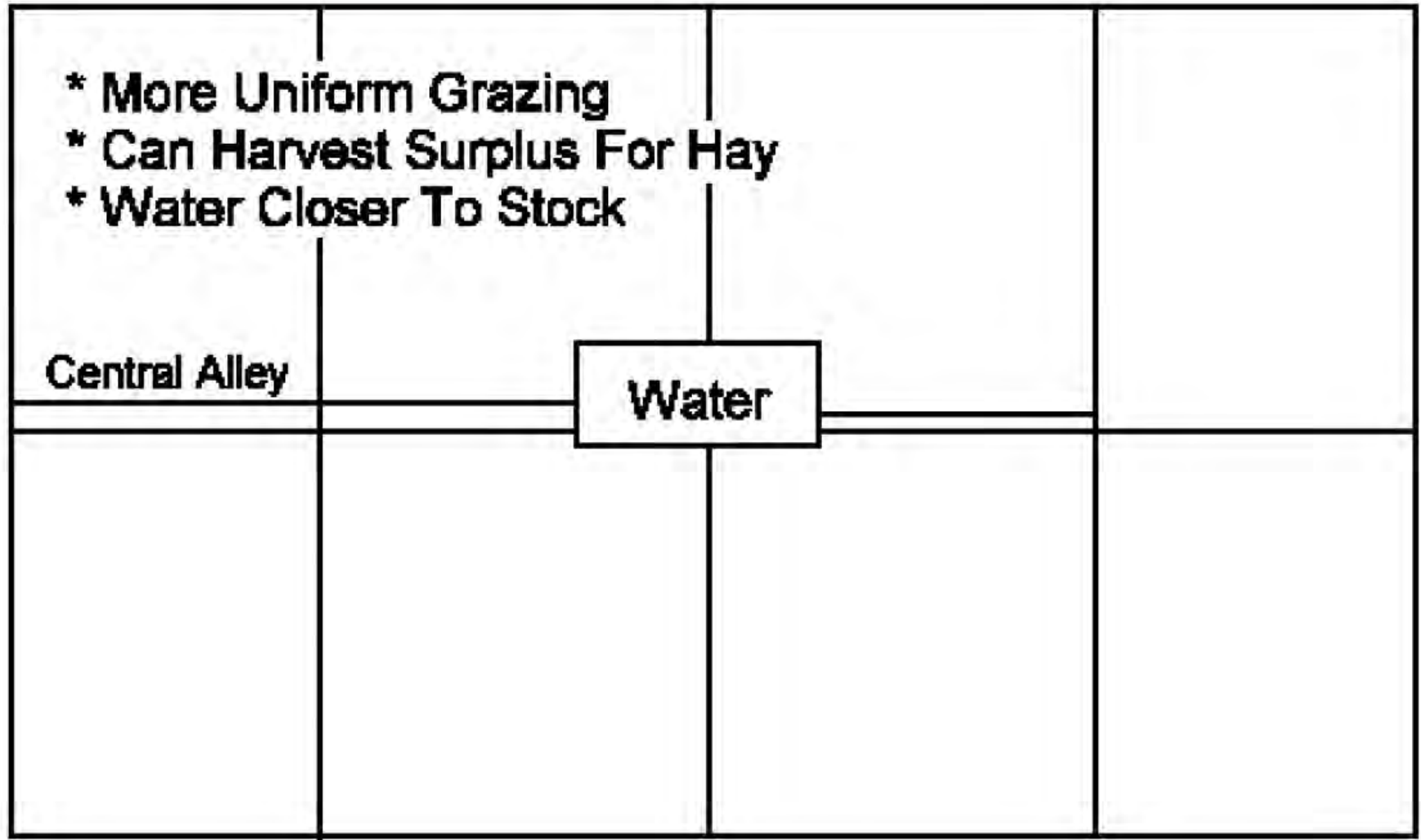
Example Solutions to Livestock Manure Contamination of Watersheds

Smart Grazing

- Subdivide pasture into two more areas.
- Rotate livestock so that grass is left standing at about 2 inches.
 - Allow grass to grow to about 8 inches before grazing animals on it again.

Smart Grazing System

Rotational Grazing



More Smart Grazing

- Multiple watering & feeding stations.
 - Moving stations will reduce erosion & manure buildup.
- Do not allow manure to build up in pastures.
 - Spread manure thinly & uniformly.
- Remove manure daily to every 3 days from heavily deposited locations.
 - Reduces parasite problems.
 - Reduces fly problems.

Drag Manure to Spread & Dry



Manure Storage: Size & Location

- Hold all the manure and bedding generated until it can be utilized.
- Setbacks.
 - 100 feet from wells, wetlands, and surface water bodies (streams, ponds).
 - 200 feet away from residences.
 - 50 feet from property lines.
- Downwind from stables/barns and neighbors' residences.
- Use shrubbery or fencing to screen.

Manure Storage: Structures

- Pile contained on a pad or in a small shed.
- Wooden or masonry “bucking wall” behind the pile.
 - Three bucking contains manure and leachate more effectively and makes handling easier.
- Structures for storing larger quantities of manure (e.g., more than a five horses, or AU equivalents).
 - Wooden or concrete storage sheds are options.
- Grassy or vegetated filter/buffer around storage.

Manure Storage: Pad & Covering

- Compacted earth or stone dust.
- Packed gravel, road base material, or crushed limestone base.
 - Farms with horses or larger numbers of animals.
- A rough-surfaced ramp.
- Cover to prevent run-off from the pile which can lead to water contamination.
 - Tarp
 - Permanent roof

Manure Storage



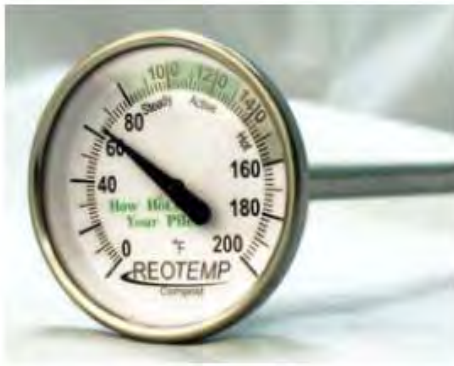
Other Storage Options

- Plastic garbage cans with lids, wood or metal bins, or carts.
- Manure spreader
 - ❑ Supplemental storage will be necessary.
- Dumpsters
 - ❑ Contract with a hauler.



Composting—Is it for you?

- Labor & time.
- Pitchfork & wheelbarrow.
- Front loader.
- Manure spreader.
- Thermometer.



Elements of Composting

■ *Aeration*

- ❑ Successful composting requires air or oxygen.

■ *Nutrient balance and porosity*

- ❑ 20 to 40 parts of carbon to one part of nitrogen.

■ *Moisture*

- ❑ 40 to 65 percent—like a damp sponge.

■ *Temperature 120° and 160°F.*

- ❑ 131°F for 15 days to kill weed seeds & parasites.

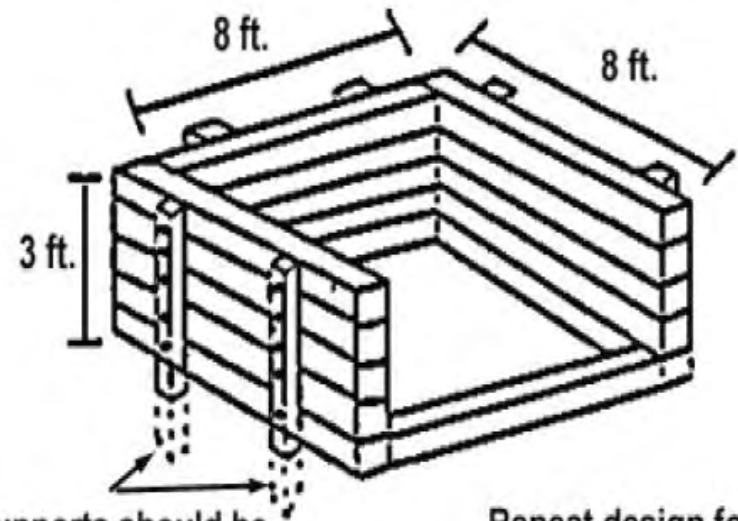
Advantages

- Typically can be done with existing farm equipment and available farm land.
- Improves manure handling.
 - Reduces volume.
 - Reduces moisture content.
 - Reduces odor.
 - Reduces fly & parasite problems.
 - More uniform & easier to handle or spread.

Advantages, continued

- Improved land application.
 - Nitrogen is more stable & released more slowly.
 - Weed seeds & pathogens destroyed.
- Soil conditioner.
- Can be used as a bedding for poultry litter & other livestock.
- Saleable product.
- Cost share money may be available from NRCS.

Compost Bins



Supports should be buried for stability

Repeat design for two or three stage system



3 Steps to Land Application

- Step 1: Start by getting to know your soil.
 - ❑ Soil test for the field or crop area where the manure is to be spread.
- Step 2: Know your manure.& compost
 - ❑ See the ToolKit.
 - ❑ Get a nutrient analysis for nitrogen, phosphorus and potassium (“N-P-K”).
 - Must be uniform sample.

3 Steps to Land Application, cont.

- Step 3: Consider crop needs
 - ❑ Use fertilizer or production guide to determine the nutrient needs .
 - ❑ Do not apply manure (and other fertilizers) at rates that exceed the amount necessary to meet crop nutrient needs in a growing season.



Table 1. Examples of available manure nutrients in pounds per animal per month.

Animals	N ¹	P ₂ O ₅	K ₂ O
	Pounds/month		
1,400-pound dairy cow	6	10	14
1,000-pound horse	3	3	6
500-pound dairy heifer	2	3	1

¹Adjusted for N losses – 1/3 of total N.

Nutrient Traits of Manure Composts

	N	% P205	K20	Org Matt
Average	1.73	0.85	0.92	42.8
Min	0.51	0.24	0.17	15.8
Max	3.49	2.63	2.58	83.7
Stdev	0.78	0.40	0.56	18.2
CV	45%	47%	61%	43%

IFAS Analytical Services Laboratories Extension Soil Testing Laboratory

2390 Mowry Road / PO Box 110740 / Wallace Building 631, UF / Gainesville, FL 32611-0740
EMAIL: SOILSLAB@IFAS.UFL.EDU WEBSITE: SOILSLAB.IFAS.UFL.EDU

Nutrient Testing for Bahia Pastures

Important Information for Bahiagrass (crop codes 35 and 36)

There are two types of tests available for Bahiagrass pastures in Florida (see Table above for details)

Phosphorus Testing and Recommendation for Bahiagrass

- Soil tests alone are not adequate for determining P fertilization needs of Bahiagrass.
- A tissue and soil test must be submitted together to determine P fertilization needs.
- Phosphorus should not be applied if tissue P is at or above 0.15% even if soil tests Very Low or Low for P.
- If P recommendations are not desired and the producer only is interested in K, Mg, Ca levels and pH then a Standard Producer Soil Test will apply. This WILL NOT include P fertilizer recommendations.

Bahiagrass testing for new establishment plantings

- For crop code 35, only 1, 2 and 3 can be requested.
- Decisions concerning liming and N fertilization of bahiagrass pastures are very sensitive to cattle productivity and prices.

*** Crop Codes:**

- **35** – Bahiagrass establishment of new plantings; **Test 1** - standard soil test
- **36** – Bahiagrass, established with Low, Medium and High Nitrogen options – **Test B1** Standard Soil AND Tissue Test (pH, lime requirement, P, K, Ca, Mg) **OR Test 1**, Standard Soil test (pH, lime requirement, K, Ca, Mg and P test value ONLY)

**** N-Option:**

- Indicate Low, Medium, or High N Option, when requesting tests for **Crop Code 36**.

Fertilization Management for Bahiagrass Pastures:

- ✓ For new plantings, apply only 100 lb N/A split as follows: apply 30 lb N/A, all of the P_2O_5 , and 50% of the K_2O as soon as plants have emerged. Apply 70 lb N/A and the remaining K_2O 30 to 50 days later.
- ✓ For bahiagrass pastures in central and south Florida, recent research has shown that P and K fertilization may not be economical. Furthermore, soil-test results may underestimate the soil supply of P. Choose to add P and K based upon economic considerations for your production system.
- ✓ For established stands of bahiagrass, apply all of the fertilizer in the early spring to maximize much-needed spring forage. Bahiagrass is a very efficient forager and recovers nutrients from deeper in the soil profile than other popular forage grasses so danger of leaching losses is low.

Fertilization Management for Bahiagrass Pastures:

➤ Three fertilization options are presented below. Choose the option which most closely fits your fertilizer budget, management objectives, and land capability.

✓ Low-Nitrogen Option. (for Grazed Pastures Only) Apply around 50 lb N/A this year, recognizing that N will be the limiting nutrient. Thus, do not apply P or K. Apply the P and K recommended by soil test every third or fourth year.

✓ Medium-Nitrogen Option. Apply around 100 lb N/A this year. Apply 25 lb P_2O_5 /A if your soil tested low in P and none if it tested medium. Apply 50 lb K_2O /A if your soil tested low in K and none if it tested medium. Re-test your soil every second or third year to verify P and K levels. If you plan to make a late-season cutting of hay, apply 80 lb N/A between August 1 and 15 (about 6 weeks before the growing season ends).

✓ High-N Option. Apply 160 lb N/A and the soil-test-based recommended rates of P_2O_5 and K_2O for each of your pastures. The fertilization rates suggested in this option are high enough to allow bahiagrass pasture to achieve well above average production.

Off-Farm Manure Utilization

- Buy or rent more land.
- Off-site land application of manure.
- Off-site compost operation.
- “Free garden fertilizer.”
- Blended soil producers, organic farmers, home gardeners, mushroom growers, others.



Whole Farm Planning & BMP Implementation Assistance

- UF/IFAS BMP Implementation Team
- Free watershed and conservation technical planning services by USDA/NRCS – see <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/>
- ‘Mini-farms’ program by FDACS – for farms 100 acres or less. Available for all counties within the Southwest Florida Water Management District. 75% reimbursement up to a Maximum of \$5,000 – see http://www.swfwmd.state.fl.us/agriculture/mini_farms.php
- Sarasota County Extension office – see <http://sarasota.ifas.ufl.edu/>
- Online free course on “Whole Farm Planning and Water Quality” – see <http://moodle.cce.cornell.edu/login/index.php>

Reference and Online Resources

- EPA/National Agricultural Center: Watersheds – see <http://www.epa.gov/oecaagct/awts.html>
- eXtension. LPES Small Farms Facts Sheets – see <http://www.extension.org/pages/8890/lpes-curriculum-small-farm-fact-sheets>
- Northeast Recycling Council. Guide to Providing Manure Management Education to Small Farm and Livestock Operations – see http://www.nerc.org/manure_management.html
- UF/IFAS Solutions for Your Life: BMPs – see http://solutionsforyourlife.ufl.edu/hot_topics/agriculture/bmps.html
- USDA/National Agroforestry Center. Riparian forest buffers – see <http://nac.unl.edu/riparianforestbuffers.htm>
- Watershed Agriculture Council. Whole Farm Planning – see http://www.nycwatershed.org/ag_planning.html
- Whole Farm Planning with Holistic Management <http://www.umass.edu/umext/jgerber/hmpage/hmpage2/mainpage6.htm>

What a simple activity! After looking at water flows on our property and considering our management practices from an aerial perspective, I feel we can make some minor changes which will improve water quality.

1. First thing we plan to do is move our compost and barn mucking piles away from the ditch that drains the impervious surfaces on our property. We'd like to make the old site a water garden, capturing roof runoff and any nutrients still at the land surface from our many years of using this site.

2. The second thing we propose to do is to address the erosion. It is worst where the road ditches dump into our property and also at the end of the ditches near the wetlands. We can change the ditches to make sections divided by little berms which will slow down the flow and will hold some water back in each segment to allow the sediments to settle out before traveling to the pond.

3. One of our main paddocks is divided by a ditch. We never thought about it this way before, but we need to start breaking up the cow dung so the sun can kill bacteria more quickly and so the nutrients will be more accessible to plants rather than large clumps of dung washing into the ditch and being carried to the swamp.

4. We didn't know that water on the yard near our well head can travel down the well casing and carry pollutants from the yard with it to our drinking water! We're re-routing the house run off away from the well.

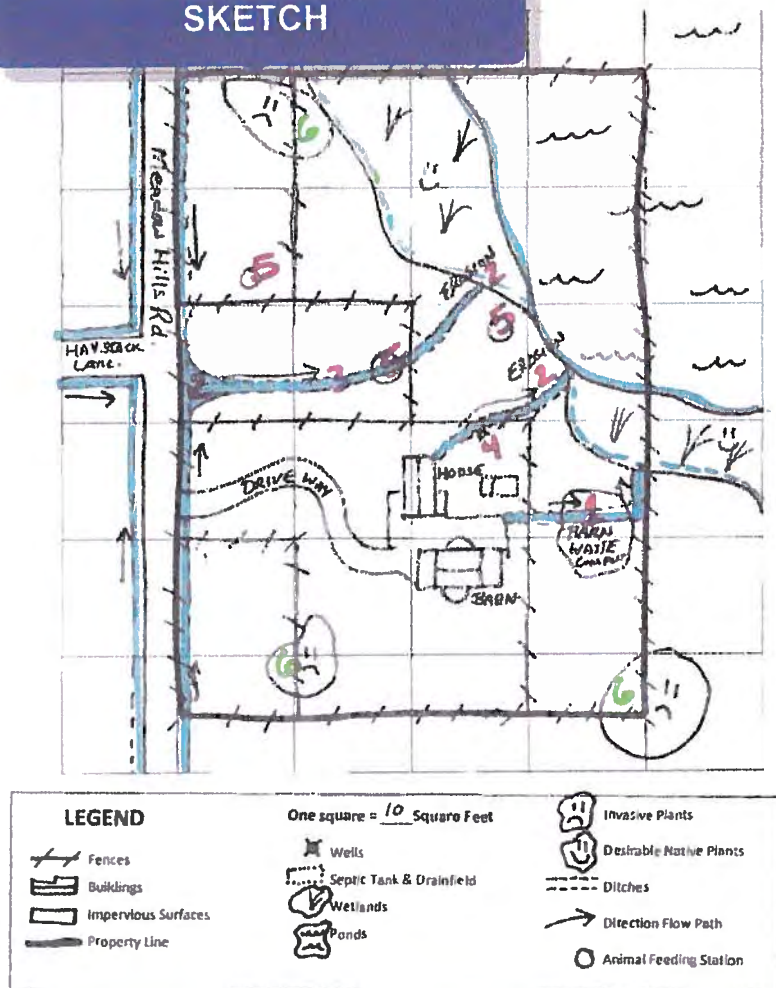
5. Oh how easy it is to move the feeding areas. We're moving them up hill and away from the ditches, lake, and swamps.

6. Invasive weed patches. We'll be preventing the livestock from carrying seeds to new areas. Die weeds, die!

7. We've decided to provide alternate water sources in all the paddocks so the animals won't be disrupting the natural waterbodies.

8. And we've decided not to fertilize right up against the ditches and the swampy lake side.

EXAMPLE PROPERTY SKETCH



PROPERTY SKETCH SHEET

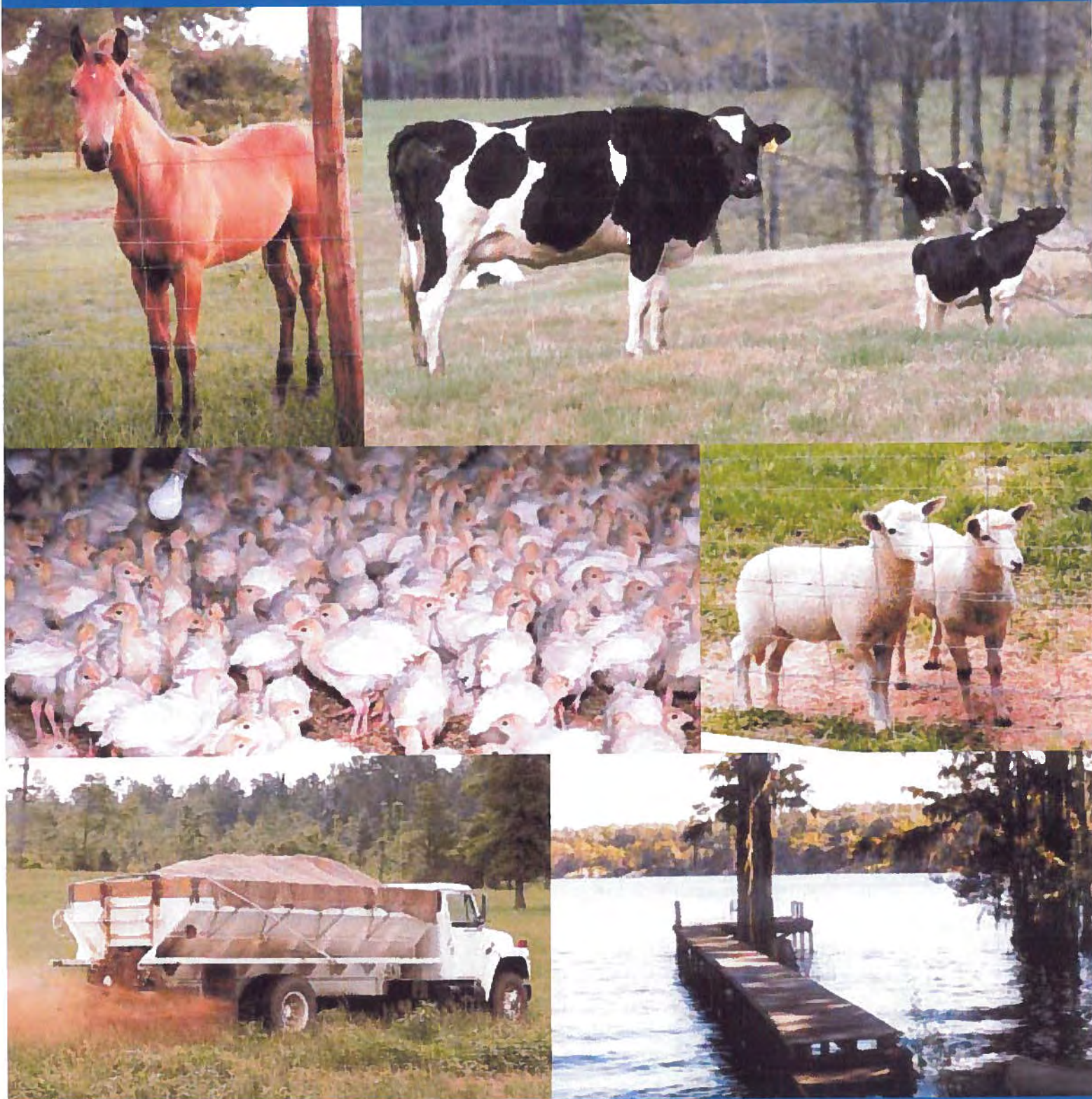
Sketch your property and water flow paths here. Is there anything you can do to impact water quality positively?

One square = _____ Square Feet

LEGEND

- | | | |
|----------------------------|--------------------|---------------------------|
| — Property Line | 💧 Wells | 😊 Desirable Native Plants |
| ☒ Buildings | 🌊 Lakes/Ponds | 🗑️ Manure Stockpile |
| ++ Fences | 🌿 Wetlands | ◯ Animal Feeding Station |
| ▭ Impervious Surfaces | === Ditches | ➔ Direction Flow Path |
| ▨ Septic Tank & Drainfield | ☹️ Invasive Plants | |

Good Neighbor Guidelines for On-farm and Offsite Application of Livestock Waste



SEPTEMBER, 2002

GOOD NEIGHBOR GUIDELINES FOR ON-FARM AND OFFSITE ANIMAL WASTE MANAGEMENT

PURPOSE

- Protect Florida's environment.
- Increase public understanding of the animal and agriculture industry.
- Improve community relations by implementing best management practices to address unwanted conditions associated with on-farm and offsite application of animal waste.

FLORIDA WATERS

GROUND WATER PROTECTION

Ground water is one of Florida's most vital resources supplying most ecosystems and providing drinking water for 90% of the state's population. Since the state's geology makes ground water vulnerable to contamination, its protection is crucial. The agricultural industry can take steps towards effectively protecting Florida's ground water:

Stockpiling

Apply animal waste at agronomic rates to prevent the leaching of nutrients past the root zone. Dairies typically use liquid manure management systems where the solids have considerably fewer nutrients than effluent from wastewater storage lagoons. Be aware that agronomic rates may be exceeded by multiple applications and/or staging large piles of solids or sludge for an extended period of time in the fields.

Poultry operations and horse farms typically use dry manure management systems where the solids contain higher amounts of nutrients. Care should be taken to prevent over application of nutrients (See the Contacts and References section on page 7 for contact information related to managing agronomic rates.)

Composting

Poultry operations and horse farms often use composting to convert bedding and manure into a rich and odor-free soil amendment for use on the farm or for sale. Composting is a method whereby the organic component of the solid waste is biologically decomposed under controlled conditions to a state in which it can be handled, stored, and applied to the land without adversely affecting the environment. A key phrase in the above definition is "under controlled conditions." This distinguishes composting from the biological decomposition processes that occur naturally, and it also differentiates composting from some objectionable

practices such as open dumps, piles of rotting manure, and other accumulations of waste materials. The Department of Environmental Protection issues permits for solid waste composting operations, but not for routine farm activities. Check with DEP about options you are considering and whether a permit would be needed.

Waste Analysis

Use available laboratories for waste analysis to ensure agronomic rates are not exceeded. The **Livestock Waste Testing Lab** in Live Oak provides free analysis of livestock waste and can be contacted at (386) 362-1725. The **Florida Rural Water Association** at 1-800-872-8207 provides free assistance for collecting and transporting waste samples to the Live Oak laboratory. (See the back of this booklet for additional contact information for waste analysis and transportation.)

Manure Spreader Calibration

Spread waste evenly on fields or pastures to prevent high nutrient concentration areas. Use a calibrated manure spreader to spread waste; front-end loaders are not appropriate for waste application.

Planting Crops

To contain and use nutrients effectively, plant crops as soon as possible following the application of animal waste. If there is concern about ammonia toxicity effects on seed germination, contact a crop consultant.

Cover Crops

To recover and retain residual nutrients, use cover crops between cropping periods where possible.

Sinkholes

Maintain a sufficient non-application buffer zone and/or berm to prevent applied waste and rainwater in contact with waste from entering sinkholes. The recommended buffer zone width on level ground with good vegetative cover is 50'. If poor vegetative cover is present or anticipated, or if the soil surface slopes towards the sinkhole, then buffer zones up to 100' should be considered. (Contact the NRCS representative listed in the back for additional information regarding sinkhole buffers.)

Buffer Zone Vegetation

For optimal nutrient uptake in the buffer zone, use the recommended grass species for the soil series present and geographic location. On moderately drained soils establish a regionally appropriate improved Bermuda grass, and on slightly poor to poorly drained soils establish bahia grass. (Contact the NRCS or IFAS representatives listed in the back for additional information regarding appropriate buffer widths and grass species.)

Well Protection

Maintain a sufficient non-application buffer zone and/or berm to prevent applied waste and rainwater in contact with waste from entering wells or other potable water sources. Maintain a 200' non-application buffer zone around a private potable water source and a 300' buffer zone when the private potable water source is located down slope of the waste application site. A 500' buffer zone is required for potable community wells and water sources.

SURFACE WATER PROTECTION

With over 50,000 miles of rivers and streams, 7800 lakes, and 4000 square miles of estuaries, Florida has an abundance of surface waters that are used for a variety of purposes. Protection of surface waters is crucial towards safeguarding aquatic life and human health. Agriculture can take steps towards effectively protecting Florida's surface waters:

Agronomic Rates

Prevent any unnecessary discharge of nutrients to surface waters of the state by spreading animal waste and other fertilizers on crops or pastures at agronomic rates.

Timing of Waste Application

To prevent surface runoff of the waste to surface waters, do not apply animal waste before or during storm events or when the ground is saturated.

Non-Application Zones

Do not apply animal waste in or in close proximity of surface waters of the state, wetlands, stormwater ditches or any conveyance system that is connected with bodies of water.

Surface Water Buffer Zones

Maintain a sufficient non-application buffer zone and/or berm to prevent applied waste and rainwater in contact with waste from entering water bodies, streams, ponds, or wetlands. The recommended buffer zone width on level ground with good vegetative cover is 50'. If poor vegetative cover is present or anticipated, or if the soil surface slopes towards the water body, then buffer zones up to 100' should be considered. (Contact the NRCS representative listed in the back for additional information regarding buffer zones.)

REDUCING UNWANTED CONDITIONS

Improper application of animal waste can lead to unpleasant living circumstances for surrounding communities. Minimizing odors and managing waste appropriately illustrates a willingness to be a good neighbor.

ODORS

Staging Solids in Fields

Manage offsite waste application areas to minimize odors and prevent the occurrence of nuisance conditions for surrounding neighbors. Avoid staging manure or spoiled feed in fields for longer than necessary. Staging times for manure or waste feed prior to land application should be kept to a minimum.

Meteorological Considerations

When possible, avoid spreading waste materials when conditions are present that would increase odors being carried offsite. Those conditions include stagnant periods, when there is minimal mixing (no odor dilution), and when residences are located downwind.

Incorporating Solids

To reduce odors, evenly spread and, where applicable, incorporate the solids into the ground. Use a calibrated manure spreader; front-end loaders are not appropriate for waste distribution. When possible, avoid spreading waste near residences on weekends.

FLIES

Food Sources

Manage offsite waste application areas so flies are not presented with a highly concentrated food source. Fly food sources include spoiled silage, sand bedding, and manure solids; avoid staging piles in the fields for longer than necessary prior to land application.

Technical Assistance

If flies substantially increase in numbers following animal or silage waste application, immediately till waste into the soil or utilize a drag harrow. Contact University of Florida Entomologist Dr. Jerry Butler at (352) 392-1901, extension 152 for additional information. (Additional contact information listed in the back.)

Pesticides

If pesticide applications are necessary, follow all product application and safe handling guidelines provided by the manufacturer.

OTHER

RECORD KEEPING

Importing & Exporting Animal Waste

Whether you are the provider or receiver of animal waste material, maintain a record of the day, amount, and source of waste removed from or brought to the site.

Field Application Records

Maintain records on nutrient application rates on a field-by-field basis. Use recent waste analysis or an estimated nutrient content of the applied waste to calculate application rates. (Contacts listed under the agronomic rate section of the contacts and references section can provide information related to nutrient application record keeping.)

COMMUNITY RELATIONS

Public Perception

The public may assume that standing piles of material from dairy farms, horse farms, chicken farms or any animal feeding operation consist wholly of manure. If piles of muck or bedding material, with low nutrient content, are to be staged for any length of time, notify neighbors that the piles are not manure and do not present a threat to ground water or the environment. Routinely spread piles with low nutrient content to avoid public misperception.

Public Education

If presented with the opportunity, inform surrounding neighbors that the application of animal waste is a beneficial reuse of a waste product, improves soil conditions and reduces the need for commercial fertilizer.

Contact Number

Provide surrounding neighbors with a business contact number to relay concerns.

Distribution of Guidelines

Regardless of who is responsible for management of the waste, improper handling will reflect badly on the source of the waste. If you distribute animal waste to other farmers or property owners, provide them with a copy of these guidelines.

Agency Contacts

If you receive complaints or concerns from the public regarding your application activities, contact the appropriate state agencies and local elected officials, and inform them of the situation.

Public Outreach Suggestions

Make available small quantities of manure for the neighbors to use in their gardens, flowerbeds, or newly established lawn. Sponsor local programs, organizations or youth leagues.

CONTACTS AND REFERENCES FOR ANIMAL WASTE MANAGEMENT

ARGONOMIC RATES

- ➔ Natural Resources Conservation Services (NRCS)
Steve Boetger, State Agronomist
(352) 338-9548
Website: <http://www.fl.nrcs.usda.gov>
- ➔ University of Florida Agricultural & Biological Engineering Dept.
Dr. Roger A. Norstedt
(352) 392-1864 ext. 103 Email: roger@agen.ufl.edu
Website: <http://www.agen.ufl.edu>
- ➔ Florida Rural Water Association
Jack Hodges, Agricultural Wastewater Technician
1-800-872-8207 or (850) 668-2746 Email: frwa@ix.netcom.com
Website: <http://frwa.net>
- ➔ Florida Department of Environmental Protection (DEP)
Tallahassee Division of Water Resource Management (850) 487-1855 or
contact the Industrial Wastewater Section of the nearest DEP district office.
Website: <http://dep.state.fl.us>

BUFFER ZONES

- ➔ Natural Resources Conservation Services (NRCS)
Greg Hendricks, State Resource Conservationist
(352) 338-9543
Website: <http://www.fl.nrcs.usda.gov>

COMPOSTING

- ➔ University of Florida Agricultural & Biological Engineering Dept.
Dr. Roger A. Norstedt
(352) 392-1864 ext. 103 Email: roger@agen.ufl.edu
Website: <http://www.agen.ufl.edu>
- ➔ Florida Backyard Composting Tutorial and Information
Website: <http://compost.ifas.ufl.edu/>
- ➔ Composting Horse Manure
SS-ANS-001E. A. Ott, E. L. Johnson, R. A. Nordstedt
http://edis.ifas.ufl.edu/BODY_AN040
- ➔ On-Farm Composting of Poultry Litter
P&SS Info # 319, Walker, F.
<http://www.agriculture.utk.edu/ansci/poultry/PSS319.htm>
- ➔ A Practical Guide for Composting Poultry Litter
MAFES Bulletin 981 published June, 1992. Brake, J. D.
<http://www.msstate.edu/dept/poultry/complit.htm>

- ➔ Florida Department of Environmental Protection (DEP)
Tallahassee Solid Waste section (850) 488-0300 or contact the Solid Waste Section of the nearest DEP district office. Website:
http://www.dep.state.fl.us/waste/categories/solid_waste/pages/composting.htm

FLY CONTROL

- ➔ University of Florida Entomology and Nematology Dept.
Dr. Jerry Butler
(352) 392-1901 ext. 152 Email: jfb@gnv.ifas.ufl.edu
Website: <http://entnemdept.ifas.ufl.edu>

LABORATORIES (FREE ASSISTANCE)

- ➔ Livestock Waste Testing Lab (analysis free of charge - except for grant-funded research)
Justin Jones, Research Coordinator
7580 CR 136
Live Oak, Florida 32060
(386) 362-1725 Email: JTJones@mail.ifas.ufl.edu
Website: <http://nfrec-sv.ifas.ufl.edu>
- ➔ Florida Rural Water Association (FRWA) (transporting samples - free of charge)
Jack Hodges, Agricultural Wastewater Technician
1-800-872-8207 or (850) 668-2746 Email: frwa@ix.netcom.com
Website: <http://frwa.net>

OTHER CONTACTS

- ➔ Florida Department of Agriculture & Consumer Services (FDACS)
Website: <http://doacs.state.fl.us>
- ➔ Local Water Management District
Website: http://www.dep.state.fl.us/secretary/watman/wmd_map.htm
- ➔ Florida Cooperative Extension
Website: <http://edis.ifas.ufl.edu/>

- * This document was produced with the cooperation of the Florida Dairy Industry, dairy consultants, various state agencies listed above, and other livestock industry stakeholders.
- * Please distribute these Good Neighbor Guidelines to applicable businesses, farms, dairies, and homeowners.
- * These guidelines may be subject to revision based on new information or improved management practices.

Cover Photos courtesy of USDA-NRCS, Ellen McCarron, and the William H. Lane family.

This publication was funded in part by the
Florida Department of Environmental Protection with a Section 319 Nonpoint Source Management
Program Grant from the U.S. Environmental Protection Agency.

Phosphorus is not the only stormwater pollutant in our regional drainage canals. Think about how many people live here and the household habits that may contribute pollution to the region's stormwater. What do you think rainwater picks up as it rolls across parking lots, lawns and pastures before draining into stormwater systems like a swale, pond or canals? Just imagine chemicals leaking from vehicles on roadways; inappropriately applied fertilizers and pesticides on urban landscaping; or, mismanaged pet and livestock waste. It all adds up...

LIVING CLOSE
TO THE
EVERGLADES
REQUIRES
EVERYONE TO
BE A WISE
RESOURCE MANAGER



The primary goal of equine “Best Management Practices,” or “BMPs,” is to eliminate or limit excess phosphorus, nitrogen and other pollutants produced by horses and livestock from entering canals and waterways through inappropriate pasture and stable practices. Besides ensuring better water quality for you, your livestock, neighbors and the Everglades – these equestrian BMPs will also help you maintain better pastures, improve livestock health and increase property values. Additionally, adopting BMPs will help protect you from related code enforcement problems.

Horse owners, equestrian facility managers, the South Florida Trail Riders Association, and Florida Farm Bureau have worked together with the South Florida Water Management District, the Florida Department of Agriculture & Consumer Services and the University of Florida Institute of Food and Agricultural Sciences (IFAS) to develop these recommended practices.



YOU
CAN
LEAD
A
HORSE
TO
WATER



IMAGINE 10 BLACK MARBLES IN A POOL OF A BILLION WHITE MARBLES—THAT’S WHAT 10 PARTS PER BILLION LOOKS LIKE. AND ALTHOUGH IT IS OK FOR DRINKING WATER TO HAVE HIGHER CONCENTRATIONS OF PHOSPHORUS, THE EVERGLADES IS NATURALLY A “NUTRIENT-POOR” NATURAL SYSTEM. EVEN SMALL AMOUNTS OF UNNATURAL NUTRIENTS CAN UPSET THE NATIVE PLANTS AND ANIMALS THAT DEPEND ON THE HISTORIC RIVER OF GRASS.

where urban drainage canals discharge into the Everglades, the stormwater pollutant of concern is primarily phosphorus – a nutrient most commonly found in fertilizers. Stormwater discharges into the Everglades with phosphorus concentrations higher than 10 parts per billion (ppb) can upset the natural balance of the Everglades system. Achieving the restoration of the Everglades will require a significant reduction in the amount of phosphorus in stormwater. Improving the water quality of stormwater runoff is the responsibility of everyone that contributes pollutants.



ur regional system of drainage canals provides flood control and allows us to live in areas that were once part of the Everglades. Stormwater from the 50 to 60 inches of rain we receive annually drains across our property collecting pollutants before it is discharged into drainage canals. Depending on where you live, stormwater in nearby drainage systems is either discharged to the Atlantic or the Everglades. Any number of pollutants can be found in stormwater, but in southeast Florida

SOUTH FLORIDA’S WATER QUALITY CHALLENGE

GOOD HORSE SENSE
PROTECTING WATER RESOURCES



Equine Best Management Practices (BMPs) for Southeast Florida

APPROPRIATE FENCING

To reduce erosion and avoid water quality degradation, strategic location of your fences needs to be considered before installation.

- Ideally, install fencing to allow for rotation and resting of pastures
- Fence off areas that receive periodic standing water where possible
- Fence to prevent access of horses to canals or bodies of water connected to canals. And, provide alternative sources, like a water trough
- Fence along a canal or other surface water so that a buffer strip of vegetation will be created naturally to filter run off and prevent soil erosion
- Regular inspection and ongoing maintenance of fences should be part of the farm management plan
- The location and construction of all fences and its materials should comply with local, state and federal laws

PREVENTING SOIL EROSION

Exposed soil – meaning areas without vegetative cover – is susceptible to soil erosion. Besides being detrimental to property values, soil erosion allows soil sediments to drain into nearby surface waters. Eroded sediment can have high levels of phosphorus. Erosion and sediment control practices will prevent surface water quality problems and retain the property’s valuable topsoil.

- Maintain a vegetative buffer strip between paddocks or pastures and canals and roadways
- Construct berms where appropriate
- Use pasture management practices

PASTURE MANAGEMENT

- Where appropriate, consider subdividing large pastures into smaller ones and develop a rotational grazing system
- Maintain grass on pastures by rotating grazing areas, and make sure there is a [livestock drinking] water source for each pasture
- Overgrazing occurs when 50% or more of the plant has been removed all at once. This causes a stoppage of root growth and reduces grass production
- Confine animals for a portion of the day to prevent overgrazing

- Allow rest periods and use a high-intensity, short duration grazing technique to rejuvenate poor pasture
- Mow regularly to encourage grass and reduce weeds (1 year’s seed is 7 year’s weeds)
- Allow pasture grass to reach 6 inches in height before grazing and remove animals when 3 inches height remains
- Mow pastures to a uniform 3 inches height after grazing to stimulate equal growth of all plants

Fertilize Pastures according to Broward Turf & Landscaping BMPs:

- If you are not an experienced landscape professional, use a “slow release” form of fertilizer. Because it has been manufactured to release nutrients gradually, slow-release fertilizers will significantly reduce the potential for runoff and leaching. Most commercial fertilizers are a blend of slow release and quick release nutrients. Fertilizer having a high percentage of slow release nutrients has a reduced potential for environmental impact and damage to pastures.
- Use fertilizer with appropriate amounts of nitrogen, phosphorus and potassium
- Before using a fertilizer containing more than 2% phosphorus, do a “soil test” to determine if it justifies adding phosphorus
- Read the fertilizer label completely and conscientiously – and do not over apply
- Apply fertilizer on appropriate schedules of three small applications yearly rather than one single application, and reduce application rates in the summer wet season whenever possible
- Watch the weather before fertilizing. Whenever possible, postpone fertilizing when a precipitation of greater than 1 inch of rain is expected to reduce fertilizer loss and stormwater pollution

WEED MANAGEMENT

Weeds spread rapidly. Regular inspection of your property is critical and involves immediate action using one or more weed control practices:

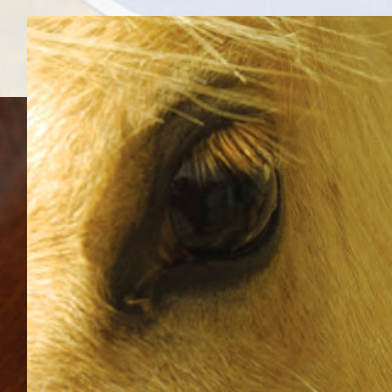
- Search for individual weeds and promptly remove, especially near water bodies or wetlands
- Avoid moving livestock from a weedy area to a weed-free area for at least 24 hours
- Mow weeds regularly before they go to seed
- Drag as needed to aerate the pasture manure with soil to encourage pasture growth, and use manure management practices

GOOD HORSE SENSE

To begin the BMP process, examine your property or where your livestock is boarded. Make a sketch showing property boundaries, fences and confinement areas, buildings, wells, septic system and drain field, wetlands and ponds, bare ground, and weeds and Non-native and invasive plants and vegetation. Also consider areas that are landscaped or pastured, neighboring land uses, ground contours and soil type.



Studying the property sketch, think about possible pollution sources. Is there a possibility that animal waste from the property might be entering canals and waterways? Could soil erosion on the property be making its way to neighboring properties or nearby surface waters? Is the pasture pond connected to a nearby canal, lake or wetland? Is the correct fertilizer being used for South Florida soils and semi-tropical environment – and what about pesticide usage, and the current system of waste management?



MANURE MANAGEMENT

Remove manure from stalls daily. Do not allow excess manure to accumulate in paddocks, corrals or pens.

- Spread manure on pastures at allowable rates using a spreader designed for the purpose
- Drag as needed to aerate the manure with soil to encourage pasture growth
 - Do not over-apply. Contact the local County Extension Agent to determine allowable agronomic rates.
 - Do not use manure spreader within 10 feet of canals or roadways
- Maintain a good deworming program for livestock to prevent parasites and worm eggs in manure that will be reapplied to pastures
- Compost manure to create topsoil/fertilizer
- Create two manure piles: one active, one dormant
- Position manure piles away from canals/roads/neighboring residence’s plot lines
- Utilize composted manure on lawns, gardens or pastures as fertilizer
- Create compost piles or containment areas away from canals, roads and neighboring residences
- Compost piles should be enclosed by a border at least 8 inches high and covered with an impervious surface to prevent leaching (such as a sheet of plastic)
- Arrange a manure pick-up service. Or arrange times for neighbors, gardeners, and nurseries to collect composted manure

MUD CONTROL

Mud is a slick, unsafe footing and harbors insects and bacteria, which cause illness and disease in livestock. A muddy farm is unsightly for the neighborhood and causes an increase in odors and flies. Mud can also be damaging to the environment by contaminating surface water with sediment runoff. The idea behind mud-control BMPs is to prevent mud from making its way into nearby surface water.

- Install gutters and downspouts on all buildings and divert away from confinement areas
- Maintain a grass strip – as wide as possible – around corrals, stalls or other confinement areas to serve as a filter for mud runoff
- Use suitable footing material in high-traffic areas

DISCONNECTING WATER BODIES

Where appropriate, keep pasture ponds separate from surface waters. Remove any existing drainage ditches or pipes that allow water from ponds or lakes on the land to enter canals or roadways. In other words, do not create drainage links between pasture ponds and nearby canals and other waterways, as well as to roadway swales or paved areas. But before disconnecting water bodies, contact your local drainage district or regulatory agency to determine that disconnecting the water body will not conflict with specifications or requirements from local regulations, permits or easements.

STORMWATER MANAGEMENT

A healthy wetland area reduces erosion and provides a good habitat for fish and wildlife as well as reducing pollution by filtering out unwanted nutrients and chemicals. Grazing in areas adjacent to canals, ponds and wetlands can destroy natural vegetation. Some suggested alternatives for maintaining healthy buffers are:

- Where feasible, construct berms on your property to retain stormwater and prevent runoff
- Create buffer strips of vegetation along canals and roadways on your property to filter run off and prevent soil erosion
- Maintain your property’s existing slopes away from canals and roadways
- When managing your farm or landscaping your property, remember that you should never change the grading of slopes that drain into canals, waterways or lakes. The grading is based on state and local minimum requirements and was designed by a State of Florida Registered Professional Engineer to meet water quantity and quality criteria
- Properly maintain water retention areas on your property:
 - Check your permit and or easement and follow specifications
 - Leave a “ring of responsibility” around pasture ponds [retention areas] by not fertilizing close to the water. This untreated area will serve as a natural buffer zone
 - Remove exotic and invasive vegetation from retention areas
 - These species can produce dense growth and decaying matter that threaten water quality
- Create drainage ditches to channel water from any catchment areas away from canals and roadways and to a water retention area

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

Small Acreage Farm & Ranch

Best Management Practices for *Protecting Florida's Water*





Do You Own a Small Acreage Farm or Ranch?

Most small acreage farms or ranches (often called ranchettes or farmettes) are rural properties, usually under 10 acres, where part of the land is used for agricultural purposes, including crops, livestock and horses.

For example, if your home is on several acres and you also have a horse on the land, your property could be considered a ranchette or farmette.



Your Role in Protecting Water Resources

As a ranchette or farmette owner, you play a significant role in protecting Florida's water resources. Some common land-use practices can potentially degrade these resources.

For example, improper irrigation techniques not only place stress on water supplies, but can also damage your property and your neighbor's property by causing erosion, flooding, etc. Storm water or irrigation water that runs off your land may carry pollutants from manure, fertilizer and pesticides into local water bodies. Uncontrolled animal access to water bodies can introduce harmful animal waste into the water supply.

Best Management Practices (BMPs) for Ranchettes and Farmettes

BMPs are tested methods, measures or practices designed to prevent or reduce harm to the environment. The BMPs listed in this brochure are practical and cost-effective ways to minimize pollutants entering water bodies, while also improving your land.



How Can BMPs Help You and Help Protect Florida's Water Resources?

- Improve crop/animal health
- Maintain better pastures
- Protect your land from soil erosion
- Manage weeds and control mud
- Increase property values
- Protect you from related code enforcement problems
- Reduce irrigation, fertilizer and herbicide costs
- Contribute to the improvement of Florida's water quality
- Contribute to the improvement of Florida's groundwater and surface water levels

Irrigation BMPs

- Wells used for irrigation should be constructed by a licensed driller
- Schedule irrigations according to soil moisture and crop water needs
- Adjust irrigation amounts to meet varying crop demands at different growth stages
- Apply irrigation uniformly and accurately; do not overspray onto impermeable surfaces



Fertilization BMPs

- Test soil to determine exact fertilizer needs
- Properly calibrate fertilizer application spreaders
- Apply fertilizer directly over root zone; for row crops, place fertilizer on top of beds; for pasture or field crops, fertilize the entire planted area
- Avoid applying fertilizer near roadways or water bodies
- Minimize overlapping fertilizer during application

Pasture BMPs

- Do not overstock your land with more animals than it can handle — follow the recommendations and guidelines of the University of Florida's Institute of Food and Agricultural Sciences
- Use high-intensity, short-duration grazing to rejuvenate poor pasture
- Allow grass to reach 6 inches before grazing; remove animals when 3 inches remain
- Mow regularly to encourage grass and discourage weeds
- If available, fertilize pastures according to site-specific soil test recommendations or the guidelines of the University of Florida's Institute of Food and Agricultural Sciences



Fencing BMPs

- Fence off or limit animal access to natural water bodies
- If needed, pipe water from streams or lakes to a trough located away from the water body
- Fence off animal access to areas that receive periodic standing water
- Use fences to divide pastures into temporary plots for rotational grazing



Stormwater BMPs

- Maintain vegetation buffers around animal confinement areas
- Locate animal confinement areas away from water bodies
- Divert uncontaminated surface and roof runoff away from animal facilities
- Construct berms to retain storm water on your land
- Maintain existing slopes away from canals and roadways
- Create drainage ditches to channel water away from water bodies and roadways and into a water retention area
- Direct storm water away from wellhead
- Ensure standing water does not pool around wellhead

Erosion Prevention BMPs

- Allow vegetative buffer strips to grow along water bodies
- Do not leave bare soil exposed to the effects of erosion
- Prevent overgrazing by confining animals for a portion of the day or using rotational grazing

Drainage BMPs

- Keep pasture and constructed ponds separate from natural water bodies
- Do not create drainage links between constructed ponds and nearby water bodies



Pasture Weed Control BMPs

- Frequently search for weeds
- If weeds are discovered, either pull them or use a herbicide recommended by the University of Florida's Institute of Food and Agricultural Sciences for the specific weeds
- Buy only hay that is free of weed seeds
- Plant only certified grass seed
- Mow weeds regularly before they go to seed
- Wash your vehicle after being in a weed-infested area
- If using herbicides, avoid spraying on windy days and near water bodies
- Do not spray herbicides immediately before, during or immediately after a rainfall



Manure BMPs

- Store manure in covered areas protected from weather
- Do not allow excess manure to accumulate in animal confinement areas
- Do not accumulate or store manure in low-lying areas where water collects
- Drag pastures as needed to aerate manure and soil using the recommended rates of the University of Florida's Institute of Food and Agricultural Sciences
- Spread manure at allowable rates using a spreader designed for the purpose
- Do not spread manure within 10 feet of canals or roadways
- Compost your manure to improve the fertilizer value
- For excess manure, use a manure pickup service or arrange times for gardeners or nurseries to collect composted manure
- Maintain a good deworming program for animals



Mud Prevention BMPs

- Maintain a grass strip around animal confinement areas
- Use suitable foot material (such as paving stones or rocks) in high-traffic areas
- Install gutters and downspouts on all buildings and divert them away from animal confinement areas

Septic Systems

Properly maintained septic systems help protect the environment by reducing pollution. As a homeowner, you are responsible for maintaining your septic system. You should have your septic system inspected every two to three years and pumped as needed. For more information on proper septic system maintenance, visit WaterMatters.org/publications to read the brochure entitled “Your Septic System Is Your Responsibility.”

Florida-Friendly Landscaping

In addition to following these BMPs for your pasture and/or farmland, remember that a properly maintained Florida-friendly yard can help you conserve water and reduce pollution of water resources. For more information on Florida-friendly landscaping, contact your local county Extension office (telephone numbers on next page) or visit WaterMatters.org/yards/.

Need More Information?

For additional information on ranchette and farmette BMPs and Florida-friendly landscaping, visit the University of Florida Institute of Food and Agricultural Sciences Extension web site at *extension.ifas.ufl.edu/* or contact your county Extension office at:

CHARLOTTE: (941) 764-4340

CITRUS: (352) 527-5700

DESOTO: (863) 993-4846

HARDEE: (863) 773-2164

HERNANDO: (352) 754-4433

HIGHLANDS: (863) 402-6540

HILLSBOROUGH: (813) 744-5519

LAKE: (352) 343-4101

LEVY: (352) 486-5131

MANATEE: (941) 722-4524

MARION: (352) 620-3440

PASCO: (352) 521-4288

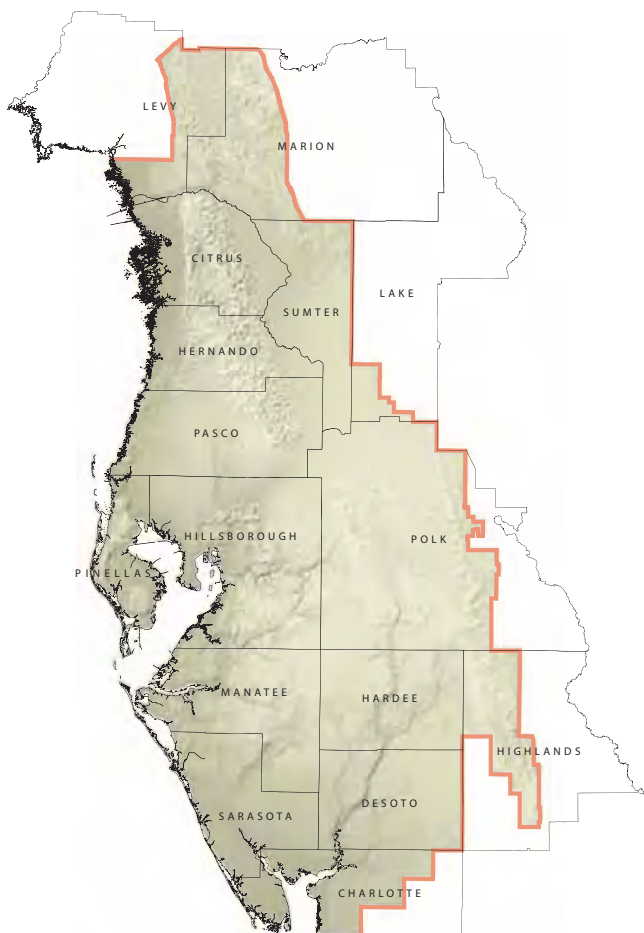
PINELLAS: (727) 582-2100

POLK: (863) 519-8677

SARASOTA: (941) 861-5000

SUMTER: (352) 793-2728

For technical assistance on implementing ranchette and farmette BMPs, contact the USDA's Natural Resources Conservation Service at (352) 338-9500, or visit their web site at *www.fl.nrcs.usda.gov/*.



Southwest Florida
Water Management District

WATERMATTERS.ORG · 1-800-423-1476

For a variety of free publications about protecting
Florida's water resources, call 1-800-423-1476, ext. 4757,
or visit WaterMatters.org/publications/.

This information will be made available in accessible formats upon request.
Please contact the Communications Department at (352) 796-7211 or
1-800-423-1476 (FL only), ext. 4757; TDD only at 1-800-231-6103 (FL only).

Managing Horse Manure by Composting

Lori K. Warren, Ph.D., Department of Animal Sciences

Key Points:

- *Properly prepared compost has many uses as a growing media, soil amendment, or slow-release fertilizer.*
- *Composted manure is more attractive than uncomposted stall waste, making it easier to give away or sell.*
- *Composting kills intestinal parasite eggs and larvae and destroys weed seeds, reducing the risk of re-infection if compost is spread on pastures.*
- *A well-managed manure pile can be composted in 2 to 3 months.*

Basic components needed for composting:

- ✓ Horse manure!
- ✓ Adequate space
- ✓ A mechanism for getting air into the pile
- ✓ A source of water
- ✓ A source of additional nitrogen (if needed)
- ✓ A bulking agent or high-carbon source (if needed)

Why Compost?

The average horse generates over 9 tons of manure each year (or even more if bedding is included). Managing such large volumes of manure can often be a challenge for many horse owners, particularly for those who may not have enough land to dispose of raw manure by spreading on pastures.

Although not a disposal method, composting offers horse owners one way to increase the value of horse manure. The heat generated by microorganisms living in the manure pile will destroy weed seeds and parasite larvae and eggs, making compost more attractive to gardeners and nurseries as a growing media or soil amendment. Composting also benefits the environment by stabilizing the nutrients in manure, making them less likely to be potential pollutants to surface or ground water. Compost can be applied to pastures as a slow-release fertilizer, reducing the risk of parasite re-infection, as well as the need for chemical fertilizers. Composting also reduces the odor and fly problems commonly associated with manure and decreases the volume of waste horse owners will have to dispose of by half.

Building a Composting System

Although composting can be accomplished with free-standing piles or windrows, most horse owners find they have better control of the process (and thus, faster composting) when manure and stall waste are placed in bins or some type of enclosure. Containing the pile also makes it easier to reduce the risk of water pollution from runoff or leaching.

Bins constructed from 2 x 6" (untreated) boards and heavy-duty posts will work best for most horse facilities. Materials need not be new; you may find suitable wood planks, concrete blocks, or other materials recycled from other farm/home improvement projects that can assist in containing the pile. The floor of each bin should be constructed of impermeable clay or concrete. A gravel access is convenient for loading or using a wheelbarrow to bring the manure to the heap. Covering the compost bins with a permanent roof, plastic sheet or tarp is recommended. Protecting the pile from rainwater will help you to regulate the proper moisture level, as well as reduce the risk of rain leaching contaminants from the pile and creating a pollution hazard.

At least two bins are recommended for small operations that support just a few horses, or for those with no mechanical equipment. In this scenario, the first bin is filled to capacity and periodically turned and mixed with a shovel or pitchfork to promote composting. When the first bin is full, materials can be added to the second bin.

Larger facilities, or those equipped with a small tractor or front-end loader, should consider building three or more bins. A series of bins allows the containment of waste at different stages of the composting process. In a three-bin system, manure and bedding are piled into bin one until it's full, then shifted into bin two for holding and composting. Meanwhile, bin one can be refilled. When bin one is full again, materials in bin two are shifted into bin three, and materials in bin one are shifted into bin two. Shifting material from one bin to the next serves as part of the turning and mixing process. Ideally, by the time bin one is full again, materials in bin three will be completely composted.

Determining Bin Size

The size of your compost bins will be dictated by the amount of manure and bedding produced, how long the materials will remain in the bin, and any equipment the bins will have to accommodate. In general, you should plan for at least 4 to 6 months of manure storage for composting.

Step 1: Calculate the amount of manure and bedding produced

An 1100-lb horse produces 50 lbs or one cubic foot of manure (urine + feces) each day. If manure is mixed with bedding, the volume can increase to 2 – 3 ft³ (or more). You can also count the number of wheelbarrow loads generated from stall cleaning each day and estimate the volume of each load.

Step 2: Determine how long the materials will remain in the bin

The use of only one or two bins usually means the materials will remain in the bins for longer periods (3 to 6 months). When using three or more bins, each bin should provide enough space to house material generated for about a one or two-month period. The volume of material in each bin will decrease over time as materials degrade, so subsequent bins may be slightly smaller if necessary.



Example Calculation: 2-Bin System for a Small Operation

Number of horses	2
Volume of manure and bedding generated each day	2 ft ³ /horse X 2 horses = 4 ft ³
Total storage capacity (number of months)	4 months (120 days)
Amount of manure generated	4 ft ³ /day X 120 days = 480 ft ³
Number of bins	2
Size of <u>each</u> bin	480 ft ³ / 2 bins = 240 ft ³ 240 ft ³ = 8 ft X 8 ft X 4 ft

Locating Your Compost Pile

Your composting system should be located on a fairly flat site, away from low lying areas, to prevent storm water from pooling and carrying away potential water contaminants. In addition, your compost site should be situated away from springs or wells (minimum distance 300 feet) and open bodies of water, such as streams, lakes, rivers and wetlands (minimum distance 100 feet). Although a well managed system will not have a foul odor or attract flies, be considerate of your neighbors by locating your bins out of view and downwind. Remember to allow room to maneuver mechanical equipment (if used). You may also wish to situate the pile near a water hydrant for ease of adding moisture when needed.

Managing Your Compost Pile

Management of the pile can be kept simple or be quite sophisticated, and should be customized to fit your specific situation. However, if you devote some time and energy to managing the pile correctly, you will produce better quality compost in a faster period of time.

Remember that composting is a flexible process—it will occur over a broad range of conditions. Decomposition will take place even if a compost pile doesn't contain the “ideal” mixture of ingredients or is ignored after it has been built, but at a slower rate. Trial and error is an essential part of successful composting, so do not feel discouraged if the process is not going as you anticipated. By monitoring your compost pile regularly, you can learn what is needed to improve the process. Most adjustments are very simple and problems are easily corrected.

1. Amassing the pile

Add manure and bedding directly to the compost pile as you clean your horse stalls. This is also the best time to add water if needed. Manure picked up from riding rings, arenas, trails and corrals can also be added directly to the pile. Avoid picking up too much dirt along with the manure and keep all trash out of the pile. A minimum pile size of one cubic yard (about the size of a standard washing machine) is needed to achieve composting temperature.

2. Monitoring the temperature of the pile

Effective composting temperatures range from 130 – 150°F. The center of a properly made heap should reach such temperatures within a week during the summer, or may take up to a month in cooler seasons. To destroy parasites and weed seeds, temperatures of 130 – 150°F should be maintained for at least 21 days. Piles that are too cool (below 130°F) break down more slowly and don't kill parasites or weed seeds. Piles that are too hot (above 160°F) kill the composting microorganisms and result in an extremely foul-smelling pile. The temperature of the compost pile should be monitored every 2 to 3 days to ensure active composting is taking place. Long-stemmed compost thermometers are available at most hardware and garden supply stores and are a relatively inexpensive investment.

3. Turning and mixing the pile

Microorganisms involved in composting need air. In addition, the most active site of composting takes place in the hotter center of the pile. Therefore, turning not only helps to aerate the pile, but also ensures that weed seeds and parasites in the cooler sections are destroyed by bringing them into the center to "cook."

Depending on your composting system and the amount of manure generated, the pile can be mixed and turned by hand with a pitchfork, or mechanically with a small front-end loader. Frequent turning accelerates the composting process; the more it's turned, the faster it breaks down. Turning may be done on a weekly or monthly basis, or may be based on the measured temperature of the pile. If using temperature as a guide, piles should be turned when temperatures fall to 100°F or when they rise above 150°F.

As an alternative to frequent turning, you may also elect to "passively aerate" your compost by inserting PVC pipes that have ½-inch holes drilled along each pipe at 6" intervals. These perforated pipes can be stuck down into the pile like chimneys, or inserted horizontally and layered along with the manure as the pile grows.

Occasional turning of the pile may still be needed to get manure on the outside into the center so the heat from the composting process can destroy parasites and weed seeds. Please note that it may take longer to compost manure aerated by PVC pipes compared to a pile that is actively mixed on a regular basis.

4. Adding water to the pile

All materials in the pile must be moist, but not soaking wet. Moisture can be gauged by squeezing a handful of compost. Compost that contains an adequate amount of moisture will feel like a freshly wrung out sponge. If water runs out of the pile or if you can squeeze water from a handful of compost, it is too wet. In this case, you will need to add straw, tree leaves, shredded bark, or old hay to dry the pile. If it doesn't feel moist, you need to add water. Consider watering your compost with a garden hose when you turn it. Or, an easy way to add water is to hose down the manure in your wheelbarrow before you dump it into the pile, if it's needed. Make it a habit to check the moisture content of the pile on a regular basis.

5. Amending the Pile with Nitrogen

By itself, horse manure contains the ideal mixture of nutrients and moisture for composting. However, quite often the manure horse owners would like to compost contains bedding. Bedding primarily contributes carbon to the compost pile, which can offset the amount of nitrogen provided by the manure. The more bedding you remove with manure during stall cleaning, the more likely you will need to add supplemental nitrogen to maintain the composting process, particularly with wood bedding (chips, shavings, sawdust, etc). Commercial fertilizers, such as urea, ammonium nitrate, or another high-nitrogen fertilizer, can be added to the pile to provide additional nitrogen. Ideally, nitrogen should be sprinkled on each wheelbarrow load of manure dumped on the pile each day. Alternatively, nitrogen can be mixed into the pile when it is turned. Refer to the table below for guidelines on amending the compost pile with nitrogen.

Guidelines for amounts of supplemental nitrogen to add per ton (2000 lbs) of stall waste using common sources of nitrogen.

Manure : Bedding Ratio (by weight)	Type of bedding	Nitrogen Source (% N)		
		Urea (46% N)	Ammonium Nitrate (33% N)	Calcium Nitrate (15% N)
1 part manure : 1 part bedding	Straw or Hay	None	None	None
	Wood shavings	20 lbs	30 lbs	60 lbs
1 part manure : 2 parts bedding	Straw or Hay	15 lbs	20 lbs	40 lbs
	Wood shavings	30 lbs	40 lbs	90 lbs

Is it Ready?

A well-managed manure pile will be completely composted in as quickly as 60 days. The average time to completion for most horse owners is 120 days. Piles that don't have enough nitrogen, water or air, or those that aren't maintained, break down much more slowly, taking 6 to 12 months or more.

Finished compost will not heat up after routine turning and mixing. Compost will smell "earthy" and look like rich soil.

Putting Compost to Use

After you have successfully produced compost you need to think about what you will do with it. Composted manure is often a more attractive product than raw manure, making it easier to give away or sell to others if you cannot use it yourself. Properly prepared compost has many uses, including:

- **Soil Amendment.** Composted horse manure can be used to increase the organic matter content and the water and nutrient-holding capacity of sandy and heavy clay soils.
- **Growth Media.** Finished compost can be used by plant nurseries as potting soil and is an excellent media for the production of mushrooms, roses and fishing worms.
- **Mulch.** Compost can be a valuable mulching material for garden and landscape plants. And if used as mulch, the compost need not be completely finished.
- **Slow-release Fertilizer.** When applied to lawns, cropland or pastures, finished compost can supply a modest amount of nutrients that will be released slowly over time. Since compost is already broken down, it does not deplete the soil of nitrogen needed by plants to grow. Nitrogen depletion can occur when uncomposted manure is spread on fields. And because composting kills parasites and weed seeds, the risk of re-infection is reduced. Additional fertilization may be necessary to obtain acceptable growth yields when compost is applied as fertilizer.

Trouble Shooting

Symptom	Cause	Solution
Compost pile will not get hot	Pile may be too dry	Add water
	Pile may contain too much bedding (carbon)	Add fertilizer or manure to supply more nitrogen
	Pile may be too wet	Add more bulking materials; cover from rain
	Pile may be too small	Build a bigger pile
Compost has foul smell	Pile may be too wet	Add more bulking materials and turn pile
	Pile may need more air	Turn the pile more often
	Pile may contain a dead animal	Remove the carcass
Compost pile doesn't seem to be breaking down	Pile may be too dry	Add water
	Pile may be too small; not holding heat	Build a bigger pile
	Pile might not contain enough nitrogen	Add fertilizer or manure to supply more nitrogen



February 5, 2013

NAME
ADDRESS
CITY, STATE, ZIP

Subject: Gottfried Creek Ranchette and Small Farm Workshop

Dear:

We just wanted to say that we missed you at the Ranchette and Small Farm Workshop held at the Englewood Sports Complex on January 23, 2012.

Dr. Robert Kluson, the Natural Resources and Agricultural Extension Agent ~~of~~for Sarasota County, gave an excellent presentation describing how Agricultural Best Management Practices (BMPs) can be used as guidelines for managing run-off of water, nutrients (fertilizers), pesticides, and animal wastes ~~on~~from ranchettes and small farms to minimize impacts on Florida's natural resources.

Since the Florida Department of Environmental Protection determined Gottfried Creek to be impaired for fecal coliform bacteria, the main focus of the workshop was to provide property owners with information about proper pasture and waste management techniques. These BMPs are designed to prevent fecal coliform bacteria from entering Gottfried Creek through either direct (intentional discharge) or indirect (stormwater runoff) pathways.

We encourage you to take an inventory of your property using the enclosed property sketch sheet to identify flow patterns across your property and to devise simple, inexpensive solutions to prevent pollutants from reaching ponds, ditches, canals, and, ultimately, ~~Gottfried~~ Creek.

For your convenience, we are also enclosing brochures and other information that was made available at the workshop that should be helpful as you assess your property.

If you ~~would be~~are interested in attending another workshop, would like assistance with the sketch sheet, or need additional information, please don't hesitate to contact me at (941) 650-1640 or kmeaux@scgov.net.

Sincerely,

Kathryn L. Meaux, ESIII
Sarasota County Water Resources

Enclosures

Appendix D

Pet Waste Campaign

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Did you know the Florida Department of Environmental Protection has determined **GOTTFRIED CREEK** to be impaired for fecal coliform bacteria?

What are fecal coliform bacteria?

Indicator bacteria that live in the digestive system of humans and other warm-blooded animals.

Where do they come from?

They come from a variety of sources such as leaks in sewer lines, failing septic systems, stormwater runoff, human sewage, birds, wildlife, pet waste, and farm animals.

What can we do?

Learn how to be a responsible pet owner to protect **Gottfried Creek** from fecal pollution.

LINKS

INFORMATION:

www.dep.state.fl.us/water/tmdl

<http://watersheded.com/topics/pet-waste>

COMPOSTING PET WASTE:

<http://cityfarmer.org/petwaste.html>

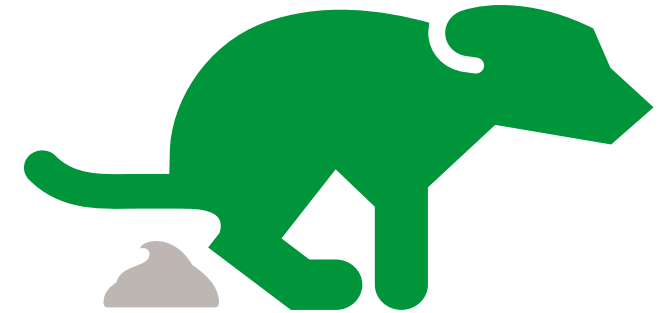
<http://www.greenyour.com/lifestyle/pets/cat/tips/compost-your-pets-waste>

<http://www.plantea.com/dog-waste-compost.htm>



Sarasota County Environmental Services
1001 Sarasota Center Blvd.
Sarasota, FL 34240
941-861-5000

Protect **GOTTFRIED CREEK**
by Picking Up After Your Pet!



**PET
WASTE
POLLUTES!**

BE A RESPONSIBLE PET OWNER

WHAT YOU SHOULD DO.

Throw it in the garbage.

Seal the pet waste in a plastic bag and dispose of it in your trash can.

Bury it in your yard.

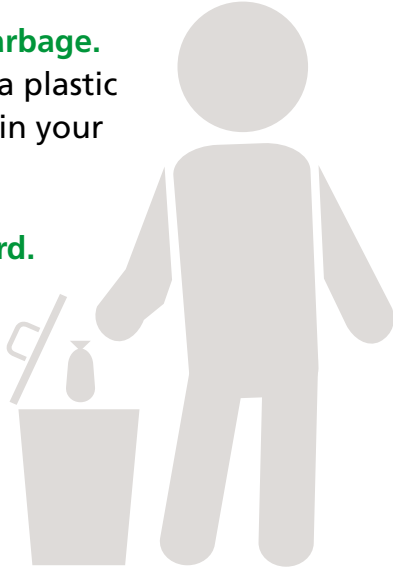
Dig a trench or hole about 5 inches deep and away from any vegetable gardens, wells, or bodies of water.

Compost it.

There are many in-ground and above-ground compost bin designs and methods available. **DO NOT** put the pet waste composting area near your household compost, wells, storm drains, ponds, lakes, ditches, or other bodies of water.

Hire a pet waste removal service.

Just make sure the waste is picked up regularly and that the service is disposing of it properly.



WHAT YOU SHOULDN'T DO.

NEVER leave pet waste on the ground, on the sidewalk, or in the street.

Proper disposal prevents harmful bacteria from polluting waterways and endangering public health.

NEVER throw pet waste into a storm drain, ditch, pond, lake, or any other body of water.

NEVER flush pet waste down the toilet.

Even though the pet waste would go to a sewage treatment plant, flushing it wastes water, especially during a drought.

When composting pet waste, NEVER add it to your household compost pile.

The temperature will not be hot enough to kill the bacteria and parasites in the pet waste. Compost it separately.



IMPORTANT FACTS:

Storm drains in Sarasota County are not connected to a wastewater treatment plant.

Pet waste left on sidewalks, streets, yards or open spaces can be washed away and carried by rainwater into storm drains and drainage ditches, which flow to nearby lakes, streams, rivers and bays.

A single gram (about 1/4 teaspoon) of pet waste contains an average of 23 million fecal coliform bacteria, some of which can cause illnesses or diseases in humans.

In addition to human health risks, bacteria and parasites in pet waste can cause serious water quality problems, resulting in polluted drinking water, "No Swim" beach advisories, shellfish bed closures, and surface water impairments.

GOTTFRIED CREEK WALK THE WATERBODY
PET WASTE CAMPAIGN
BROCHURE DISTRIBUTION LOCATIONS

Animal Shelters

1. Ears Animal Rescue Sanctuary
145 W. Dearborn St.
Englewood, FL 34223
941-475-0630

Libraries

1. Elsie Quirk Library
100 W. Dearborn St.
Englewood, FL 34223
941-474-3515

Humane Societies

1. Humane Society Suncoast
6781 San Casa Dr.
Englewood, FL 34224
941-474-7884
2. Suncoast Humane Society
290 S. Indiana Ave.
Englewood, FL 34223
941-361-1038

Parks

1. Englewood Sports Complex
1300 S. River Road
Englewood, FL 34223
941-474-5845
2. Englewood Recreation Center
101 N. Orange St.
Englewood, FL 34223
3. Lemon Bay Park
570 Bay Park Blvd.
Englewood, FL 34223

Pet Stores

1. Mike's Aquarium & Pet Shop
447 S. Indiana Ave.
Englewood, FL 34223
941-473-1041

2. Pet Supermarket
1951 S. McCall Rd., Ste 100
Englewood, FL 34223
941-475-1500
3. Pac
395 W. Dearborn St.
Englewood, FL 34223
941-474-7444

Veterinarians

1. Loving Care Animal Hospital
2011 Englewood Rd., Englewood, FL 34223
941-474-7771
2. Englewood Animal Hospital
340 N. Indiana Ave.
Englewood, FL 34223
941-474-1295

Appendix E

Thomas Ranch

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Developers plan 11,000 homes for North Port

By [John Hilscher](#)

Published: Friday, May 30, 2014 at 11:24 a.m.

Canada's largest home builder plans to team up with a Sarasota developer and land buyer to construct more than 11,000 homes in South County.

Mattamy Homes plans for Thomas Ranch, a 9,650-acre tract in and around North Port, come after the company paid \$86.25 million to acquire the ranch.

Development is expected to begin in 2016 and span 20 to 25 years, with 700 to 2,000 homes built at a time.

The property has already been approved for more than 11,000 homes and 3 million square feet of commercial space.

Vanguard Land Co., a Sarasota real estate acquisition and development firm headed by former Taylor Woodrow N.A. CEO John R. Peshkin, will be a minority partner and provide planning and direction.

"It's very rare to find a property of this size with the comprehensive plan approvals," Peshkin said Friday. "It's a great location and a great market, one of if not the best tracts of land on the west coast of Florida."

Thomas Ranch also marks the largest real estate purchase for Mattamy in its 10 years of operating in the United States.

"What was compelling about the deal was that the property has development time lines that are almost generational in length," said Peter Gilgan, Mattamy's founder and CEO.

"And we're also extremely excited about the growth potential of this part of Florida — we believe that the baby boomer demographic will continue to look to Florida as a place they want to retire, and this parcel of land will serve that need exceptionally well."



HERALD-TRIBUNE ARCHIVE / 2007
The entrance to Thomas Ranch on U.S. 41 between Venice and North Port.

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Printed on page BM3

Thomas Ranch expansion rejected

By Doug Sword

Published: Wednesday, May 14, 2008 at 6:52 a.m.

A vast development in South Sarasota County was voted down Tuesday after county commissioners said they feared the raw size of the project and the impact it would have on area roads.

The 3-2 tally against the southern expansion of Thomas Ranch, known as the Gottfried Stewardship District, came despite about \$200 million worth of road building commitments from the developer.

Tuesday's defeat may represent the last major effort by a developer to build big in the county's rural areas. A measure that passed in November requires a supermajority vote of 4-1 for commissioners to approve similar projects. A measure passed last week boosted the requirement to 5-0.

The Thomas Ranch expansion, though, which called for 5,700 homes and 300,000 square feet of commercial space on 2,850 acres, was already in the pipeline and needed just four commissioners to support it.

In the end, despite the long list of commitments, only two commissioners were for it.

"I'm thrilled, of course," said Ann Kaplan, president of the Sarasota Council of Neighborhood Associations, or CONA, which opposed the project.

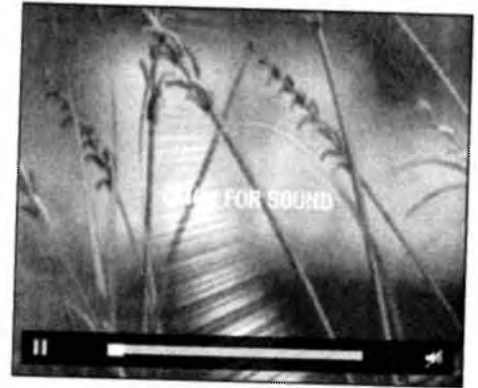
Voter approval of three anti-development ballot questions over the last 14 months, particularly last week's 79 percent vote, influenced the commissioners' votes, Kaplan said.

Commissioners Jon Thaxton, Nora Patterson and Shannon Staub voted down the project. Paul Mercier and Joe Barbetta favored the development, mainly because of commitments by the developer to spend more than \$180 million on a South County road network that would have added four major roads between Englewood, North Port and Venice. The developer also would have contributed toward the \$90 million widening of North River Road.

Thomas Ranch's newest project is called the Gottfried Stewardship District because it drains into Gottfried Creek. But it is really the southern section of the 10,000-acre Thomas Ranch, most of which is in North Port and already slated for development.

In all, the North Port portion includes 7,500 acres, 15,000 homes and more than 3 million square feet of commercial, retail and office space, or more than three Westfield Sarasota Square malls.

The added commercial and retail space of the expansion so close to Englewood "would no doubt compete" with Dearborn Street and the county's efforts to bring commerce to the village's center, Staub said.



As for what happens next, that is uncertain from the developer's standpoint, said Thomas Ranch attorney Jeffrey Boone.

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"Clearly what's next is there's no way to get River Road built," Boone said, referring to the developer's offer to front the \$90 million to widen North River Road.

Then there is the other \$180 million Thomas Ranch offered to spend extending Gissenger Street and Manasota Beach and Keyway roads eastward across the development and constructing a new north-south road, West Villages Parkway.

"These roads will be built, it's just taxpayers will have to pay for it," Boone said.

Current zoning allows Fourth Quarter Properties, also known as Thomas Ranch, to build 441 estate homes on the 2,850-acre Gottfried expanse, with an option to seek a rezoning to boost that to 1,072.

The commission's vote also invalidates another promise from the developer, which was to limit development on an adjacent property it owns to 1,300 homes.

If Fourth Quarter Properties wins rezoning for that property and its Gottfried land, it could build more than 4,300 homes there. Rezonings require a 3-2 vote from county commissioners.

While Staub and Patterson did not voice strong opposition to the project until just before Tuesday's vote, Thaxton has criticized the project for months as unjustifiable because of its impact on roads, water supplies and other infrastructure.

This story appeared in print on page BM3

Printed on page A1

City OKs Taylor Ranch plan

After reviewing a developer's proposal three times, North Port approves designating the property as an improvement district.

By PATRICK WHITTLE

Published: Thursday, January 22, 2004 at 3:26 a.m.

NORTH PORT -- The third time was the charm for developer Stan Thomas.

The Georgia-based developer's bid to designate a 7,800-acre former Taylor Ranch property as a Special Improvement District, with its own taxation powers and governing body, won unanimous approval from the City Commission on Wednesday after failing in February and November of 2003.

The city's passage of the plan, which still must be approved by the state Legislature, opens the door for Thomas to sell bonds to finance roads and infrastructure for as many as 15,000 homes on his land over the next 15 years.

Thomas' representatives said they intended to bring the plan before the state in March, and break ground in mid-2005.

The plan essentially shifts the cost of providing infrastructure from the developer to the future residents of what would be called West Villages Improvement District.

The residents would repay infrastructure bonds through property assessments.

For example, Thomas is required by law to pay for roads and sewers to serve the area. But with a Special Improvement District he could float tax-free bonds to raise the money, and the residents would pay it back.

Thomas gained the commission's approval by clarifying how the taxation will affect future residents and by modifying his original proposal to give the city more control over the district.

During both previous votes, which resulted in the city's rejecting the proposal by a 3-2 margin, the commissioners voiced concerns over whether residents could be hit with unexpectedly costly assessments. They also worried that the district would have too much authority.

Thomas allayed the commissioners' concerns by adding two major changes to the proposal since the November vote.

Without a majority vote of residents, the district could make no improvements that would result in higher assessments.

Thomas also included a disclosure clause in the proposal, guaranteeing that people who buy into his development will be told that in addition to city and county taxes, they'll also pay special assessments to repay the bonds.



LACE UP FOR A CURE
Sunday, OCT 16
 6am-2pm - New Balance Sarasota

For more information,
 the map & registration [\[click here\]](#)

CELEBRATION LUNCH noon-2pm
 \$10 per ticket - 100% of the proceeds
 benefiting the Susan G. Komen for the Cure.

Lunch provided by

The other change specifies that the City Commission must approve any changes made to the district.

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"I think it never was our intention to usurp the authority of the city," said Thomas representative Bruce Williams. "I think the changing of the document did more to clarify it."

Thomas attorney Jeff Boone assured the commissioners that the city would have maximum control of the district.

"Basically folks . as we locals say, ain't nothing we can do without ya'll saying we can do it first," he said.

Commissioner Barbara Gross, who voted against the plan twice, said she was satisfied with the changes.

"I was always the most vocal opponent of this all the way," she said. "I think we've done the best we can to protect the people who will live there 10, 15 years from now."

The Thomas land, mostly south of U.S. 41 and west of River Road, was purchased as part of a 26-square-mile parcel he purchased for \$78 million in 2001 and 2002.

According to Boone, zoning changes could allow as many as 15,000 homes over the next 15 years on the land, which is now zoned for a maximum of 1,600 residences.

Boone said the district would probably be a mix of residential, commercial, and office space. He said a combination of Thomas and others would probably develop the property.

This story appeared in print on page A1

Appendix F

Presentations

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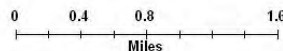
Gottfried Creek: *FDEP Walk the Waterbody Initiative*

*Sarasota County SEUAC
April 12, 2012*

*Kathryn L. Meaux
Sarasota County Water Resources*



Gottfried Creek Basin
WBID 2049



Why Walk the Waterbody?

- *Fecal Coliform TMDL for WBID 2049*
 - *First step in determining sources and identifying easy to implement management actions*
 - *Takes the Place of a Basin Management Action Plan (BMAP)*
 - *Cost Effective*
 - *Fosters improved relationships, communication, and cooperation among and within agencies and the public*
 - *Increases public awareness*
- 

Objectives of Walk the Waterbody

- *Bring together all stakeholders for participation and cooperation*
 - *Categorize conditions of watershed using GIS - Maps*
 - *All agencies with jurisdictional authority take part in Maps on the Table, WTW field inspection, and post-event follow-up.*
 - *Summary report with findings and action items*
 - *Implement management actions to eliminate sources and locate potential sources*
 - *Establish follow-up protocols for responsible agencies when a source is located*
- 

Gottfried Creek WTW Stakeholders

- *Sarasota County*
- *Englewood Water District*
- *Charlotte County*
- *City of North Port*
- *Sarasota County Department of Health*
- *Florida Department of Transportation*
- *Florida Dept. of Ag. & Consumer Services*
- *Fourth Quarters Properties – Thomas Ranch*
- *Lemon Bay League*
- *Lemon Bay Aquatic Preserve*
- *CHNEP*
- *Citizens Groups: Coastal Wildlife Club*

12-16-2012 Shoreline Inspection

- *Pre-WTW inspection*
- *Sarasota County and FDEP via boat*
- *Stormwater outfalls*
- *Suspect pipes/hoses*
- *Illicit discharges*
- *Homeless Camps*
- *Animals in or near Water: Horses, Cattle, Raccoons, Chickens, Birds*

2-28-2012 WTW Field Inspection

- *Wastewater*
 - *Any infrastructure in close proximity to surface waters: Lift Stations, Manholes, Air Release Valves*
- *Branches and contributing ditches*
- *Erosion or wash out*
- *Dense tree canopy*
- *Dense vegetation in stream*
- *Stagnant water*
- *Homeless camps*
- *Animals in water: Horses, Cattle, Raccoons, etc.*

2-28-2012 WTW Field Inspection

➤ *Stormwater*

- *Potential illicit connections, Storm drains and inlets*
- *Outfalls from ponds, Stormwater pipes, Suspicious pipes*



What We Did and Didn't Find

What We Didn't Find

- *Point sources*
- *Illicit connections*
- *Illicit discharges*
- *SSOs*
- *Obvious septic tank issues*
- *Homeless camps*

What We Did Find

- *Private lift station issues*
- *Potential farm animal impacts*
- *Concentrated wildlife populations*
- *Unmaintained open stormwater ditches*
- *Unmaintained ponds*
- *Potential manure mgmt. issues at small horse farms*

Next Steps

- *Thomas Ranch Tour*
- *Action Items*
- *Summary Report*

Summary and Benefits

- *Fecal coliform sources appear to be from nonpoint source stormwater pollution for Gottfried Creek*
 - *WTW is a common sense approach*
 - *WTW is a highly cost effective way to effectively address TMDLs without going through long, expensive process*
 - *WTW allows citizens to become involved in the process and provide input about what is going on in their watershed (own it)*
 - *WTW promotes communication*
 - *WTW fosters relationships*
- 

Summary and Benefits

- *Very Positive Press Coverage*
- *Limited Duration*
- *Stormwater quality will be improved*
- *DEP views Sarasota County very favorably*
- *WTW Gottfried will serve as a model for other fecal coliform TMDLs*

Walk the Waterbody Team



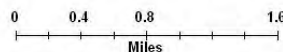
Gottfried Creek: *FDEP Walk the WBID (Waterbody) Initiative*

***CHNEP TAC Meeting
July 11, 2012***

***Kathryn L. Meaux
Sarasota County Water Resources***



Gottfried Creek Basin
WBID 2049



What is Walk the Waterbody?

- *FDEP initiative to address fecal coliform TMDLs*
- *A field reconnaissance event to record observations about the watershed, identify potential pollution sources, and recommend follow-up management actions.*
- *A simple, inexpensive way to identify potential water quality improvement opportunities*



FDEP Guidance



*Florida Department of
Environmental Protection*



Walk the Waterbody Training

General Version

Why Walk the Waterbody?

- *Fecal Coliform TMDL for Gottfried Creek (WBID 2049)*
- *Can take the place of a Basin Management Action Plan (BMAP)*
- *Highly cost-effective*
- *Time-saving*
- *Fosters improved relationships, communication, and cooperation among and within agencies and the public*
- *Increases public awareness*

Objectives of Walk the Waterbody

- *Bring together all agencies and stakeholders for participation and mutual cooperation*
- *Categorize conditions of watershed using GIS*
- *Identify current and potential bacteria sources and migration pathways*
- *Implement management actions to eliminate sources*
- *Establish follow-up protocols for responsible agencies when a source is located*
- *Final summary report with findings and action items*



Walk the Waterbody Steps

- *Choose lead entity*
 - *Identify stakeholders*
 - *Data collection and review*
 - *Aerial map of watershed*
 - *Maps on the Table exercise*
 - *Pre-field event surveys*
 - *Walk the Waterbody*
 - *Post-field event surveys*
 - *Summary report*
 - *Final stakeholder meeting*
- 

Gottfried Creek WTW Stakeholders

- *Sarasota County*
- *Englewood Water District*
- *Charlotte County*
- *City of North Port*
- *Sarasota County Department of Health*
- *Florida Department of Transportation*
- *Florida Dept. of Ag. & Consumer Services*
- *Fourth Quarters Properties – Thomas Ranch*
- *Lemon Bay League*
- *Lemon Bay Aquatic Preserve*
- *CHNEP, Charlotte Harbor Aquatic Preserve*
- *Citizens Groups: Coastal Wildlife Club*

Maps on the Table Exercise

- *FDEP leads the meeting*
- *Bring all stakeholders together*
- *Break down into small groups*
- *Review aerial map of watershed*
- *Identify known issues and potential problem areas*
- *Follow-up by lead entity*
 - *Compiles information*
 - *Plans pre-field event surveys*
 - *Plans WTW field event*
 - *Plans post-field event surveys, if needed*

12-16-2012 Shoreline Inspection

- *Pre WTW inspection*
- *Sarasota County and FDEP via boat*
- *Stormwater outfalls*
- *Suspect pipes/hoses*
- *Illicit discharges*
- *Homeless Camps*
- *Animals in or near Water: Horses, Cattle, Raccoons, Chickens, Birds*

2-28-2012 WTW Field Event

➤ *Wastewater*

- *Any infrastructure in close proximity to surface waters: Lift Stations, Manholes, Air Release Valves*

➤ *Stormwater*

- *Potential illicit connections and discharges; Outfalls from ponds; Suspicious pipes*

➤ *Branches and contributing ditches*

➤ *Erosion or wash out*

➤ *Dense tree canopy*

➤ *Dense vegetation in stream*

➤ *Septic tank issues*

➤ *Homeless camps*

➤ *Animals in water: Horses, Cattle, Raccoons, Hogs, etc.*

What We Did and Didn't Find

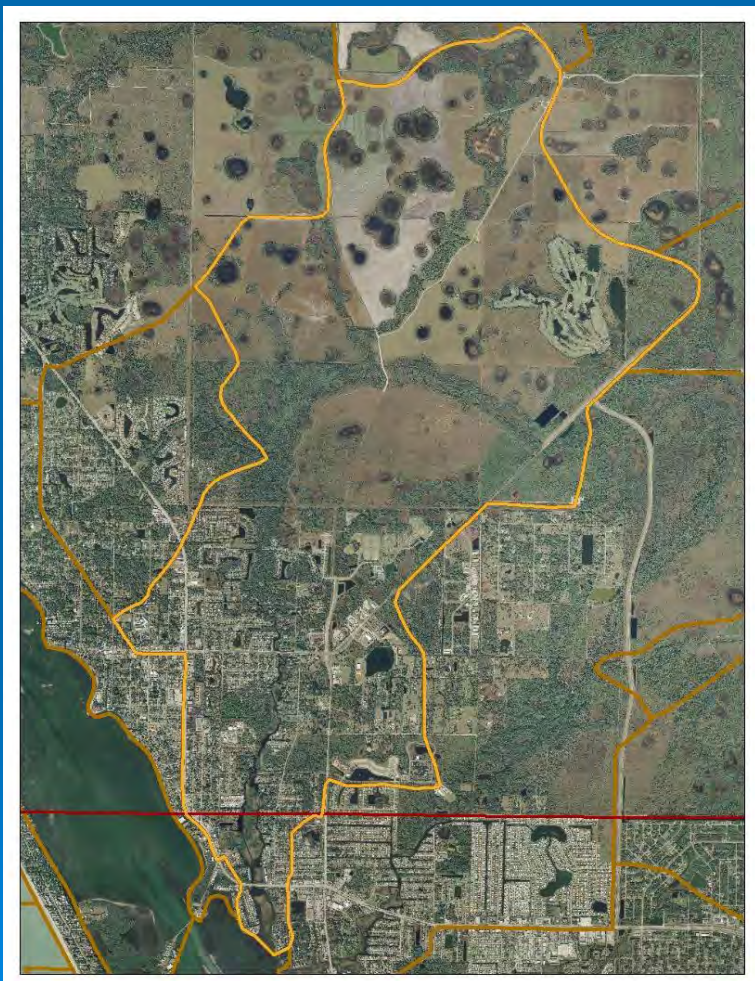
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- *Concentrated wildlife populations*
- *Unmaintained open stormwater ditches*
- *Unmaintained ponds*
- *Potential manure mgmt. issues at small horse farms*

5-10-2012 Thomas Ranch Tour



- *Thomas Ranch occupies upper third of basin*
- *Englewood Lateral weir*
- *Areas that cattle could access creek*
- *Concentrated wildlife populations*
- *FDACS follow-up with BMP program*

Thomas Ranch Tour Vehicle



Eric Anderson – Ranch Manager

**WTW Team:
Anita, Beth, Kathy, Noel**



5-10-2012 Ranchette Survey



- *Five to ten acre ranchettes in basin*
- *Small horse farms*
 - *Boarding, Training, Riding lessons*
- *Exotic bird breeder*
- *Cat and dog kennel and boarding*
- *Animal waste and manure management issue*

Next Steps

- *Summary Report*
 - *Finalize list of action items*
 - *Develop management strategies*
 - *Implement management actions*
 - *Establish follow-up protocols for responsible agencies when a source is located*
 - *Public education and outreach campaign*
 - *Follow-up stakeholder meeting*
- 

Summary and Benefits

- *Fecal coliform sources - nonpoint source stormwater runoff*
- *Common sense approach*
- *Highly cost effective way to effectively address TMDLs without going through long, expensive BMAP process*
- *Allows citizens to become involved in the process and provide input about what is going on in their watershed (own it)*
- *Action Items – Community education*

Summary and Benefits Cont'd

- *Promotes communication and fosters relationships*
- *Very Positive Press Coverage*
- *Limited Duration – Will have an end product*
- *Stormwater quality will be improved*
- *Gottfried Creek will serve as a model for future fecal coliform TMDLs in Sarasota County*

Acknowledgements – WTW Team

- *Beth Alvi, Anita Nash, and Jennifer Thera, FDEP*
 - *Tim Kirby and Rob Wright, Sarasota County Water Resources Staff*
 - *Hector Mendez, Sarasota County Department of Health*
 - *Jay Linden, Englewood Water District*
 - *Joanne Vernon, Charlotte County*
 - *Edgar St. Amand, City of North Port*
 - *Noel Martin, FDACS*
 - *Eric Anderson, Thomas Ranch*
 - *Leilani Farrell, Esciences, FDOT*
- 

Walk the Waterbody Team



Questions?



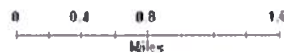
Gottfried Creek: *FDEP Walk the WBID (Waterbody) Initiative*

*Florida Stormwater Association
Winter Conference
December 6, 2012*

*Kathryn L. Meaux
Sarasota County Water Resources*



Gottfried Creek Basin
WBID 2049



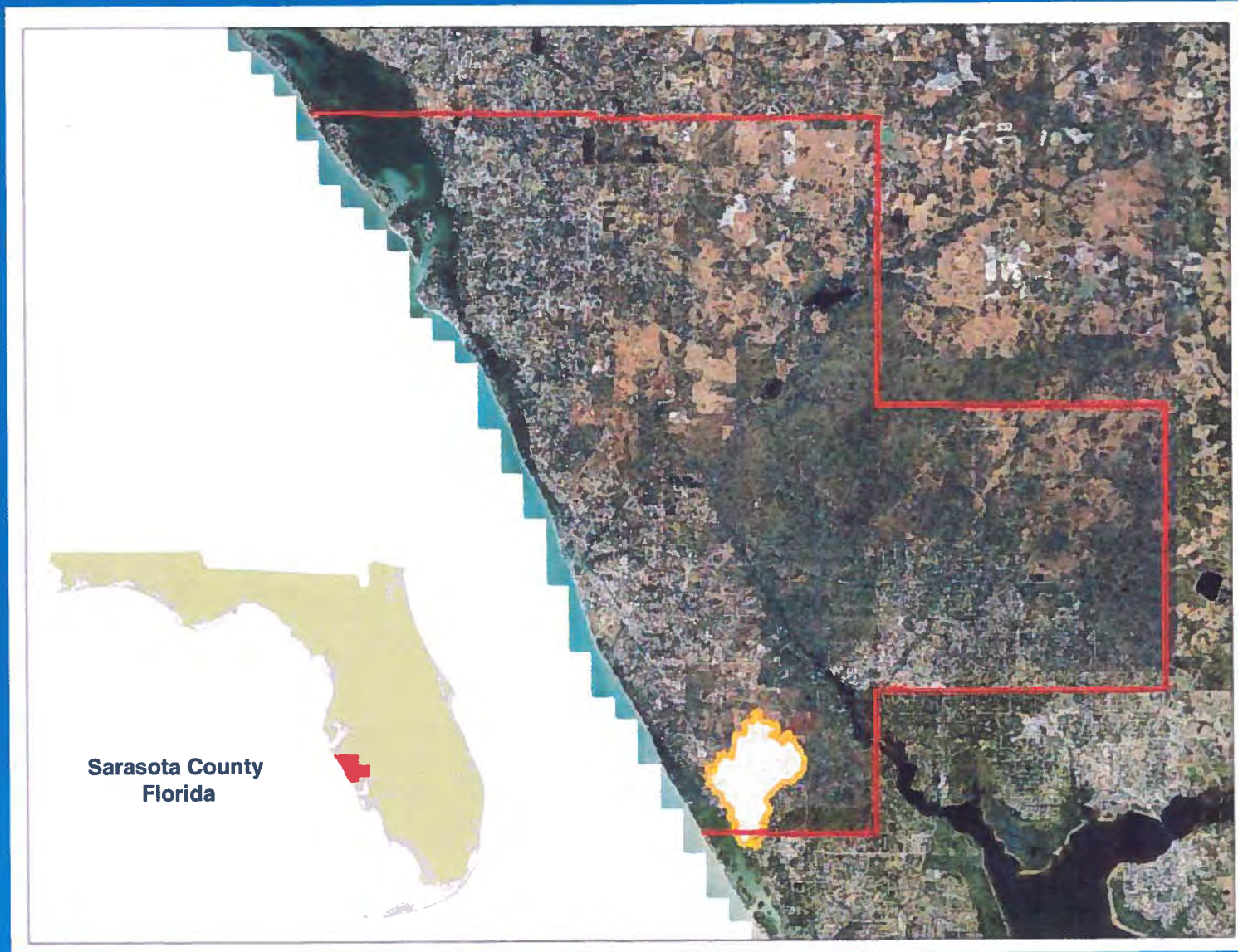
Gottfried Creek:

FDEP Walk the WBID (Waterbody) Initiative

- *What is Walk the Waterbody?*
- *Why Walk the Waterbody?*
- *Walk the Waterbody Objectives.*
- *Maps on the Table.*
- *Walking the Waterbody.*
- *Results*
- *Next Steps*



Gottfried Creek Basin



What is Walk the Waterbody?

- *FDEP initiative to address fecal coliform TMDLs*
- *A field reconnaissance event to record observations about the watershed, identify potential pollution sources, and recommend follow-up management actions.*
- *A simple, inexpensive way to identify potential water quality improvement opportunities*

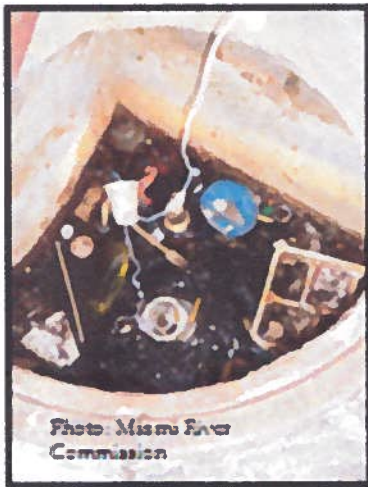
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FDEP Guidance



*Florida Department of
Environmental Protection*



*Photo: Miami River
Commission*

Walk the Waterbody Training

General Version

Objectives of Walk the Waterbody

- *Bring together all agencies and stakeholders for participation and mutual cooperation*
- *Categorize conditions of watershed using GIS*
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- *Lemon Bay Aquatic Preserve*
- *CHNEP, Charlotte Harbor Aquatic Preserve*
- *Citizens Groups: Coastal Wildlife Club*

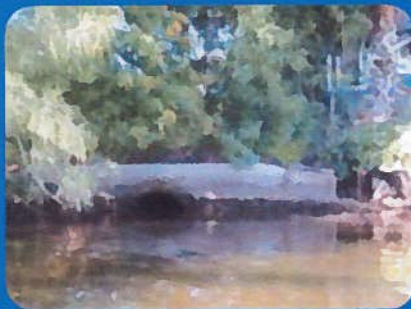
Maps on the Table Exercise

- *FDEP leads the meeting*
- *Bring all stakeholders together*
- *Break down into small groups*
- *Review aerial map of watershed*
- *Identify known issues and potential problem areas*
- *Follow-up by lead entity*
 - *Compiles information*
 - *Plans pre-field event surveys*
 - *Plans WTW field event*
 - *Plans post-field event surveys, if needed*

Shoreline Inspection



- *Pre-WTW Inspection*
- *Stormwater outfalls*
- *Suspect pipes/hoses*
- *Illicit discharges*
- *Sewage leaks*
- *Homeless camps*
- *Animals in or near Water: Horses, Cattle, Raccoons, Chickens, Birds*



Walking the Waterbody

2-28-2012



- *Wastewater*
 - *Lift Stations, ARV, Manholes*



- *Stormwater*
 - *Illicit discharges, outfalls, suspicious pipes*



- *Branches and contributing ditches*
- *Erosion or wash out*
- *Dense tree canopy and vegetation*



Walking the Waterbody

2-28-2012



- *Pet Waste Issues*
- *Septic Tank Issues*
- *Homeless Camps*
 - *Potential unsanitary conditions*
- *Animals in/near water*
 - *Horses, Cattle, Birds, Raccoons, Hogs, etc.*



Thomas Ranch Tour



- *Thomas Ranch occupies upper third of basin*
 - *11,000 Acres*
 - *800 Head of Cattle*
- *Weir Control Structure*
- *Areas that cattle could access creek*
- *Concentrated wildlife populations*
- *FDACS Ranch BMP Program*

Thomas Ranch Tour Team



Eric Anderson – Ranch Manager

**WTW Team:
Anita, Beth, Kathy, Noel**



Thomas Ranch Tour Team



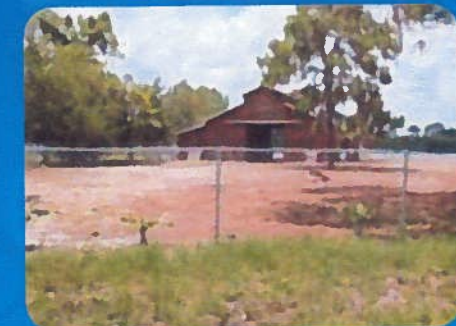
- Chipping and Mulching Operation
- Wetlands
- Improved Pasture
- Creek Conditions
 - Narrow
 - Heavy Vegetation
 - Dry Most of Year



Ranchette /Small Farm Survey



- Five to ten acre ranchettes in basin
- Small horse farms
 - Boarding,
 - Training,
 - Riding lessons
- Exotic bird breeder
- Cat and dog kennel and boarding
- Animal waste and manure management issue



What We Did and Didn't Find

What We Didn't Find

- *Point sources*
- *Illicit connections*
- *Illicit discharges*
- *SSOs*
- *Obvious septic tank issues*
- *Homeless camps*
- *Livestock access to creek on ranch*

What We Did Find

- *Private lift station issues*
- *Potential farm animal impacts*
- *Concentrated wildlife populations*
- *Unmaintained open stormwater ditches*
- *Unmaintained ponds*
- *Potential manure mgmt. issues at small horse farms*

Next Steps

- *Summary Report In Process*
- *Finalized list of action items*
 - *Develop management strategies*
 - *Implement management actions*
- *Establish follow-up protocols for responsible agencies when a source is located*
- *Ranchette/Small Farm Workshop*
- *Pet waste disposal campaign*
- *Follow-up stakeholder meeting*

Summary and Benefits

- *Fecal coliform sources - nonpoint source stormwater runoff*
- *Common sense approach*
- *Highly cost effective way to effectively address TMDLs without going through long, expensive BMAP process*
- *Allows citizens to become involved in the process and provide input about what is going on in their watershed (own it)*
- *Action Items – Community education*

Summary and Benefits Cont'd

- *Promotes communication and fosters relationships*
- *Very Positive Press Coverage*
- *Limited Duration – Will have an end product*
- *Stormwater quality will be improved*
- *Gottfried Creek will serve as a model for future fecal coliform TMDLs in Sarasota County*

Acknowledgements – WTW Team

- *Beth Alvi, Anita Nash, and Jennifer Thera, FDEP*
- *Tim Kirby and Rob Wright, Sarasota County Water Resources Staff*
- *Hector Mendez, Sarasota County Health Department*
- *Jay Linden, Englewood Water District*
- *Joanne Vernon, Charlotte County*
- *Edgar St. Amand, City of North Port*
- *Noel Martin, FDACS*
- *Eric Anderson, Thomas Ranch*
- *Leilani Farrell , Esciences, FDOT*

Walk the Waterbody Team



*Take the lead; You'll be glad
you did!*

Questions?

Walk the Waterbody

Sarasota Board of County Commissioners

June 10, 2013



Gottfried Creek

Kathryn L. Meaux

*Public Utilities Department
Water Resources*

Total Maximum Daily Load Cycle

- *Address if waterways meet standards*
- *If not, designate as impaired*
- *Develop restoration targets (TMDLs)*
- *Develop restoration plan (BMAP)*
- *Implement restoration (MPDES)*
- *Re-assess (Back to first step)*



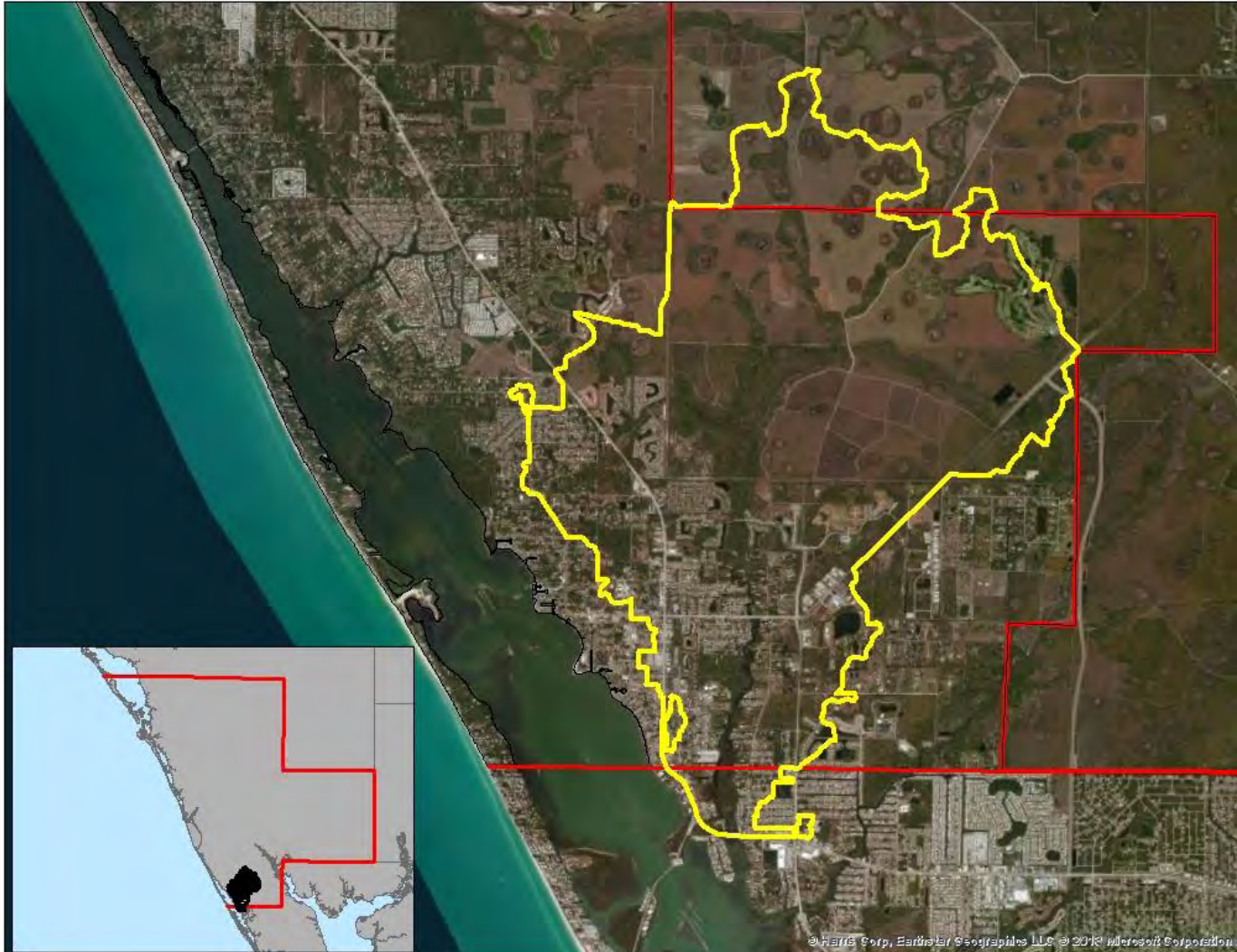
Today's Discussion

- *“Where” - is Walk the Waterbody?*
- *“What” - is Walk the Waterbody?*
- *“Why” – Walk the Waterbody?*
- *“When” - Timeframe*
- *“Who” - Stakeholders*
- *“How” – Walk the Waterbody Process”*
- *Walk the Waterbody Objectives*
- *What we Learned*
- *Follow-Up*
- *Summary*



Gottfried Creek

Gottfried Creek Basin



What is Walk the Waterbody?

- *FDEP initiative to address fecal coliform TMDLs*
- *Pro-active multi-jurisdictional field exercise*
- *Pollution source identification process*
- *Consensus building process*



Why Walk the Waterbody?

- *Fecal coliform TMDL adopted for Gottfried Creek*
- *May replace Basin Management Action Plan (BMAP)*
- *Cost-effective and Time-saving*
- *Improves communication and cooperation within and among agencies*
- *Increases public awareness*



Walk the Waterbody Objectives

- *Achieve water quality standards*
- *Provide a healthy waterbody*
- *Foster community stewardship*
- *Assist leaders with making well-informed watershed management decisions*
- *Meet the TMDL*

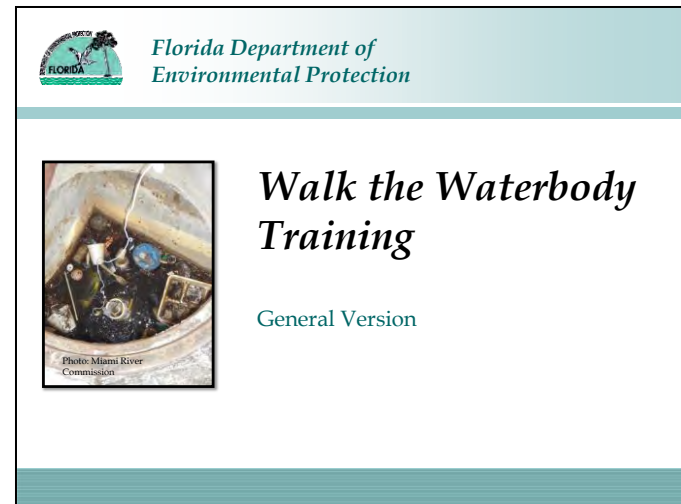


Gottfried Creek Stakeholders

- *Sarasota County*
- *Englewood Water District*
- *Charlotte County*
- *City of North Port*
- *Sarasota County Department of Health*
- *Florida Department of Transportation*
- *Florida Dept. of Ag. & Consumer Services*
- *Fourth Quarters Properties – Thomas Ranch*
- *Lemon Bay League*
- *Lemon Bay Aquatic Preserve*
- *CHNEP, Charlotte Harbor Aquatic Preserve*
- *Citizens Groups: Coastal Wildlife Club*

Walk the Waterbody Process

- *Planning*
 - *Choose lead entity*
 - *Identify stakeholders*
 - *Data collection and review*
 - *Aerial maps of watershed*
 - *Maps on the Table exercise*
- *Walking the Watershed*
 - *Pre-event Shoreline Survey*
 - *Walk the Waterbody*
 - *Post-event Surveys*
- *Follow-up*
 - *Action Items*
 - *Summary Report*



Maps on the Table Exercise

- ***FDEP moderates***
- ***Brainstorming exercise***
- ***Stakeholder Participation***
 - ***Review aerial maps***
 - ***Identify known issues & potential problem areas***
- ***Follow-up by lead entity***
 - ***Compile information***
 - ***Plan pre-field event surveys***
 - ***Plan WTW field event***
 - ***Plan post-field event surveys, if needed***



Shoreline Survey



- *Pre-WTW Inspection*
- *Stormwater outfalls*
- *Suspect pipes/hoses*
- *Illicit discharges*
- *Sewage leaks*
- *Homeless camps*
- *Animals in or near Water: Horses, Cattle, Raccoons, Chickens, Birds*



Walking the Waterbody



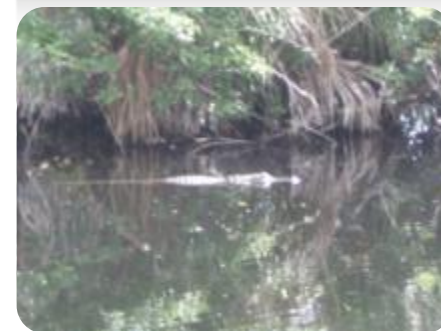
- ***Wastewater***
 - ***Lift Stations, ARV, Manholes***
- ***Stormwater***
 - ***Illicit discharges, outfalls, suspicious pipes***
- ***Branches and contributing ditches***
- ***Erosion or wash out***
- ***Dense tree canopy and vegetation***



Walking the Waterbody



- *Pet Waste Issues*
- *Septic Tank Issues*
- *Homeless Camps*
 - *Potential unsanitary conditions*
- *Animals in/near water*
 - *Horses, Cattle, Birds, Raccoons, Hogs, etc.*



Thomas Ranch Tour



- *Thomas Ranch occupies upper half of basin*
 - 11,000 Acres
 - 800 Head of Cattle
- *Weir control structure*
- *Cattle access to creek*
- *Concentrated wildlife populations*
- *FDACS BMP Ranch Program*

Thomas Ranch Tour Team



Eric Anderson – Ranch Manager

*WTW Team:
Anita, Beth, Kathy, Noel*



Thomas Ranch Tour



- *Chipping and Mulching Operation*
- *Cattle Breeding*
- *Isolated Wetlands*
- *Open Range*
- *Improved Pasture*
- *Weir Structure*
- *Creek Conditions*
 - *Narrow*
 - *Heavy Vegetation*
 - *Dry Most of Year*



Ranchette/Small Farm Survey



- *Five to ten acre parcels*
- *Small horse farms*
 - *Boarding*
 - *Training*
 - *Riding Lessons*
- *Exotic bird breeder*
- *Cat and dog kennel and boarding*
- *Animal waste and manure mgmt. issue*



What We Learned

What We Didn't Find

- *Point sources*
- *Illicit connections*
- *Illicit discharges*
- *SSOs*
- *Obvious septic tank issues*
- *Homeless camps*
- *Livestock access to creek on ranch*

What We Did Find

- *Private lift station issues*
- *Potential farm animal impacts*
- *Concentrated wildlife populations*
- *Unmaintained open ditches*
- *Unmaintained ponds*
- *Potential manure mgmt. issues at small horse farms*

Follow-Up

- *Action Items Addressed*
 - *Abandoned raw water lines capped*
 - *Private lift station locks and emergency signage*
 - *FDOT stormwater ponds cleaned*
 - *Sarasota County stormwater ditches maintained*
 - *Charlotte County stormwater ditches maintained*
 - *FDACS Ranch BMP Program for Thomas Ranch*
 - *Education – BMPs for Ranchettes and Small Farms*
 - *Education – Proper pet waste disposal*
- *Summary Report to FDEP*
 - *In review*

SUMMARY

- *Documentation of watershed characteristics*
- *No serious bacteria issues were discovered*
- *Issues found were quickly addressed*
- *Bacteria appears to be from natural sources*
- *Common sense & cost-effective approach*
- *Community participation and ownership*
- *Builds relationships*
- *Positive press coverage*
- *Water quality improvement*
- *Model for future fecal coliform TMDLs*

Walk the Waterbody Team



**Leilani Farrell, Kathy Meaux, Joanne Vernon, Jennifer Thera
Anita Nash, Edgar St. Amand, Tim Kirby, Jay Linden, Rob Wright
Hector Mendez, Noel Marton (Not Pictured), Eric Anderson (Not Pictured)**

Board Action

- *Today is for information and dialogue*
- *No requested board action*
- *Gottfried Creek WTW is not complete yet –
will send update when it is done*
- *5 other county waterbodies have Fecal Coliform
TMDLs*
- *Will request approval before we pursue another
WTW*

Questions?

Kathryn L. Meaux
kmeaux@scgov.net
941-650-1640

Appendix G

News Articles

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Site inspections seek source of creek's pollution

Anita Nash, a state environmental consultant, came all the way from Tallahassee to Englewood last week to take photographs of dog poop.

Nash also enlisted nine representatives from city, county and state agencies to spend the day helping her, in part by recording GPS coordinates so each deposit could be formally identified in a coming Department of Environmental Protection report.

Don't say it. This was not an example of — pardon the pun — government

waste.

Quite the opposite. Nash's exercise was the first in our area of a DEP initiative called Walk the Waterway. It turns out that diagnosing and solving an environmental problem is not as easy as taking a water sample and ordering up a test; instead, it requires hands-on examination and determined fact-gathering.



SOURCE: Southwest Florida Water Management District
STAFF MAP / BARRY MCCARTHY

In this case, the waterway was Gottfried Creek, which starts within the Thomas Ranch and empties south of the Tom Adams Bridge into Lemon Bay.

The DEP classifies Gottfried as polluted. The creek's level of



TOP: Kathy Meaux, an environmental scientist with Sarasota County, left, and Jarl "Jay" Linden, a P.E. Technical Operations Support manager in the Englewood Water District, plan their route to some of 30 select locations along Gottfried Creek in Englewood, as a team of 10 specialists examine the area looking for sources of possible pollution. **ABOVE:** Robert Wright, Neighborhood Environmental Stewardship Team (NEST) coordinator, uses a GPS device. **STAFF PHOTOS / ELAINE LITHERLAND**

fecal coliform bacteria indicates the presence of human or animal feces and possible pathogens, such as E. coli.

From 2001 to 2008, the creek exceeded the state's fecal coliform limit of 400 counts per 100 milliliters at 16 of 51 monitoring sites.

That was enough to earn an "impaired" designation, which requires Sarasota County to do something about it. One approach would entail hiring a consultant and devising an elaborate management plan. That would be expensive and time-consuming.

The second approach, adopted by the county, called for those who know the creek best to identi-

fy potential problem areas within its 7,229-acre watershed, which encompasses wetlands, agriculture and urban uses.

Finding the source of fecal coliform is difficult because there is no single point of pollution such as a sewage treatment plant.

Even so, representatives from North Port, Sarasota County, the state Department of Transportation, Charlotte County and the Englewood Water District, among others, came up with 30 places to check.

On Feb. 24, in an Englewood

BY ERIC ERNST

ERIC ERNST
COMMENT

Trying to find sources of pollution

ERNST from 1B

hopping center parking lot, Kathryn Meaux, an environmental specialist with Sarasota County, spread a map of the watershed over the trunk of her Honda Civic. Red dots marked the potential hotspots.

Before the crew from the different jurisdictions piled into a van for a day's work, Nash gave a short pep talk.

"We're all investigators," he said. "If you see something today that raises questions, ask them."

Nash said they would document and photograph overgrown ditches, livestock, wildlife, mysterious pipes, homeless camps, stagnant water and anything else that could cause water quality problems for the creek.

That included animal feces, whose influence should not be underestimated. "Pets (especially dogs) could be a significant source of coliform pollution through surface runoff within the Gottfried Creek," a March 2010 DEP report stated. "Studies report that up to 95 percent



Anita Nash, center, visits a horse pasture Tuesday along Gottfried Creek in Englewood. STAFF PHOTO / ELAINE LITHERLAND

of the fecal coliform found in urban stormwater can have nonhuman origins."

That day, the investigators spied about what one would expect: drainage ditches that needed to be cleared, a manhole cover with no lock, a trash bin pad that could use a cleaning.

"We found no smoking guns," Nash said.

Meaux will compile all the findings, the participants will review them, and the DEP will come up with recommendations. Those suggestions could include an emphasis on educating the public to maintain septic systems and lift

stations, manage manure piles or just pick up after their pets.

By the way, Nash and her peers found no photogenic dog poop on their journey. They did witness something better. In the Oak Forest subdivision, they saw two individuals picking up their dogs' droppings.

"It was a testament to the neighborhood's standards," Nash declared.

Someone snapped a shot for the record.

Eric Ernst's column runs Wednesdays, Fridays and Sundays. Contact him at eric.ernst@heraldtribune.com or (941) 486-3073.

March 6, 2012
pg 2

Ernst: Delving deeper into a polluted creek

By [Eric Ernst](#)

Published: Tuesday, March 6, 2012 at 3:02 p.m.

Anita Nash, a state environmental consultant, came all the way from Tallahassee to Englewood last week to take photographs of dog poop.

Nash also enlisted nine representatives from city, county and state agencies to spend the day helping her, in part by recording GPS coordinates so each deposit could be formally identified in a coming Department of Environmental Protection report.

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Even so, representatives from North Port, Sarasota County, the state Department of Transportation, Charlotte County and the Englewood Water District, among others, came up with 30 places to check.

On Feb. 24, in an Englewood shopping center parking lot, Kathryn Meaux, an



Robert Wright, Neighborhood Environmental Stewardship Team coordinator, uses a GPS device as a team of 10 environmental specialists visit some of 30 locations along Gottfried Creek in Englewood on Feb. 28 looking for sources of possible pollution. The Sarasota County-led effort in examining the areas is in response to the creek not meeting state or national standards for coliform counts. (Staff photo by Elaine Litherland)

environmental specialist with Sarasota County, spread a map of the watershed over the trunk of her Honda Civic. Red dots marked the potential hotspots.

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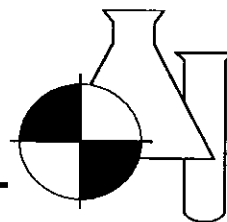
Eric Ernst's column runs Wednesdays, Fridays and Sundays. Contact him at eric.ernst@heraldtribune.com or (941) 486-3073.

Appendix H

Lab Reports

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BENCHMARK EA SOUTH



ANALYTICAL TEST REPORT THESE RESULTS MEET NELAC STANDARDS

NELAC Certification # E85086

Sarasota County Utilities
1255 T. Mabry Carlton Pkwy
Venice, FL 34293

Cesar Rodriguez

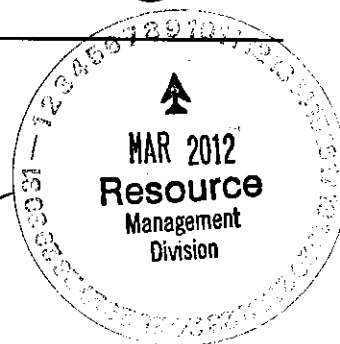
Submission
Number :

S 12020613 ✓

Project Name : GOTTFRIED CREEK ✓

Date Received : 02/28/2012 ✓

Time Received : 1632 ✓



Submission: S 12020613 ✓

Sample Number: 1 ✓

Sample Date: 02/28/2012 ✓

Sample Time: 1107 ✓

Sample Description: 022812 GOT-3 ✓

Sample Method: Grab

QUALITY
ASSURED

HB 3/9/12

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	10 U ✓	#/100 ML	10 ✓	10	SM9222D	02/28/2012	16:43	PR

HB Melinda Merchant

Dale D. Dixon / Laboratory Director

Melinda Merchant / Laboratory Manager

03/02/2012

Date

DATA QUALIFIERS THAT MAY APPLY:

A = Value reported is an average of two or more determinations.

B = Results based upon colony counts outside the ideal range.

H = Value based on field kit determination. Results may not be accurate.

I = Reported value is between the laboratory MDL and the PQL.

J1 = Est. value surrogate recovery limits exceeded.

J2 = Est. value. No quality control criteria exists for component.

J3 = Est. value quality control criteria for precision or accuracy not met.

J4 = Est. value. Sample matrix interference suspected.

J5 = Est. value. Data questionable due to improper lab or field protocols

K = Off-scale low. Value is known to be < the value reported.

L = Off-scale high. Value is known to be > the value reported

N = Presumptive evidence of presence of material.

Q = Sample held beyond accepted hold time(15 minutes for pH).

T = Value reported is < MDL. Reported for informational purposes only and shall not be used in statistical analysis.

U = Analyte analyzed but not detected at the value indicated.

V = Analyte detected in sample and method blank.

Y = Analysis performed on an improperly preserved sample. Data may be inaccurate.

Z = Too many colonies were present (TNTC); the numeric value represents the filtration volume.

? = Data rejected and should not be used. Some or all of QC data were outside criteria, and the Presence or absence of the analyte cannot be determined from the data.

! = Data deviate from historically established concentration ranges.

* = Not reported due to interference.

NOTES:

PQL = 4xMDL. Except for Micro PQL=MDL

X = Value exceed MCL.

For questions and comments regarding these results, please contact Melinda Merchant at (941) 625-3137

These results relate only to the samples included in this report.

Benchmark EnviroAnalytical, Inc.
1711 Twelfth Street East
Palmetto, FL 34221
(941)723-9986
(941)723-6061 Fax
BenchmarkEA@earthlink.net

Client: Sarasota County Environmental Services
Integrated Water Resources
1001 Sarasota Center Blvd.
Sarasota, FL 34240
(941) 650-1112
(941) 480-3558 Fax
PO#120429

Chain of Custody Form: Gottfried Creek

Laboratory Submission #:

512020613

Samp_ID	Type	Matrix	Fecal Coliform* (MF)				Lab Sample #
			(E)				
			NaThio				
			1x100mL				
022812 GOT-3	Grab	SW	Date: 02/28/2012 Time: 1107	1			1
022812 GOT-4	Grab	SW	Date: 02/28/2012 Time:	1			
022812 GOT-5	Grab	SW	Date: 02/28/2012 Time:	1			
022812 GOT-6	Grab	SW	Date: 02/28/2012 Time:	1			
022812 GOT-7	Grab	SW	Date: 02/28/2012 Time:	1			
022812 GOT-8	Grab	SW	Date: 02/28/2012 Time:	1			
022812 GOT-9	Grab	SW	Date: 02/28/2012 Time:	1			
022812 GOT-10	Grab	SW	Date: 02/28/2012 Time:	1			
022812 GOT-11	Grab	SW	Date: 02/28/2012 Time:	1			
022812 GOT-12	Grab	SW	Date: 02/28/2012 Time:	1			

1	Relinquished by collector:	Gottfried Creek	Date	Time	Received By:	Date	Time
2	Relinquished by:	Beth Wilson	Date	Time	Received By:	Date	Time
3	Relinquished by:		Date	Time	Received By:	Date	Time

Please use full sample ID on Analytical Test Report.
*Please use a dilution of 200,000 for Fecal Coliform.

Laboratory Sample Acceptability
Temp:
pH>2: 2.2°C

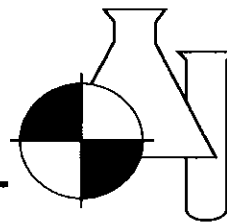
NELAC Certification # E85086

[illegible]

HB 7/16/12

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM	200	#/100 ML	10	10	SM9222D	07/02/2012	15:32	MM

BENCHMARK EA SOUTH



ANALYTICAL TEST REPORT THESE RESULTS MEET NELAC STANDARDS

NELAC Certification # E85086

Submission: S 12070025 ✓

Sample Number: 4 ✓

Sample Date: 07/02/2012 ✓

Sample Time: 1226 ✓

Sample Description: 070212 GOT-10 ✓

Sample Method: Grab

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	300 ✓	#/100 ML	10 ✓	10	SM9222D	07/02/2012	15:32	MM

HB 7/16/12
Melinda Merchant
Dale D. Dixon / Laboratory Director

07/06/2012

Date

Melinda Merchant/ Laboratory Manager

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These results relate only to the samples included in this report.

Laboratory Submission #:

512070025

[illegible]

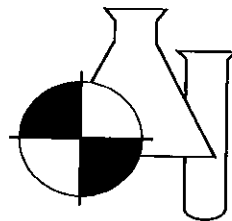
1	Relinquished by collector: <i>Patricia Mearns</i>	Date 7/2/12	Time 443	Received By: <i>Ph. L. L.</i>	Date 7/2/12	Time 1443
2	Relinquished by:	Date	Time	Received By:	Date	Time
3	Relinquished by:	Date	Time	Received By:	Date	Time

Please use full sample ID on Analytical Test Report.
***Please use a dilution of 200,000 for Fecal Coliform.**

Laboratory Sample Acceptability
Temp: 5.1°C BEAS
pH>2:

BENCHMARK

EnviroAnalytical Inc.



NELAC Certification # E84167

ANALYTICAL TEST REPORT

THESE RESULTS MEET NELAC STANDARDS

Submission Number : 12070568 ✓

Sarasota County Utilities Oper
1255 T. Mabry Carlton Pkwy
Venice, FL 34293

Project Name : IWR - GOTTFRIED CREEK ✓
Date Received : 07/16/2012 ✓
Time Received : 1435 ✓

Resource
Management
Division

Cesar Rodriguez

Submission Number 12070568 ✓

Sample Number: 001 ✓

Sample Description: 071612-GOT-11 ✓

Sample Date: 07/16/2012 ✓

Sample Method: Grab

Sample Time: 1000 ✓

QUALITY
ASSURED
ASSURED HB 7/24/12

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	6000 B ✓	#/100 ML	1000 ✓	1000	SM9222D	07/16/2012	15:50	MR

Submission Number 12070568 ✓

Sample Number: 002 ✓

Sample Description: 071612-GOT-12 ✓

Sample Date: 07/16/2012 ✓

Sample Method: Grab

Sample Time: 1025 ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	700 B ✓	#/100 ML	100 ✓	100	SM9222D	07/16/2012	15:50	MR

Submission Number 12070568 ✓

Sample Number: 003 ✓

Sample Description: 071612-GOT-13 ✓

Sample Date: 07/16/2012 ✓

Sample Method: Grab

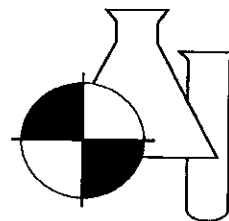
Sample Time: 1040 ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	12000 B ✓	#/100 ML	1000 ✓	1000	SM9222D	07/16/2012	15:50	MR

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BENCHMARK

EnviroAnalytical Inc.



NELAC Certification # E84167

Submission Number 12070568 ✓

Sample Number: 004 ✓

Sample Description: 071612-GOT-14 ✓

Sample Date: 07/16/2012 ✓

Sample Method: Grab

Sample Time: 1048 ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date	Time	Analyst
FECAL COLIFORM ✓	1970 B ✓	#/100 ML	10 ✓	10	SM9222D	07/16/2012 ✓	15:50	MR

Submission Number 12070568 ✓

Sample Number: 005 ✓

Sample Description: 071612-GOT-15 ✓

Sample Date: 07/16/2012 ✓

Sample Method: Grab

Sample Time: 1122 ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date	Time	Analyst
FECAL COLIFORM ✓	10 U ✓	#/100 ML	10 ✓	10	SM9222D	07/16/2012 ✓	15:50	MR

Submission Number 12070568 ✓

Sample Number: 006 ✓

Sample Description: 071612-GOT-BL ✓

Sample Date: 07/16/2012 ✓

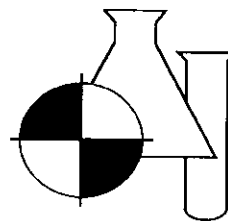
Sample Method: Grab

Sample Time: 1125 ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis Date	Time	Analyst
FECAL COLIFORM ✓	10 U ✓	#/100 ML	10 ✓	10	SM9222D	07/16/2012 ✓	15:50	MR

BENCHMARK

EnviroAnalytical Inc.



NELAC Certification # E84167

07/19/2012

Dale D. Dixon / Laboratory Director

Date

Tülay Tanrisever/ QC Officer

Jennifer Jordan / QC Officer

DATA QUALIFIERS THAT MAY APPLY:

A = Value reported is an average of two or more determinations.

B = Results based upon colony counts outside the ideal range.

H = Value based on field kit determination. Results may not be accurate.

I = Reported value is between the laboratory MDL and the PQL.

J = Estimated value.

J1 = Est. value surrogate recovery limits exceeded.

J2 = Est. value. No quality control criteria exists for component.

J3 = Est. value quality control criteria for precision or accuracy not met.

J4 = Est. value. Sample matrix interference suspected.

J5 = Est. value. Data questionable due to improper lab or field protocols

K = Off-scale low. Value is known to be < the value reported.

L = Off-scale high. Value is known to be > the value reported

NOTES:

PQL = 4xMDL.

MBAS calculated as LAS; molecular weight = 348.

X = Value exceed MCL.

N = Presumptive evidence of presence of material.

O = Sampled, but analysis lost or not performed.

Q = Sample held beyond accepted hold time

T = Value reported is < MDL. Reported for informational purposes only and shall not be used in statistical analysis.

U = Analyte analyzed but not detected at the value indicated.

V = Analyte detected in sample and method blank. Results for this analyte in associated samples may be biased high. Standard, Duplicate and Spike values are within control limits. Reported data are usable

Y = Analysis performed on an improperly preserved sample. Data may be inaccurate.

Z = Too many colonies were present (TNTC). The numeric value represents the filtration volume

! = Data deviate from historically established concentration ranges.

? = Data rejected and should not be used. Some or all of QC data were outside criteria, and the Presence or absence of the analyte cannot be determined from the data.

* = Not reported due to interference.

ND = Not Detected at or above adjusted reporting limit.

NOTES:

For questions and comments regarding these results, please contact Bettina Beilfuss at (941) 723-9986

Results relate only to the samples.

**Client: Sarasota County Environmental Services
Integrated Water Resources**
1001 Sarasota Center Blvd.
Sarasota, FL 34240
(941) 650-1112
(941) 480-3558 Fax
PO#120429

Benchmark EnviroAnalytical, Inc.
1711 Twelfth Street East
Palmetto, FL 34221
(941)723-9986
(941)723-6061 Fax
BenchmarkEA@earthlink.net

Chain of Custody Form: Gottfried Creek

Laboratory Submission #:

12070568

[illegible]

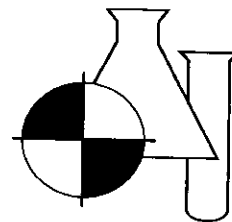
	Relinquished by collector:	Date	Time	Received By:	Date	Time
1	Kathy Moore	7/16/12	1343	W. Thompson	7-16-12	1406
2	W. Thompson	7-16-12	1435	J.R.	7/16/12	1435
3	Relinquished by:			Received By:		

Please use full sample ID on Analytical Test Report.
***Please use a dilution of 200,000 for Fecal Coliform.**

Laboratory Sample Acceptability
Temp: 2.2°C
pH>2:

BENCHMARK

EnviroAnalytical Inc.



NELAC Certification # E84167

ANALYTICAL TEST REPORT

THESE RESULTS MEET NELAC STANDARDS

Submission Number : 12071170 /

Sarasota County Utilities Oper
1255 T. Mabry Carlton Pkwy
Venice, FL 34293

Project Name : GOTTFRIED CREEK /
Date Received : 07/30/2012 /
Time Received : 1440 /

Cesar Rodriguez



Submission Number 12071170 /

Sample Number: 001 / Sample Description: 073012-GOT-13 /
Sample Date: 07/30/2012 / Sample Method: Grab
Sample Time: 1035 /

QUALITY
ASSURED

HB 8/13/12

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM	2700	#/100 ML	100	100	SM9222D	07/30/2012	15:47	MR

Submission Number 12071170 /

Sample Number: 002 / Sample Description: 073012-GOT-16 /
Sample Date: 07/30/2012 / Sample Method: Grab
Sample Time: 1104 /

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM	19000 B	#/100 ML	1000	1000	SM9222D	07/30/2012	15:47	MR

Submission Number 12071170 /

Sample Number: 003 / Sample Description: 073012-GOT-17 /
Sample Date: 07/30/2012 / Sample Method: Grab
Sample Time: 1113 /

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM	2800	#/100 ML	100	100	SM9222D	07/30/2012	15:47	MR

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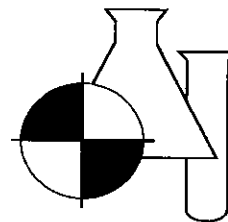
standard report

12071170

PAGE 1 OF 3

BENCHMARK

EnviroAnalytical Inc.



NELAC Certification # E84167

Submission Number 12071170 ✓

Sample Number: 004 ✓

Sample Description: 073012-GOT-BL ✓

Sample Date: 07/30/2012 ✓

Sample Method: Grab

Sample Time: 1120 ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	10 U ✓	#/100 ML	10 ✓	10	SM9222D	07/30/2012	15:47	MR

HB 8/13/12

Dale D. Dixon / Laboratory Director

Tülay Tanrısever / QC Officer

Jennifer Jordan / QC Officer

08/07/2012

Date

DATA QUALIFIERS THAT MAY APPLY:

A = Value reported is an average of two or more determinations.

B = Results based upon colony counts outside the ideal range.

H = Value based on field kit determination. Results may not be accurate.

I = Reported value is between the laboratory MDL and the PQL.

J = Estimated value.

J1 = Est. value surrogate recovery limits exceeded.

J2 = Est. value. No quality control criteria exists for component.

J3 = Est. value quality control criteria for precision or accuracy not met.

J4 = Est. value. Sample matrix interference suspected.

J5 = Est. value. Data questionable due to improper lab or field protocols.

K = Off-scale low. Value is known to be < the value reported.

L = Off-scale high. Value is known to be > the value reported.

NOTES:

PQL = 4xMDL.

MBAS calculated as LAS; molecular weight = 348

X = Value exceed MCL.

N = Presumptive evidence of presence of material.

O = Sampled, but analysis lost or not performed.

Q = Sample held beyond accepted hold time.

T = Value reported is < MDL. Reported for informational purposes only and shall not be used in statistical analysis.

U = Analyte analyzed but not detected at the value indicated.

V = Analyte detected in sample and method blank. Results for this analyte in associated samples may be biased high. Standard, Duplicate and Spike values are within control limits. Reported data are usable.

Y = Analysis performed on an improperly preserved sample. Data may be inaccurate.

Z = Too many colonies were present (TNTC). The numeric value represents the filtration volume.

! = Data deviate from historically established concentration ranges.

? = Data rejected and should not be used. Some or all of QC data were outside criteria, and the Presence or absence of the analyte cannot be determined from the data.

* = Not reported due to interference.

ND = Not Detected at or above adjusted reporting limit.

NOTES:

For questions and comments regarding these results, please contact Bettina Beilfuss at (941) 723-9986

Results relate only to the samples.

**Client: Sarasota County Environmental Services
Integrated Water Resources
1001 Sarasota Center Blvd.
Sarasota, FL 34240
(941) 650-1112
(941) 480-3558 Fax
PO#120429**

Benchmark EnviroAnalytical, Inc.
1711 Twelfth Street East
Palmetto, FL 34221
(941)723-9986
(941)723-6061 Fax
BenchmarkEA@earthlink.net

Chain of Custody Form: Gottfried Creek

Laboratory Submission #:

12071178

[illegible]

	Relinquished by collector	Date	Time	Received By:	Date	Time
1	<i>Robert Mearns</i>	07/30/12	12:55	<i>W. D. Payne</i>	7-30-12	1310
2	<i>W. D. Payne</i>	7-30-12	1446	<i>W. D. Payne</i>	7/30/12	1446
3	<i>W. D. Payne</i>					

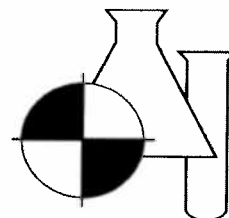
Please use full sample ID on Analytical Test Report.
***Please use a dilution of 200,000 for Fecal Coliform.**

Laboratory Sample Acceptability
Temp: 21.6°C
pH>2:

3 of 3

BENCHMARK

EnviroAnalytical Inc.



NELAC Certification # E84167

ANALYTICAL TEST REPORT

THESE RESULTS MEET NELAC STANDARDS

Submission Number : 12100230 ✓

Sarasota County Utilities Oper
1255 T. Mabry Carlton Pkwy
Venice, FL 34293

Project Name : IWR -GOTTFRIED CREEK ✓
Date Received : 10/05/2012 ✓
Time Received : 1430 ✓

Cesar Rodriguez



Submission Number 12100230 ✓

Sample Number: 001 ✓

Sample Description: 100512-GOT-13 ✓

Sample Date: 10/05/2012 ✓

Sample Method: Grab ✓

Sample Time: 0957 ✓

QUALITY
ASSURED

HB 10/16/12

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	1700 B ✓	#/100 ML	100	100	SM9222D	10/05/2012	14:55	MR

Submission Number 12100230 ✓

Sample Number: 002 ✓

Sample Description: 100512-GOT-16 ✓

Sample Date: 10/05/2012 ✓

Sample Method: Grab ✓

Sample Time: 1002 ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	450 ✓	#/100 ML	10	10	SM9222D	10/05/2012	14:55	MR

Submission Number 12100230 ✓

Sample Number: 003 ✓

Sample Description: 100512-GOT-17 ✓

Sample Date: 10/05/2012 ✓

Sample Method: Grab ✓

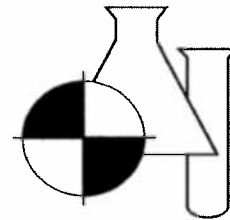
Sample Time: 1009 ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	200 B ✓	#/100 ML	100	100	SM9222D	10/05/2012	14:55	MR

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BENCHMARK

EnviroAnalytical Inc.



NELAC Certification # E84167

Submission Number 12100230 ✓

Sample Number: 004 ✓

Sample Description: 100512-GOT-BL ✓

Sample Date: 10/05/2012 ✓

Sample Method: Grab ✓

Sample Time: 1038 ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	10 U ✓	#/100 ML	10 ✓	10	SM9222D	10/05/2012	14:55	MR

Submission Number 12100230 ✓

Sample Number: 005 ✓

Sample Description: 100512-GOT-18 ✓

Sample Date: 10/05/2012 ✓

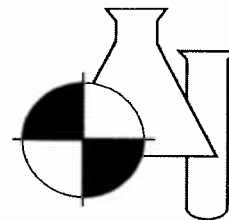
Sample Method: Grab ✓

Sample Time: 1030 ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	170 B ✓	#/100 ML	10 ✓	10	SM9222D	10/05/2012	14:55	MR

BENCHMARK

EnviroAnalytical Inc.



NELAC Certification # E84167

HB 10/16/12

10/10/2012

Dale D. Dixon / Laboratory Director

Date

Tülay Tanrısever / QC Officer

Jennifer Jordan / QC Officer

DATA QUALIFIERS THAT MAY APPLY:

A = Value reported is an average of two or more determinations.

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J = Estimated value.

J1 = Est. value surrogate recovery limits exceeded

J2 = Est. value No quality control criteria exists for component.

J3 = Est. value quality control criteria for precision or accuracy not met.

J4 = Est. value. Sample matrix interference suspected.

J5 = Est. value. Data questionable due to improper lab or field protocols

K = Off-scale low. Value is known to be < the value reported.

L = Off-scale high. Value is known to be > the value reported

NOTES:

PQL = 4xMDL.

MBAS calculated as LAS; molecular weight = 348.

X = Value exceed MCL.

N = Presumptive evidence of presence of material.

O = Sampled, but analysis lost or not performed.

Q = Sample held beyond accepted hold time.

T = Value reported is < MDL. Reported for informational purposes only and shall not be used in statistical analysis.

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V = Analyte detected in sample and method blank. Results for this analyte in associated samples may be biased high. Standard, Duplicate and Spike values are within control limits. Reported data are usable.

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Z = Too many colonies were present (TNTC). The numeric value represents the filtration volume.

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? = Data rejected and should not be used. Some or all of QC data were outside criteria, and the Presence or absence of the analyte cannot be determined from the data.

* = Not reported due to interference.

ND = Not Detected at or above adjusted reporting limit.

NOTES:

For questions and comments regarding these results, please contact Bettina Beilfuss at (941) 723-9986

Results relate only to the samples.

Client: Sarasota County Environmental Services
Integrated Water Resources
1001 Sarasota Center Blvd.
Sarasota, FL 34240
(941) 650-1112
(941) 480-3558 Fax
PO#120429

Benchmark EnviroAnalytical, Inc.
1711 Twelfth Street East
Palmetto, FL 34221
(941)723-9986
(941)723-6061 Fax
BenchmarkEA@earthlink.net

Chain of Custody Form: Gottfried Creek

Laboratory Submission #:

12100230

[illegible]

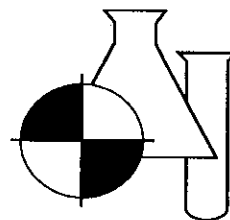
	Relinquished by collector:	Date	Time	Received By:	Date	Time
1	Gottinger Meany	10/5/12	11:53	Rayner Van Gammen	10-5-12	1:350
2	Relinquished by:			Received By:		
3	Relinquished by:			Received By:		

Please use full sample ID on Analytical Test Report.
*Please use a dilution of 200,000 for Fecal Coliform.

Temp: 2.10
pH>2:

BENCHMARK

EnviroAnalytical Inc.



NELAC Certification # E84167

ANALYTICAL TEST REPORT

THESE RESULTS MEET NELAC STANDARDS

Submission Number : 13041041 /

Sarasota County Utilities Oper
1255 T. Mabry Carlton Pkwy
Venice, FL 34293

Project Name : IWR-GOTTFRIED CREEK /
Date Received : 04/25/2013 /
Time Received : 1430 /

Cesar Rodriguez

Submission Number 13041041 /

Sample Number: 001 /
Sample Date: 04/25/2013 /
Sample Time: 0950 /
Sample Description: 042513-GOT-12 /
Sample Method: Grab /

QUALITY
ASSURED

HB 5/6/13

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM /	220 /	#/100 ML	10 /	10	SM9222D	04/25/2013	15:00	MR

Submission Number 13041041 /

Sample Number: 002 /
Sample Date: 04/25/2013 /
Sample Time: 1006 /
Sample Description: 042513-GOT-13 /
Sample Method: Grab /

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM /	230 /	#/100 ML	10 /	10	SM9222D	04/25/2013	15:00	MR

Submission Number 13041041 /

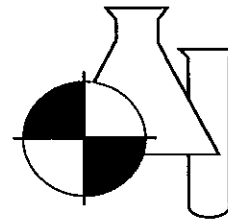
Sample Number: 003 /
Sample Date: 04/25/2013 /
Sample Time: 1018 /
Sample Description: 042513-GOT-16 /
Sample Method: Grab /

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM /	3700 /	#/100 ML	100 /	100	SM9222D	04/25/2013	15:00	MR

1711 12th Street East * Palmetto, FL 34221 * Phone (941) 723-9986 * Fax (941) 723-6061

BENCHMARK

EnviroAnalytical Inc.



NELAC Certification # E84167

Submission Number 13041041 ✓

Sample Number: 004 ✓

Sample Description: 042513-GOT-17 ✓

Sample Date: 04/25/2013 ✓

Sample Method: Grab ✓

Sample Time: 1023 ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	10 U ✓	#/100 ML	10 ✓	10	SM9222D	04/25/2013	15:00	MR

Submission Number 13041041 ✓

Sample Number: 005 ✓

Sample Description: 042513-GOT-18 ✓

Sample Date: 04/25/2013 ✓

Sample Method: Grab ✓

Sample Time: 1044 ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	50 B ✓	#/100 ML	10 ✓	10	SM9222D	04/25/2013	15:00	MR

Submission Number 13041041 ✓

Sample Number: 006 ✓

Sample Description: 042513-GOT-BL ✓

Sample Date: 04/25/2013 ✓

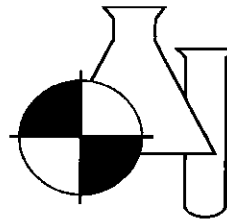
Sample Method: Grab ✓

Sample Time: 1048 ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	10 U ✓	#/100 ML	10 ✓	10	SM9222D	04/25/2013	15:00	MR

BENCHMARK

EnviroAnalytical Inc.



NELAC Certification # E84167

HB 5/6/13
Tülay Tanrisever
Dale D. Dixon / Laboratory Director

05/01/2013

Date

Tülay Tanrisever / QC Officer

Jennifer Jordan / QC Officer

DATA QUALIFIERS THAT MAY APPLY:

A = Value reported is an average of two or more determinations.

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H = Value based on field kit determination. Results may not be accurate.

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J5 = Est. value. Data questionable due to improper lab or field protocols

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L = Off-scale high. Value is known to be > the value reported

NOTES:

PQL = 4xMDL.

MBAS calculated as LAS; molecular weight = 348.

X = Value exceeds MCL.

N = Presumptive evidence of presence of material.

O = Sampled, but analysis lost or not performed.

Q = Sample held beyond accepted hold time.

T = Value reported is < MDL. Reported for informational purposes only and shall not be used in statistical analysis.

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V = Analyte detected in sample and method blank. Results for this analyte in associated samples may be biased high. Standard, Duplicate and Spike values are within control limits. Reported data are usable.

Y = Analysis performed on an improperly preserved sample. Data may be inaccurate.

Z = Too many colonies were present (TNTC). The numeric value represents the filtration volume.

! = Data deviate from historically established concentration ranges.

? = Data rejected and should not be used. Some or all of QC data were outside criteria, and the Presence or absence of the analyte cannot be determined from the data.

* = Not reported due to interference.

ND = Not Detected at or above adjusted reporting limit.

NOTES:

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Results relate only to the samples.

Client: Sarasota County Environmental Services
Integrated Water Resources
1001 Sarasota Center Blvd.
Sarasota, FL 34240
(941) 650-1112
(941) 480-3558 Fax
PO#130384

Benchmark EnviroAnalytical, Inc.
1711 Twelfth Street East
Palmetto, FL 34221
(941)723-9986
(941)723-6061 Fax
BenchmarkEA@earthlink.net

Chain of Custody Form: Gottfried Creek

Laboratory Submission #:

13041041

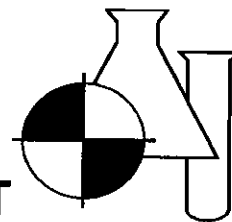
Samp_ID	Type	Matrix	Fecal Coliform* (MF)	Lab Sample #
			(A)	
			NaThio	
			1x100mL	
042513 GOT-12	Grab	SW	Date: 04/25/2013 Time: 0950	1
042513 GOT-13	Grab	SW	Date: 04/25/2013 Time: 1006	2
042513 GOT-16	Grab	SW	Date: 04/25/2013 Time: 1018	3
042513 GOT-17	Grab	SW	Date: 04/25/2013 Time: 1023	4
042513 GOT-18	Grab	SW	Date: 04/25/2013 Time: 1044	5
042513 GOT-BL	Grab	SW	Date: 04/25/2013 Time: 1048	6

1	Relinquished by collector:	Date: 04/25/2013	Time: 1153	Received By:	Date: 4-25-13	Time: 1340
2	Relinquished by:	Date: 4-25-13	Time: 1430	Received By:	Date: 4/25/13	Time: 1430
3	Relinquished by:	Date:	Time:	Received By:	Date:	Time:

Please use full sample ID on Analytical Test Report.
*Please use a dilution of 200,000 for Fecal Coliform.

Laboratory Sample Acceptability
Temp: 1.6°C
pH: 7

BENCHMARK EA SOUTH



ANALYTICAL TEST REPORT

THESE RESULTS MEET NELAC STANDARDS

NELAC Certification # E85086

Sarasota County Utilities
1255 T. Mabry Carlton Pkwy
Venice, FL 34293

Cesar Rodriguez

Submission
Number :

S 13060013 /

Project Name :

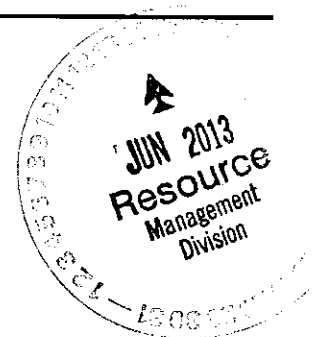
GOTTFRIED CREEK /

Date Received :

06/03/2013 /

Time Received :

1047 /



Submission: S 13060013 /

Sample Number: 1 /

Sample Date: 06/03/2013 /

Sample Time: 0748 /

Sample Description:

060313 GOT-9 /

Sample Method:

Grab /

QUALITY
ASSURED

HB 6/17/13

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM /	110 B /	#/100 ML	10	10	SM9222D	06/03/2013	11:13	PR

Submission: S 13060013 /

Sample Number: 2 /

Sample Date: 06/03/2013 /

Sample Time: 0920 /

Sample Description:

060313 GOT-12 /

Sample Method:

Grab /

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM /	70 B /	#/100 ML	10	10	SM9222D	06/03/2013	11:13	PR

Submission: S 13060013 /

Sample Number: 3 /

Sample Date: 06/03/2013 /

Sample Time: 0904 /

Sample Description:

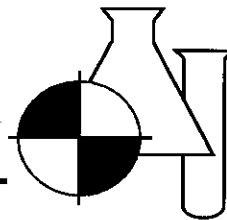
060313 GOT-13 /

Sample Method:

Grab /

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM /	5400 /	#/100 ML	100	100	SM9222D	06/03/2013	11:13	PR

BENCHMARK EA SOUTH



ANALYTICAL TEST REPORT

THESE RESULTS MEET NELAC STANDARDS

NELAC Certification # E85086

Submission: S 13060013 ✓

Sample Number: 4 ✓

Sample Date: 06/03/2013 ✓

Sample Time: 0841 ✓

Sample Description: 060313 GOT-16 ✓

Sample Method: Grab ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	2200 ✓	#/100 ML	100 ✓	100	SM9222D	06/03/2013 ✓	11:13	PR

Submission: S 13060013 ✓

Sample Number: 5 ✓

Sample Date: 06/03/2013 ✓

Sample Time: 0847 ✓

Sample Description: 060313 GOT-17 ✓

Sample Method: Grab ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	10 U ✓	#/100 ML	10 ✓	10	SM9222D	06/03/2013 ✓	11:13	PR

Submission: S 13060013 ✓

Sample Number: 6 ✓

Sample Date: 06/03/2013 ✓

Sample Time: 0928 ✓

Sample Description: 060313 GOT-18 ✓

Sample Method: Grab ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	40 B ✓	#/100 ML	10 ✓	10	SM9222D	06/03/2013 ✓	11:13	PR

Submission: S 13060013 ✓

Sample Number: 7 ✓

Sample Date: 06/03/2013 ✓

Sample Time: 1045 ✓

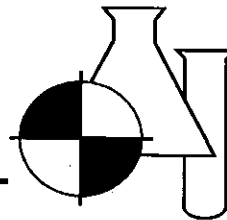
Sample Description: 060313 GOT-BL ✓

Sample Method: Grab ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	10 U ✓	#/100 ML	10 ✓	10	SM9222D	06/03/2013 ✓	11:13	PR

1001 Corporate Ave, Suite 102 North Port, FL 34289 Phone: (941) 625-3137 Fax: (941) 240-3071

BENCHMARK EA SOUTH



ANALYTICAL TEST REPORT THESE RESULTS MEET NELAC STANDARDS

NELAC Certification # E85086

Submission: S 13060013 ✓

Sample Number: 8 ✓

Sample Date: 06/03/2013 ✓

Sample Time: 0754 ✓

Sample Description: 060313 LBGOT-2 ✓

Sample Method: Grab ✓

Parameter	Result	Units	MDL	PQL	Procedure	Analysis		Analyst
						Date	Time	
FECAL COLIFORM ✓	80 B ✓	#/100 ML	10 ✓	10	SM9222D	06/03/2013	11:13	PR

HB 6/17/13
✓ Melinda Merchant
Dale D. Dixon / Laboratory Director

06/07/2013

Date
Melinda Merchant / Laboratory Manager

DATA QUALIFIERS THAT MAY APPLY:

A = Value reported is an average of two or more determinations.

B = Results based upon colony counts outside the ideal range.

H = Value based on field kit determination. Results may not be accurate.

I = Reported value is between the laboratory MDL and the PQL.

J1 = Est. value surrogate recovery limits exceeded.

J2 = Est. value. No quality control criteria exists for component.

J3 = Est. value quality control criteria for precision or accuracy not met.

J4 = Est. value. Sample matrix interference suspected.

J5 = Est. value. Data questionable due to improper lab or field protocols

K = Off-scale low. Value is known to be < the value reported.

L = Off-scale high. Value is known to be > the value reported

N = Presumptive evidence of presence of material.

Q = Sample held beyond accepted hold time(15 minutes for pH).

T = Value reported is < MDL. Reported for informational purposes only and shall not be used in statistical analysis.

U = Analyte analyzed but not detected at the value indicated.

V = Analyte detected in sample and method blank.

Y = Analysis performed on an improperly preserved sample. Data may be inaccurate.

Z = Too many colonies were present (TNTC); the numeric value represents the filtration volume.

? = Data rejected and should not be used. Some or all of QC data were outside criteria, and the Presence or absence of the analyte cannot be determined from the data.

! = Data deviate from historically established concentration ranges.

* = Not reported due to interference.

NOTES:

PQL = 4xMDL. Except for Micro PQL=MDL

X = Value exceed MCL.

For questions and comments regarding these results, please contact Melinda Merchant at (941) 625-3137

These results relate only to the samples included in this report.

Benchmark EnviroAnalytical, Inc.
1711 Twelfth Street East
Palmetto, FL 34221
(941)723-9986
(941)723-6061 Fax
BenchmarkEA@earthlink.net

Client: Sarasota County Environmental Services
Integrated Water Resources
1001 Sarasota Center Blvd.
Sarasota, FL 34240
(941) 650-1112
(941) 480-3558 Fax
PO#130384

Chain of Custody Form: Gottfried Creek

Laboratory Submission #:

513060013

Samp_ID	Type	Matrix	Fecal Coliform* (MF)				Lab Sample #
			(A)				
			NaThio				
			1x100mL				
060313	GOT-9	Grab SW	Date: 06/03/2013 Time: 0748	1			1
060313	GOT-12	Grab SW	Date: 06/03/2013 Time: 0920	1			2
060313	GOT-13	Grab SW	Date: 06/03/2013 Time: 0904	1			3
060313	GOT-16	Grab SW	Date: 06/03/2013 Time: 0841	1			4
060313	GOT-17	Grab SW	Date: 06/03/2013 Time: 0847	1			5
060313	GOT-18	Grab SW	Date: 06/03/2013 Time: 0928	1			6
060313	GOT-BL	Grab SW	Date: 06/03/2013 Time: 1045	1			7
060313	LB2012	Grab SW	Date: 06/03/2013 Time: 0758	1			8

1	Relinquished by collector:	Date: 06/03/2013	Time: 1047	Received By: Melinda Merchant	Date: 6/3/13	Time: 1047
2	Relinquished by:	Date:	Time:	Received By:	Date:	Time:
3	Relinquished by:	Date:	Time:	Received By:	Date:	Time:

Please use full sample ID on Analytical Test Report.
*Please use a dilution of 200,000 for Fecal Coliform.

Laboratory Sample Acceptability
Temp: 4.6°C
pH: 2: ☐