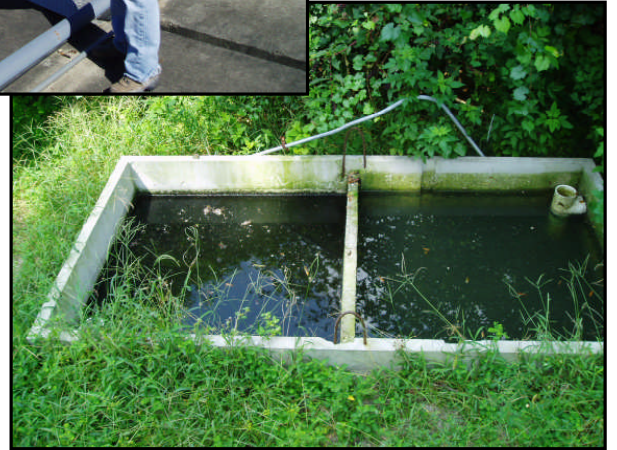


Wastewater Treatment Plant Inspection Program Fiscal year 2006 and 2007 Data Report



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November 2008

**Alachua County Environmental Protection
Wastewater Treatment Plant Inspection Program
Fiscal Year 2006 and 2007 Data Report**

Prepared November 2008

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Report Scope

This data report includes the results from Alachua County Environmental Protection Department's inspections of wastewater treatment plants (WWTP) within Alachua County during the 2006 and 2007 fiscal years (October 2005 – September 2007). Groundwater monitoring data provided to the Florida Department of Environmental Protection Department by the WWTP operators is included for those treatment plants that are required to submit this information.

Background and Introduction

There are 20 wastewater treatment plants (WWTPs) permitted by the Florida Department of Environmental Protection (FDEP) located in Alachua County (Table 1 and Map 1). The Alachua County Environmental Protection Department (ACEPD) has a wastewater program partially funded by the annual fees paid to the County by the owners of the WWTPs. ACEPD does not permit the facilities, but does conduct inspections and collect effluent samples more frequently than FDEP Northeast District Domestic Wastewater staff. The operators or owners of the WWTPs are required by their FDEP permit to self monitor the quality of their effluent and to report the results to FDEP on a monthly basis. The Alachua County Unified Land Development Code (ULDC) Chapter 406 Article 12 Wastewater Treatment Facilities (Sec 406.72) requires that ACEPD be copied on all communications with FDEP including monitoring reports. ACEPD reviews this data to aid in determining the frequency of monitoring appropriate for each facility.

Most WWTPs are inspected by ACEPD on a quarterly basis; however some facilities are monitored more or less frequently. The facilities are inspected to insure that they are operating properly, with an emphasis on nutrient removal. Many of the plants are not required by FDEP to sample for any nutrient species in their monthly sampling, therefore ACEPD samples are usually analyzed for nitrite + nitrate, total Kjeldahl nitrogen, ammonia, total nitrogen, and phosphorus. The treated effluent is disposed of in various permitted ways including: re-use, sprayfields, injection wells, surface water discharges, and percolation ponds (also called rapid infiltration basins). Hence, the treated wastewater eventually becomes groundwater or surface water and can contribute to environmental degradation if it has high concentrations of phosphorus and/or nitrogen. Excessive nutrients can cause algal blooms, prolific plant growth, and fish kills in springs and surface waters.

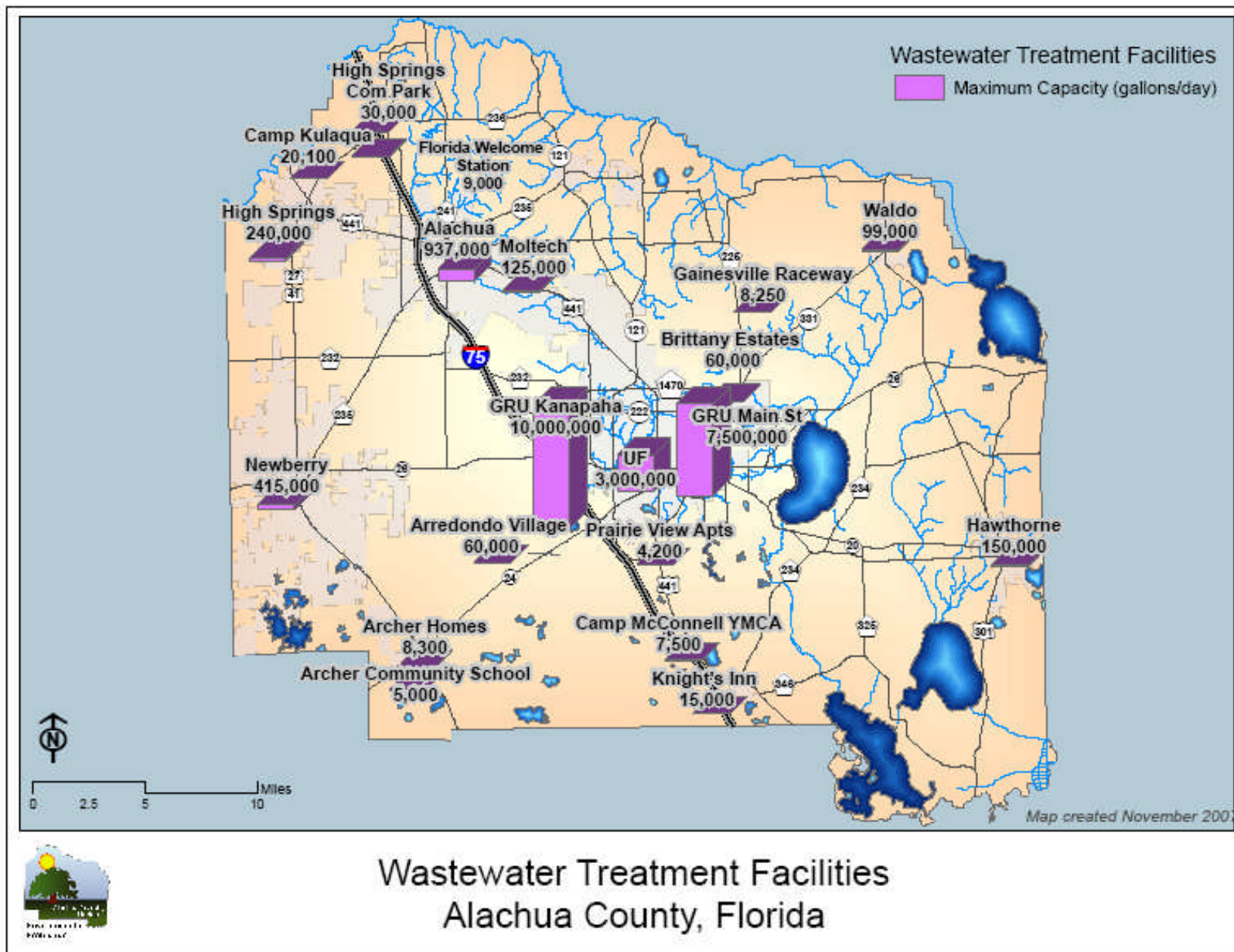
After each inspection ACEPD staff writes a letter communicating concerns and compliance issues. The inspection form, the effluent data, and the summary letter are sent

to the plant owner, plant operator, and FDEP's Northeast District Office Domestic Wastewater staff.

ACEPD's effluent data is discussed in the following sections, with an emphasis on nutrient data. The effluent samples are collected as grab samples and are brought to Advanced Testing Technologies Laboratory (ATTL) in Gainesville, Florida for analysis. Some of the FDEP permit limitations for some of the larger treatment facilities are for flow proportioned composite samples, because flows vary at the facilities throughout the day. Since the samples collected during ACEPD inspections are grab samples, the data cannot be used to verify that the effluent at the larger plants is in compliance with their permits. However, the data does indicate what the treatment facilities are releasing to the environment around the time of the inspection. The effluent data the facilities submit for their FDEP monthly monitoring reports are not included in this report. Municipal plants discharging effluent to groundwater are required to submit groundwater reports to FDEP. This data is included in this report. The municipal plants are discussed first, followed by the package plants.

Table 1: Wastewater Treatment Plants in Alachua County (2006 and 2007)

Facility Name	Effluent Disposal	Permit Expiration	Maximum Permitted Capacity (gallons per day)	Nutrient effluent limitations (mg/L)
Archer Community School	Rapid Infiltration Basin	7/8/2009	5,000	Nitrate = 12
Archer Homes	Absorption Field	7/28/2010	8,300	Nitrate = 12
Arredondo Village MHP	Rapid Infiltration Basin	5/14/2010	60,000	Nitrate = 12
Brittany Estates MHP	Surface Water Discharge	10/1/2011	60,000	Nitrate = 12, total phosphorus must be reported
Camp Kulaqua	Rapid Infiltration Basin	10/27/2009	20,100	Nitrate = 12
Camp McConnell YMCA	Absorption Field	12/8/2009	7,500	Nitrate = 12
City of Alachua	Spray Irrigation and Public Re-use	7/27/2011	937,000	Nitrate + nitrite and TKN must be reported
City of Hawthorne	Rapid Infiltration Basin	5/2/2011	150,000	Nitrate + nitrite must be reported
City of High Springs	Spray Irrigation	3/30/2013	240,000	Nitrate must be reported
City of Newberry	Spray Irrigation	2/20/2012	415,000	Total nitrogen must be reported
City of Waldo	Treatment Wetland to Surface Water	4/27/2013	99,000	Total nitrogen = 6, ammonia = 3.2, unionized ammonia = 0.02, total phosphorus = 2 (post wetland)
Florida Welcome Station	Rapid Infiltration Basin	9/5/2010	9,000	Nitrate = 12
Gainesville Raceway	Spray Irrigation	1/23/2008	8,250	No limitations
GRU Main Street	Surface Water Discharge and Public Re-use	9/14/2008	7,500,000	Total organic nitrogen = 3.5, ammonia = 4.87 or 3.64 (depending on season), unionized ammonia = 0.02, total nitrogen, TKN, and total phosphorus must be reported.
GRU Kanapaha	Underground Injection and Public Re-use	3/16/2008	10,000,000	Nitrate + nitrite = 10, unionized ammonia = 0.02, total organic nitrogen, total nitrogen, TKN, and total phosphorus must be reported.
Knight's Inn Micanopy	Spray Irrigation	4/21/2010	15,000	No limitations
Moltech/Electro Energy	Surface Water Discharge/Zero Discharge	None required	125,000	No permit required by FDEP
Prairie View Apartments	Rapid Infiltration Basin	8/25/2010	4,200	Total nitrogen must be reported
Sunshine MHP	Rapid Infiltration Basin	Closed 9/06	15,000	Nitrate = 12
University of Florida	Underground Injection and Public Re-use	4/21/2008	3,000,000	Nitrate + nitrite = 10 and total nitrogen, TKN, and total phosphorus must be reported



Map1: Permitted Wastewater Treatment Plants in Alachua County, Florida. *Note: the High Springs Commercial Park is not discussed in this document because it has not been built yet.*

Municipal Plants

There are eight municipal WWTPs in Alachua County, including the University of Florida's facility. Municipal facilities treat a greater volume of wastewater compared to package plants, and the treatment facility is built on-site. Package plants are typically pre-fabricated and shipped to the site as one unit (WEF 1985). In Alachua County, the municipal plant capacities range in permitted treatment volume from 99,000 (City of Waldo) to 10,000,000 (Gainesville Regional Utilities Kanapaha) gallons per day. The plant operators are required to spend more time at the municipal facilities, due to their larger treatment volume, and the facilities tend to utilize more advanced technologies compared to package plants. The municipal facilities are discharging much greater volumes of treated effluent, which increases their potential to degrade water quality. Figure 1 displays the average total nitrogen and total phosphorus effluent data from the ACEPD inspections of municipal plants. Effluent quality varied among the sampling events at the facilities and among the various facilities. Some facilities were sampled more frequently than others. The individual facilities are discussed in the following sections.

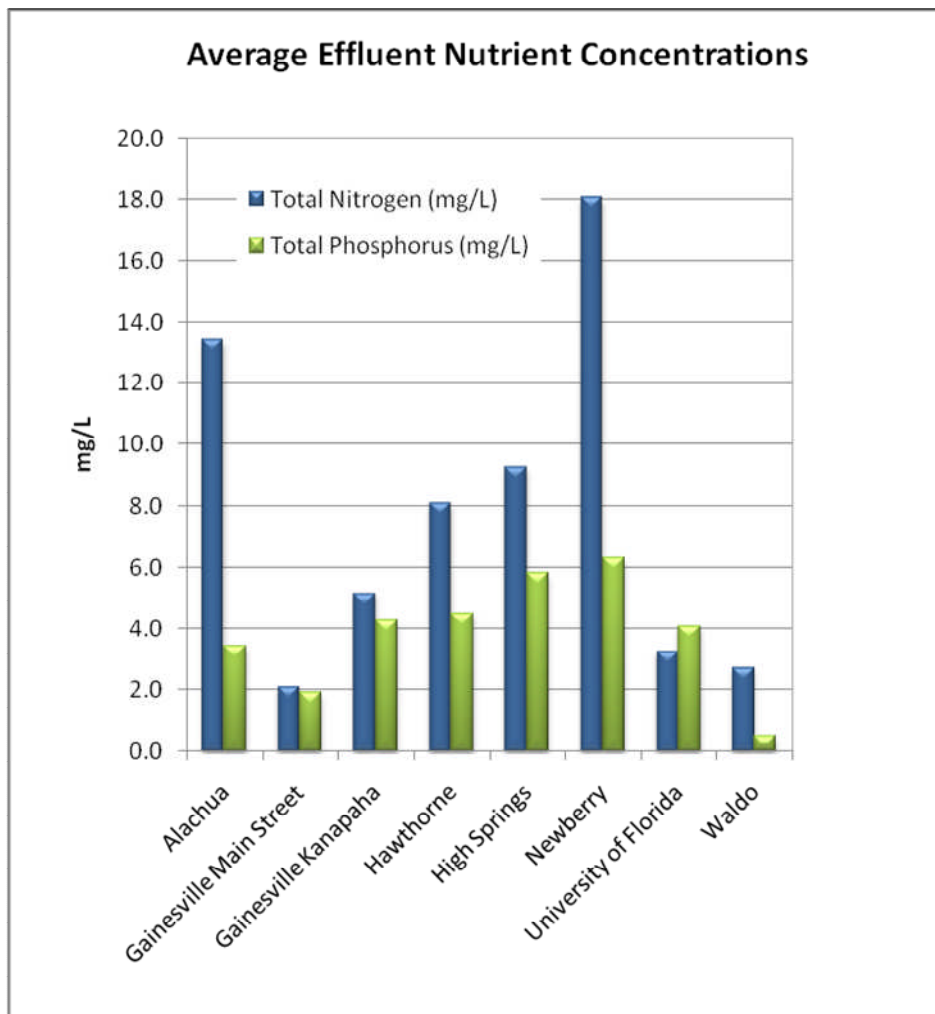


Figure 1: Average effluent data from grab samples collected during ACEPD inspections during the 2006 and 2007 fiscal years.

The City of Alachua

Facility size: 0.937 MGD

Permitted effluent disposal: 84 acre sprayfield and 197 acre golf course (re-use)

Residuals disposal: Land applied on site

Permit expiration date: July 27, 2011



The City of Alachua WWTP

The City of Alachua municipal wastewater treatment plant consists of two separate plants (a complete mix activated sludge and extended aeration activated sludge) operating in parallel to treat the waste from the city of Alachua. The facility was found to be in compliance during the six ACEPD inspections conducted in the 2006 and 2007 fiscal years. However, effluent quality varied among the inspections (Figure 2). The high nitrate concentrations that are often observed in the effluent are a concern in this karst area.

The City of Alachua is required by FDEP to sample their groundwater monitoring wells on a quarterly basis. The background wells are labeled with a B, compliance wells are labeled with a C, and intermediate wells are labeled with an I. High nitrate values were consistently measured at Compliance Well One (MWC-1), and the City of Alachua argued in 2006 that this well is up-gradient of their effluent disposal. FDEP worked with the City of Alachua and re-designated this well as a background monitoring well (MWB-1 in Figure 3). The high nitrate values detected at this well are thought to be influenced from the adjacent site which is the former Copeland Sausage Plant. The elevated nitrate levels, regardless of the source, are a concern in such close proximity to the Santa Fe River and its springs. A dye trace study conducted by Karst Environmental Services for ACEPD found a connection from nearby Lee Sink and Mill creek to Hornsby Springs, a

first magnitude spring on the Santa Fe River (Butt et al 2006). The City of Alachua is looking to expand this plant and is researching ways to maximize de-nitrification at the facility.

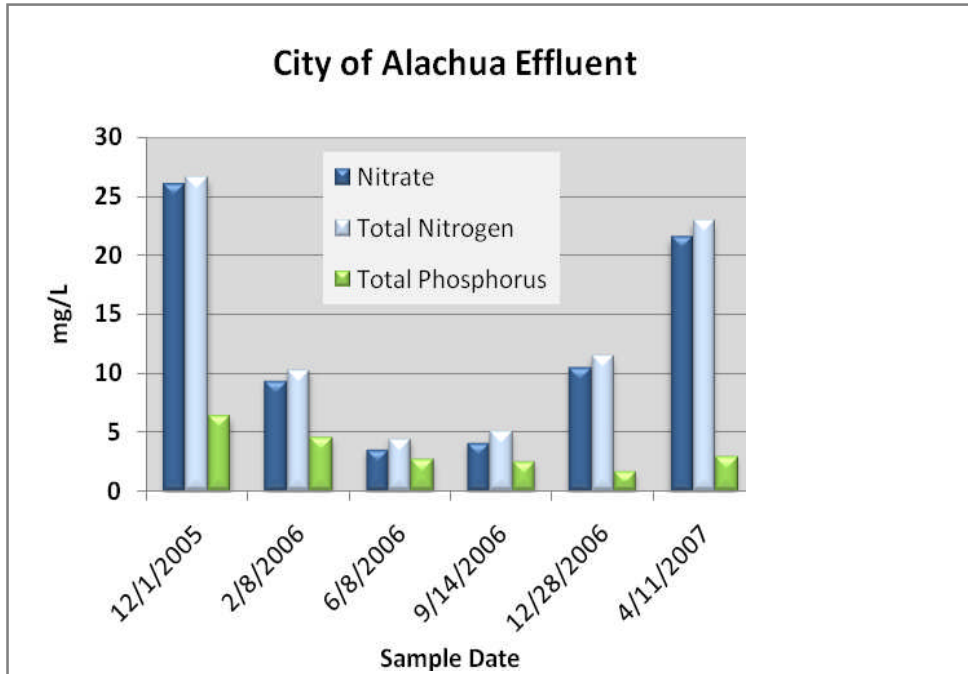


Figure 2: Effluent data from grab samples collected during ACEPD inspections at the City of Alachua WWTP during the 2006 and 2007 fiscal years

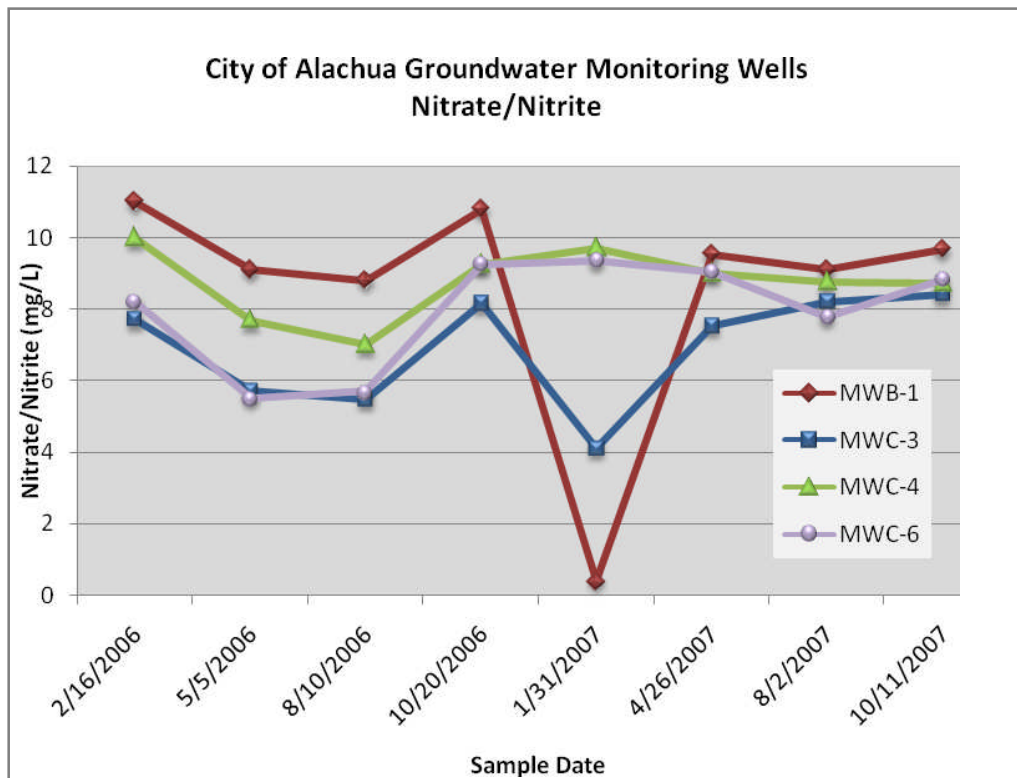


Figure 3: Nitrite + Nitrate data from the City of Alachua WWTP Groundwater Monitoring Reports from 2006 and 2007.

City of Gainesville

Kanapaha Facility

Facility Size: 10 MGD

Permitted effluent disposal: Underground injection well and 6.89 MGD residential re-use.

Residuals disposal: land applied to 3 sites in Alachua County

Permit expiration date: March 16, 2008



The clarifiers at the GRU Kanapaha facility

Main Street Facility

Facility Size: 7.5 MGD

Permitted effluent disposal: 7.5 MGD discharge to Sweetwater Branch

Residuals disposal: land applied to 3 sites in Alachua County

Permit expiration date: September 14, 2008



The clarifiers at the GRU Main Street facility

The wastewater from the City of Gainesville is treated at two wastewater facilities operated by Gainesville Regional Utilities (GRU). The Main Street facility is an advanced secondary activated sludge plant and the Kanapaha plant is a Modified Ludzak-Ettinger extended aeration activated sludge with pre-denitrification biological nitrogen removal plant. Each plant is inspected annually by ACEPD. The plants appeared to be operating effectively during the 2006 and 2007 ACEPD inspections and were found to be in compliance. The effluent appeared to be within the FDEP permit limitations and the nutrient concentrations were relatively low (Figure 4).

The effluent from the Main Street facility is discharged to Sweetwater Branch which flows through Paynes Prairie State Preserve before entering the aquifer via Alachua Sink. In 2007 the actual average flow discharged to Sweetwater Branch was 5.51 MGD (Hutton 2008). The majority of the Kanapaha effluent is injected into the aquifer via deep well injection. In 2007 an average of 6.79 MGD was injected into the aquifer (Hutton 2008). Up to 6.89 MGD of Kanapaha effluent is permitted for re-use for applications such as schools, residential lawns, parks, fire protection, Kanapaha Botanical gardens, and tanker trucks for pesticide application, dust control, and other activities. In 2007 re-use of reclaimed water increased to an average of 3.15 MGD from 2.96 MGD in 2006 (Hutton 2008).

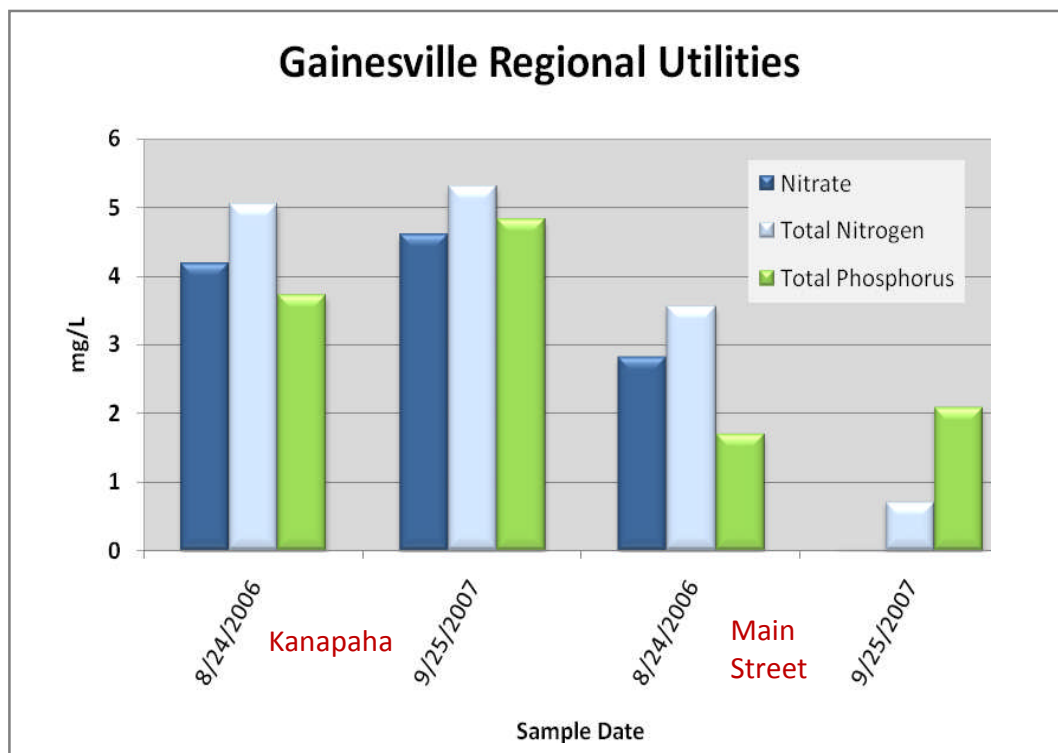


Figure 4: Effluent data from grab samples collected during ACEPD inspections at the GRU WWTPs during the 2006 and 2007 fiscal years

GRU is required to sample their groundwater monitoring wells at the Kanapaha plant and submit the results to FDEP. The background wells are labeled with a B and the compliance wells are labeled with a C. The nitrite + nitrate concentrations at monitoring well MWC-2D appear to be increasing, but a longer period of record would be needed to confirm this observation. There are no groundwater monitoring wells associated with the Main Street facility, since this plant discharges to a surface water.

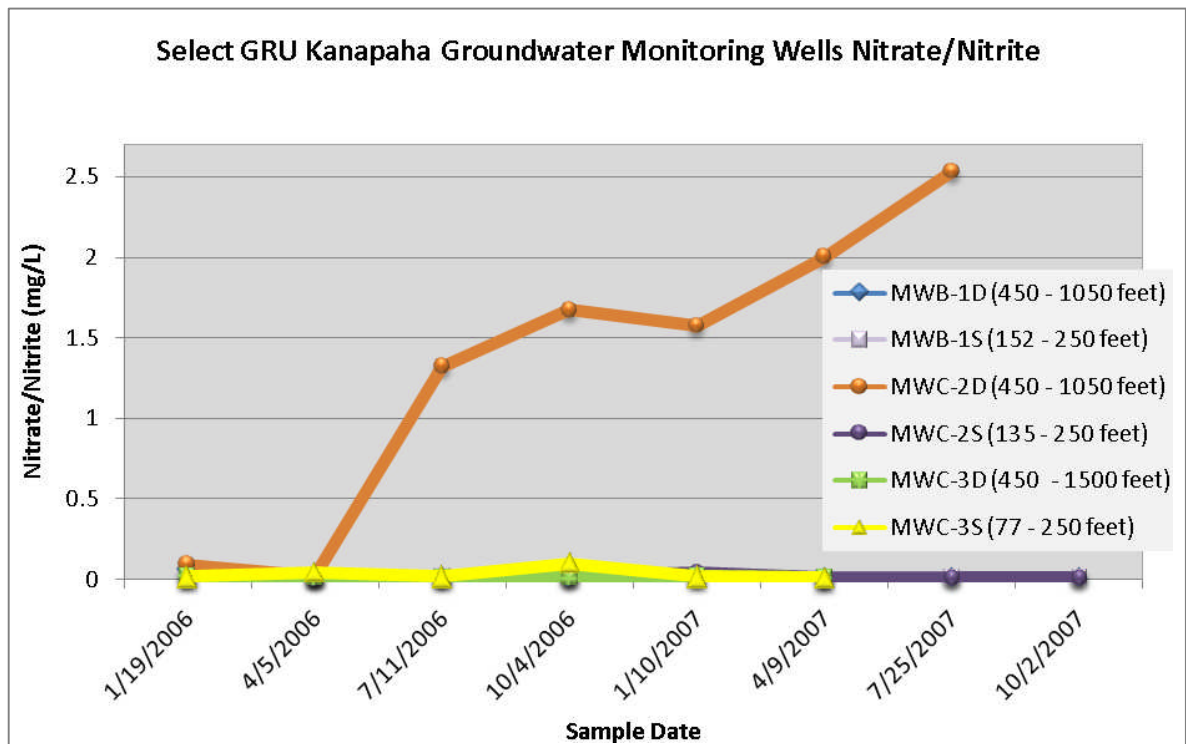


Figure 5: Nitrite + Nitrate data from the GRU Kanapaha WWTP Groundwater Monitoring Reports from 2006 and 2007. The distance below the land surface is denoted in feet after each well ID in the legend.

The City of Hawthorne

Facility size: existing 0.15 MGD to be expanded to 0.50 MGD

Permitted effluent disposal: 1.79 acres of rapid infiltration basins to be expanded to 4.77 acres

Residuals disposal: Transported to GRU

Permit expiration date: March 16, 2008



The City of Hawthorne Wastewater Treatment Facility

The City of Hawthorne municipal wastewater treatment plant is an extended aeration secondary treatment plant. This facility was found to be in compliance during all seven of the ACEPD inspections conducted in the 2006 and 2007 fiscal years. Effluent nitrogen values were relatively low for the majority of fiscal year 2006, but rose in August of 2006 (Figure 6). The higher nitrate concentrations and phosphorus levels are a concern with the proximity of Little Orange Lake. However, the effluent was in compliance with the FDEP permit, as this permit does not have numeric limitations for nutrients.

The City of Hawthorne is required to sample their groundwater monitoring wells and submit the results to FDEP on a quarterly basis. The background well is labeled with a B and the compliance wells are labeled with a C. The nitrate + nitrite concentrations varied among the wells and the sampling events. There appears to be a slight trend of increasing nitrate + nitrite levels in all of the wells, including the background, over time. A longer period of record would be required to verify this observation (Figure 7).

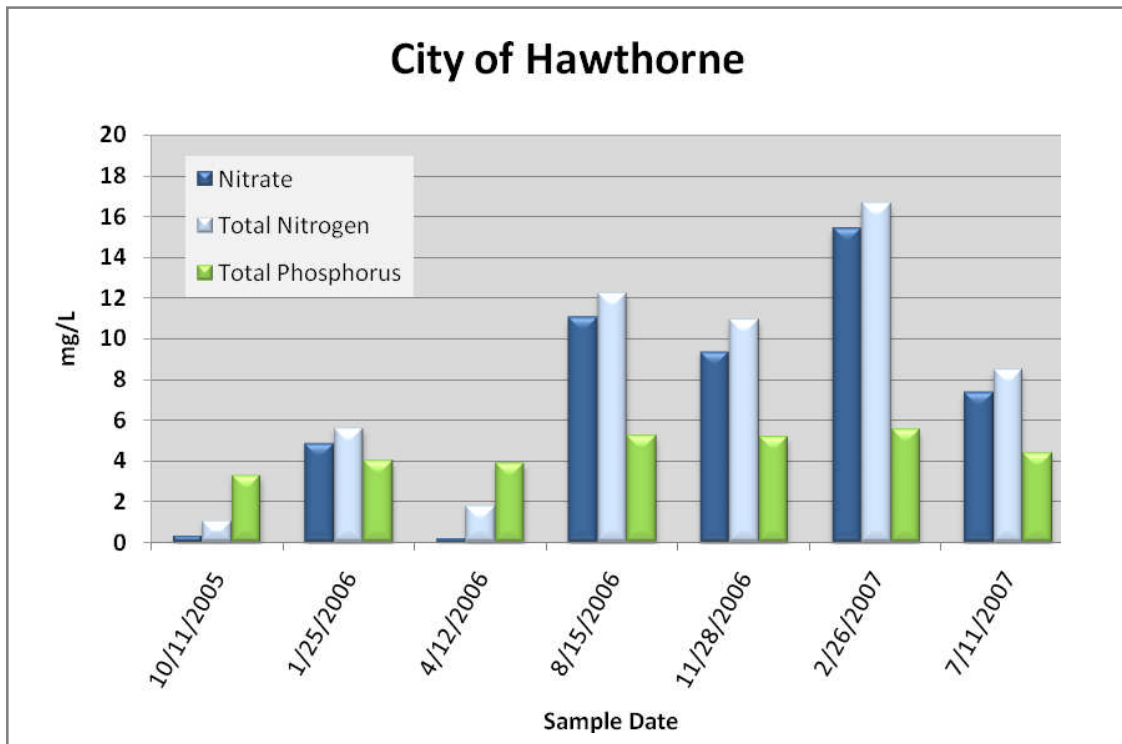


Figure 6: Effluent data from grab samples collected during ACEPD inspections at the Hawthorne WWTP during the 2006 and 2007 fiscal years

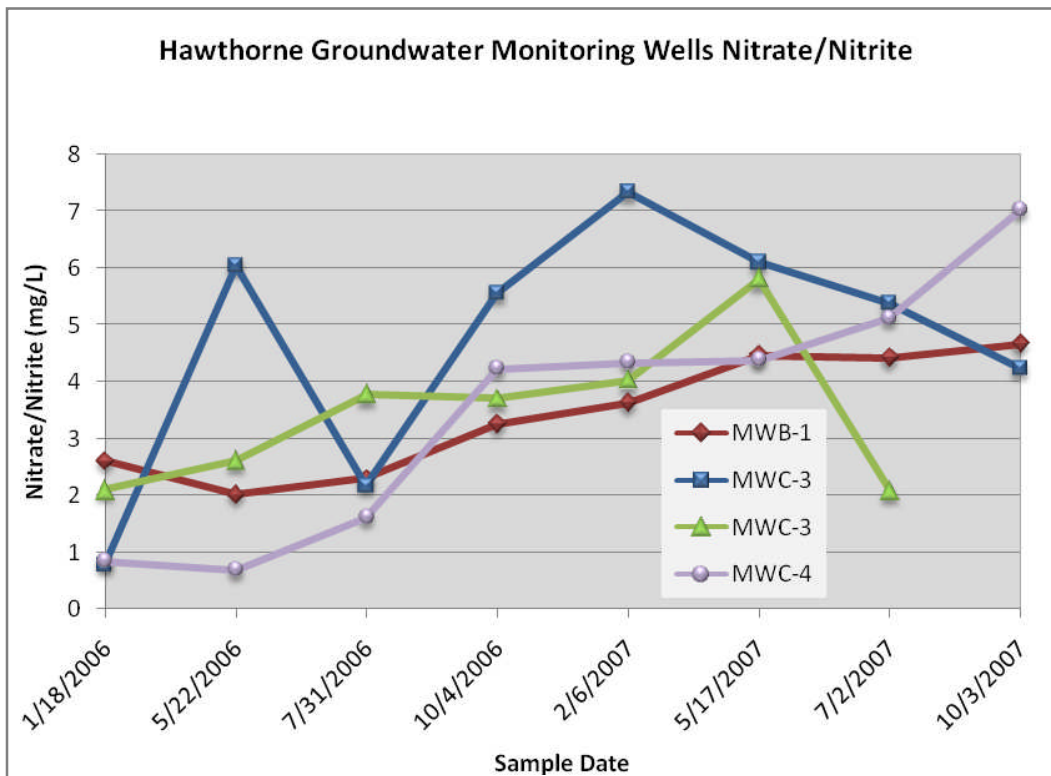


Figure 7: Nitrate + nitrite data from the City of Hawthorne WWTP Groundwater Monitoring Reports from 2006 and 2007

The City of High Springs

Facility size: 0.24 MGD

Permitted effluent disposal: 16.25 acres of sprayfield

Residuals disposal: Transported to GRU

Permit expiration date: March 30, 2013



The City of High Springs WWTP

The City of High Springs municipal wastewater treatment plant is a Ludzak-Ettinger activated sludge plant. This facility was found to be in compliance during all six of the ACEPD inspections conducted in fiscal years 2006 and 2007. However, the occasional elevated nitrogen and phosphorus concentrations in the treated effluent (Figure 8) are of concern in the karst setting of the plant's sprayfield in such proximity to the Santa Fe River and its springs. The cover crop on the sprayfield was not well established during 2006 and 2007, so it likely utilized very little to none of the excess nutrients in the treated effluent. FDEP has required The City of High Springs to demonstrate an established cover crop on the existing sprayfield before the sprayfield can be expanded as planned.

The City is required to sample the groundwater monitoring wells and submit the results to FDEP on a quarterly basis. The background well is labeled with a B and the compliance wells are labeled with a C. The elevated nitrate + nitrite concentrations in the background well are a concern and makes one question if this well is actually down gradient of the sprayfield. Figure 9 displays the groundwater data from the startup of this plant in 2004 through 2007. It seems that nitrate + nitrite values are increasing in all of the wells except compliance well 4.

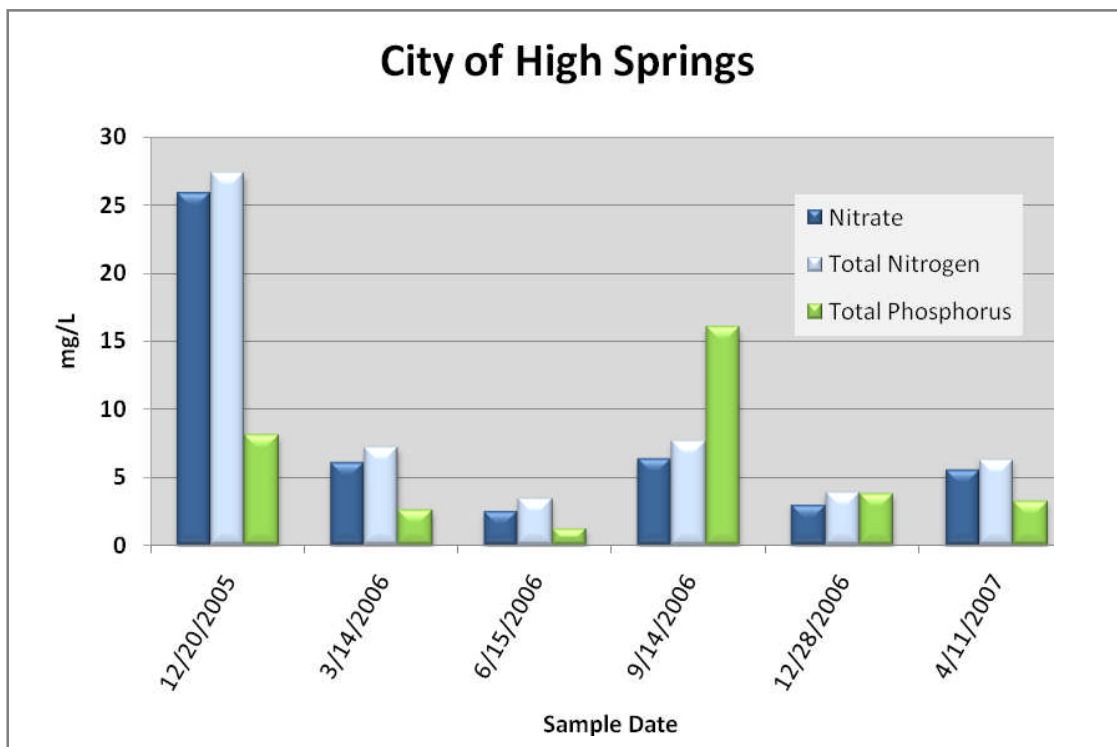


Figure 8: Effluent data from grab samples collected during ACEPD inspections at the High Springs WWTP during the 2006 and 2007 fiscal years.

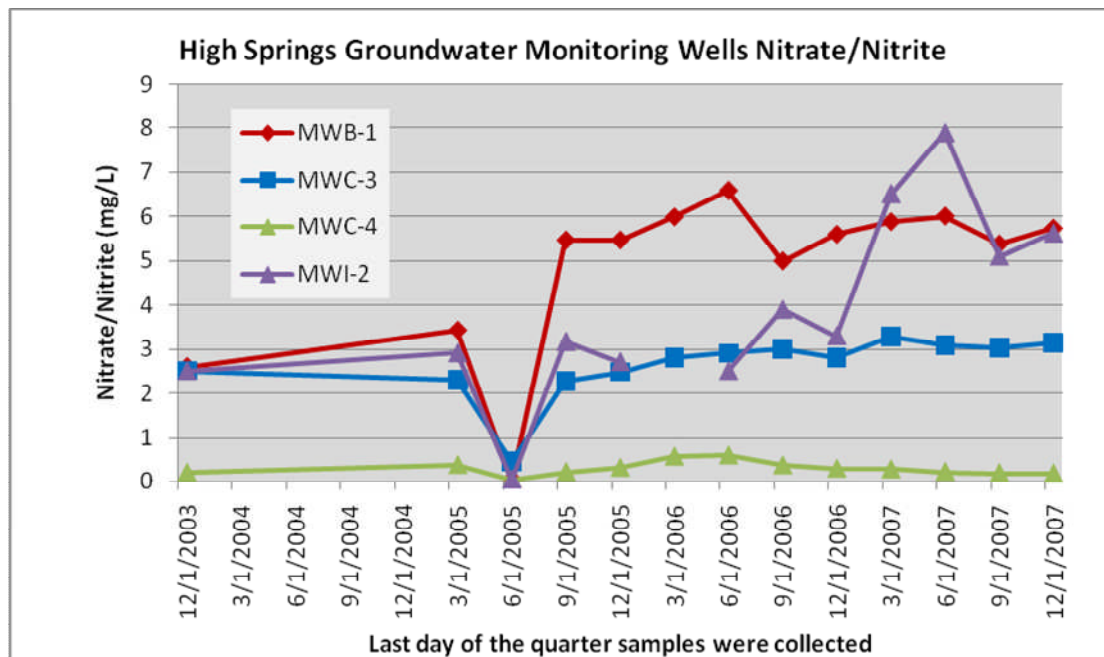


Figure 9: Nitrate + nitrite data from the City of High Springs WWTP Groundwater Monitoring Reports from 2004 through 2007.

The City of Newberry

Facility size: up to 0.415 MGD

Permitted effluent disposal: 39 acres of sprayfield

Residuals disposal: Land applied to sprayfield on site

Permit expiration date: February 20, 2012



The headworks, carousal, and equalization basin at the City of Newberry WWTP

The City of Newberry's municipal wastewater treatment plant is an activated sludge secondary treatment plant. This facility was inspected by ACEPD six times during the 2006 and 2007 fiscal years. During four of the inspections compliance issues were noted: carousal one was malfunctioning, carousal two was malfunctioning, the screenings dumpster was uncovered, and the effluent exceeded fecal coliform permit limitations. The plant had several upsets during 2006, although the grab samples of the effluent tended to meet FDEP's permit requirements. ACEPD met with City staff on 11-29-06 to discuss compliance at the plant along with the County's springs protection program. Plant appearance and compliance has improved since this meeting.

The City is required to sample their groundwater monitoring wells and submit the results to FDEP on a quarterly basis. The background wells are labeled with a B, compliance wells are labeled with a C, and intermediate wells are labeled with an I. Elevated nutrient concentrations in the effluent and the groundwater monitoring wells (Figures 10 and 11) are of concern in the karst setting of the plant's sprayfield. Nitrate + nitrite levels are higher at all of the monitoring wells in comparison to the background well.

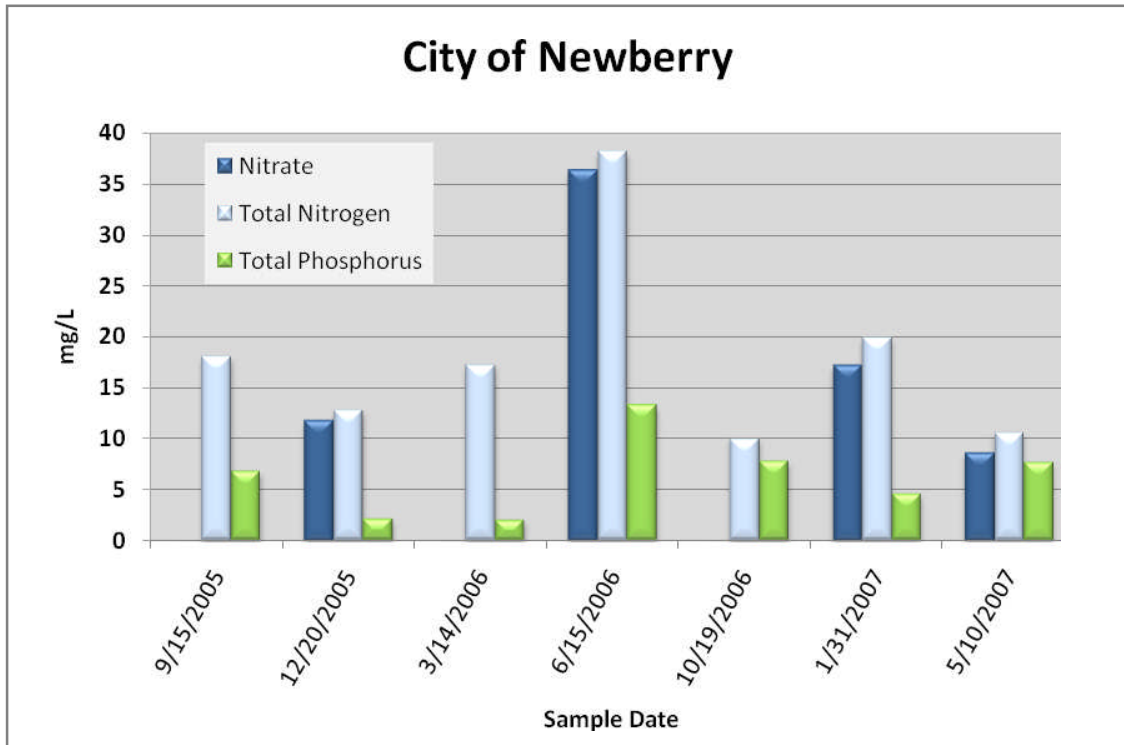


Figure 10: Effluent data from grab samples collected during the ACEPD inspections of the City of Newberry WWTP in 2006 and 2007

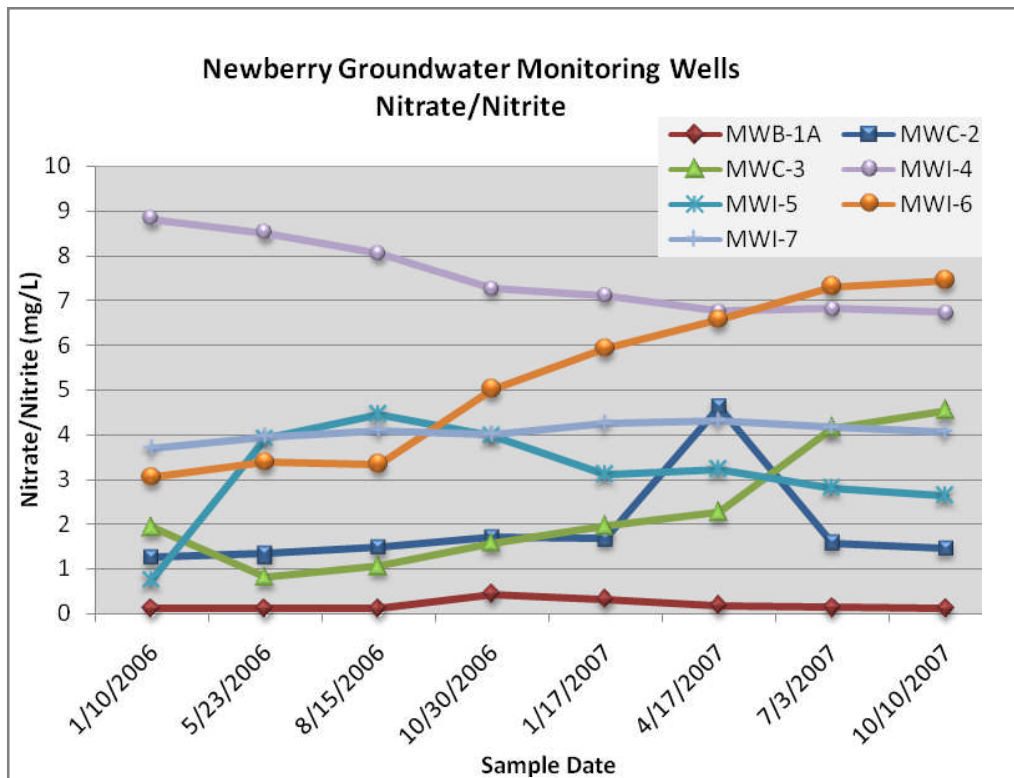


Figure 11: Nitrite + Nitrate data from the City of Newberry WWTP Groundwater Monitoring Reports from 2006 and 2007.

The University of Florida

Facility size: 3.0 MGD

Permitted effluent disposal: 3.0 MGD underground injection and 0.96 MGD public access re-use

Residuals disposal: Hauled to GRU

Permit expiration date: April 21, 2008



University of Florida WWTP

The University of Florida wastewater treatment plant is an advanced treatment Kruger Process (phased isolation oxidation ditch) treatment plant. This facility was inspected annually by ACEPD in the 2006 and 2007 fiscal years. The plant was found in compliance; however the dumpster receiving screenings and grit was uncovered. A cover for the dumpsters has since been constructed and is in use. The effluent from the plant met FDEP permit limitations when select regulated parameters were collected as grab samples and is relatively low in nitrogen (Figure 12).

The University of Florida is required to sample their groundwater monitoring wells and submit the results to FDEP. The background wells are labeled with a B and compliance wells are labeled with a C. Monitoring well data was not available for the complete period of record. Nitrate + nitrite levels appear to be elevated, especially in the background wells (Figure 13). However, a larger period of record would be needed to verify any trends.

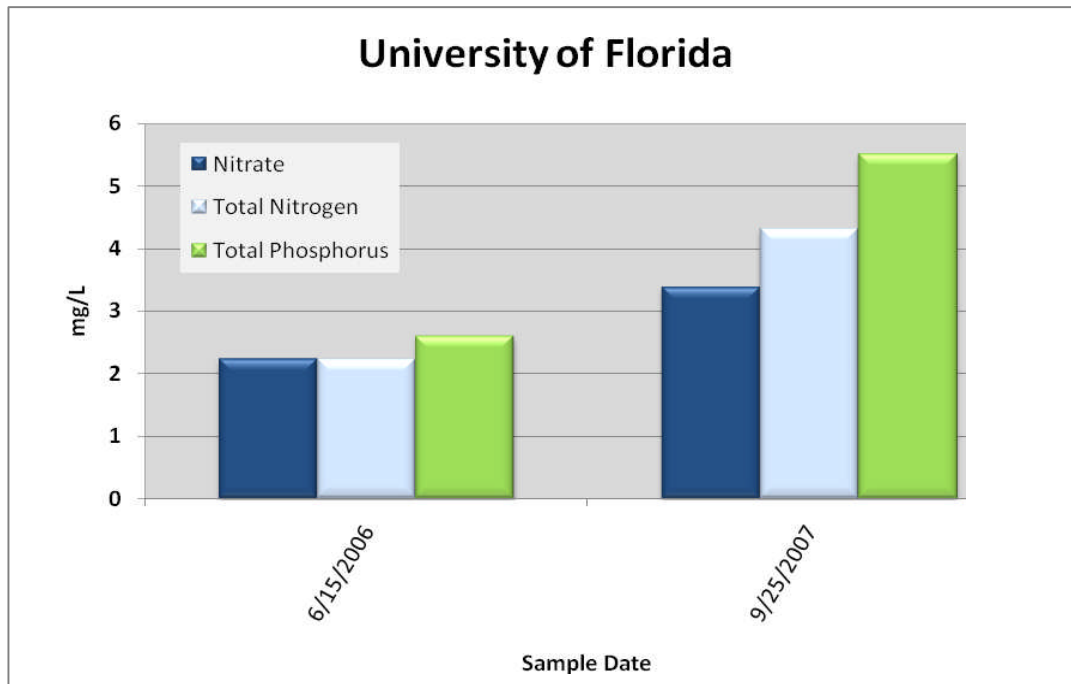


Figure 12: Effluent data from grab samples collected during the ACEPD inspections of the University of Florida WWTP in 2006 and 2007

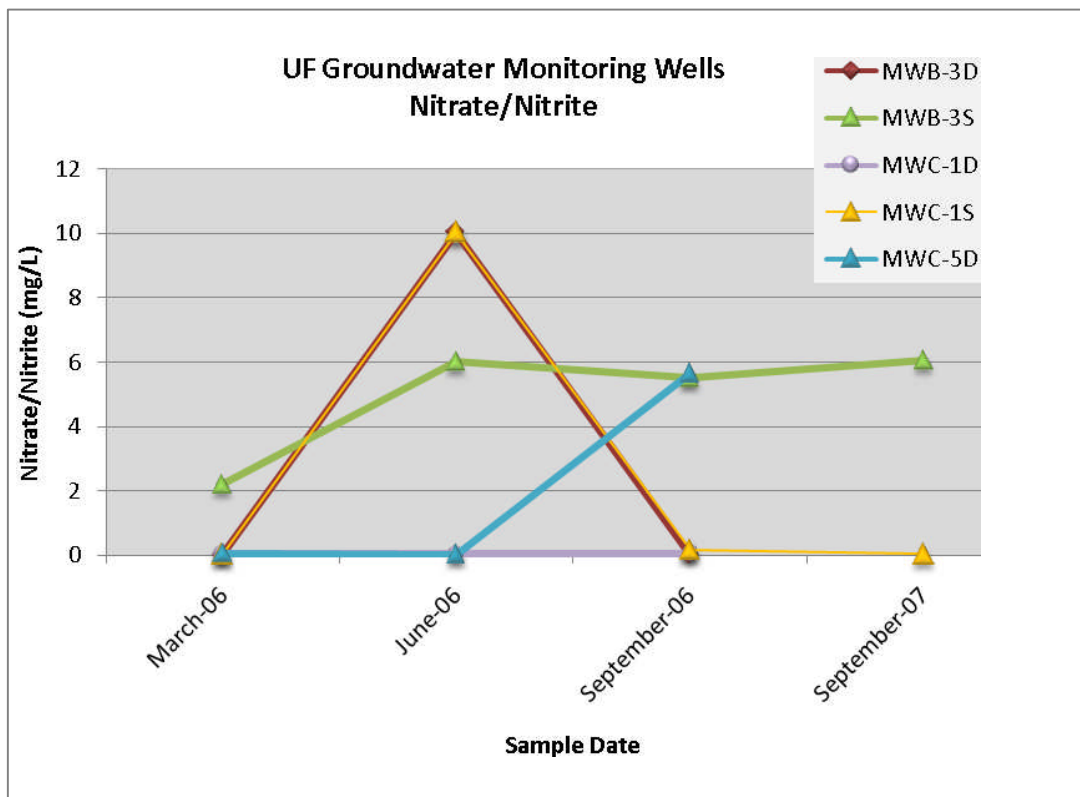


Figure 13: Nitrite + Nitrate data from the University of Florida WWTP Groundwater Monitoring Reports from 2006 and 2007.

The City of Waldo

Facility size: 0.099 MGD

Permitted effluent disposal: 3 constructed wetlands to a receiving wetland

Residuals disposal: Hauled to GRU

Permit expiration date: April 27, 2013



The aeration basins, digester, and clarifier at the Waldo WWTP.

The City of Waldo's municipal wastewater treatment plant is an extended aeration plant. This facility was inspected by ACEPD six times in the 2006 and 2007 fiscal years. The plant was found out of compliance during two of the inspections due to an uncovered screenings container and solids in the chlorine contact chamber. However, the effluent from the plant met FDEP permit limitations when select regulated parameters were sampled. The effluent is routed through a treatment wetland for additional treatment prior to discharge to an adjacent natural wetland. Generally, the effluent leaving the treatment wetland is of high quality (Figure 15) and likely has little impact on the receiving wetland. FDEP had some concerns about elevated ammonia levels leaving the treatment wetland. Since the effluent is discharged to surface water, the plant is not required by FDEP to monitor groundwater.

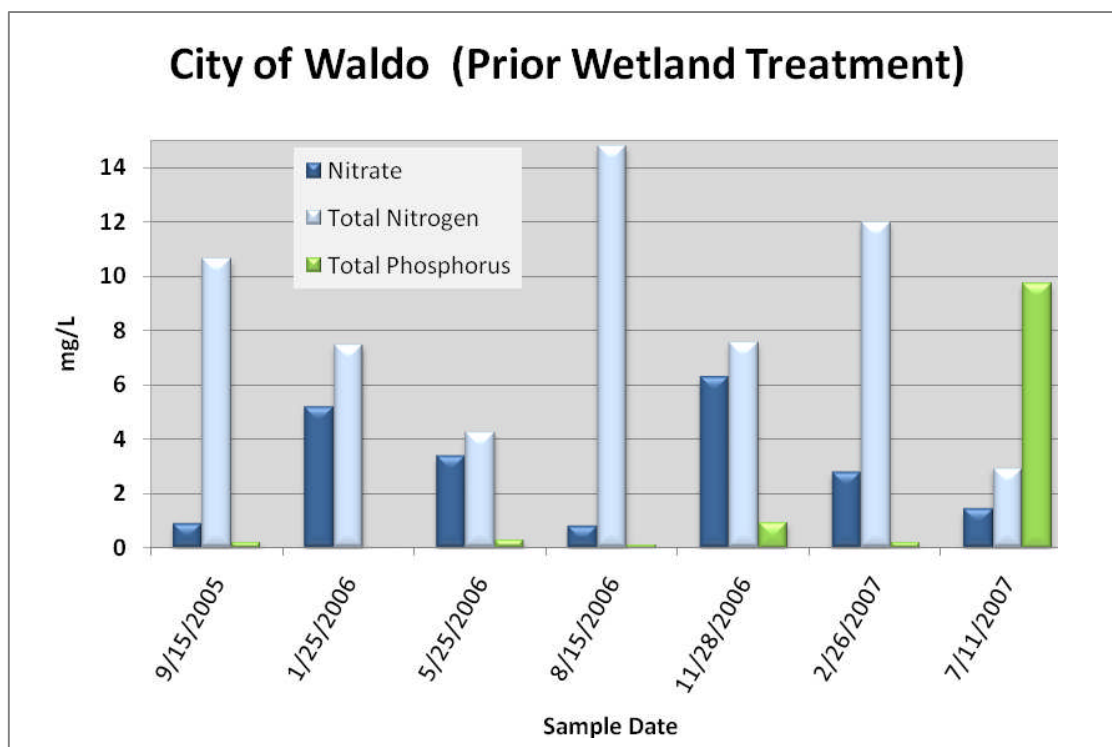


Figure 14: Effluent data from grab samples collected from the facility prior to the treatment wetland during the ACEPD inspections of the City of Waldo WWTP in fiscal years 2006 and 2007

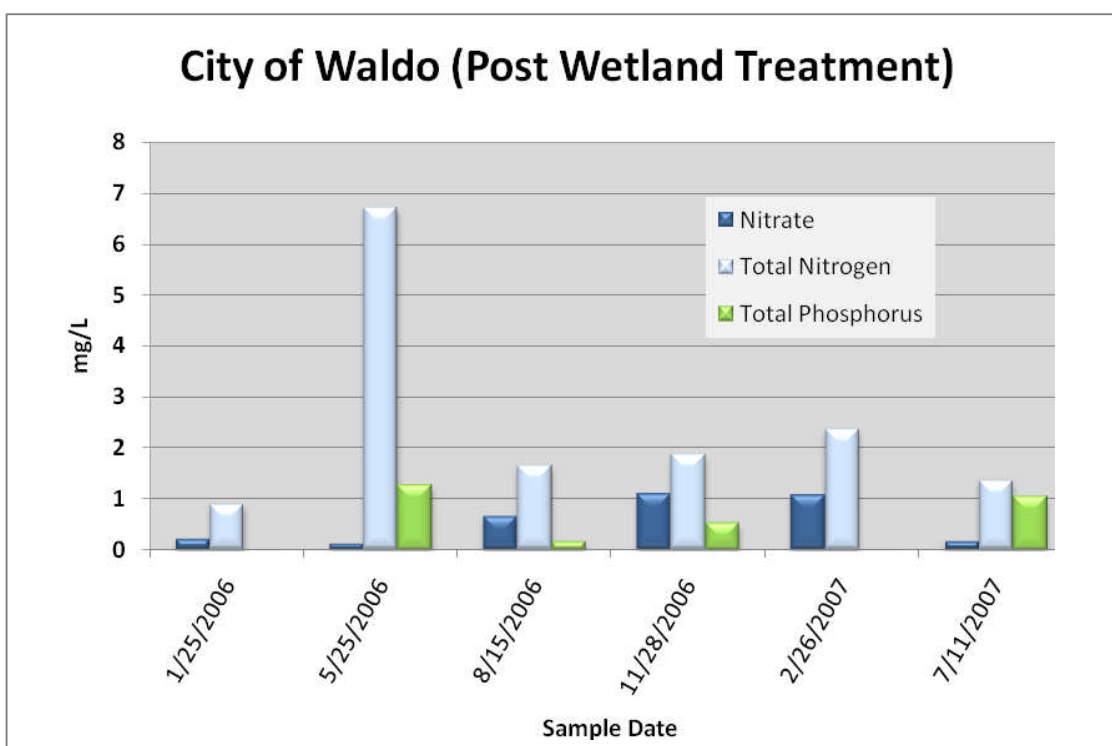


Figure 15: Effluent data from grab samples collected from the treatment wetland during the ACEPD inspections of the City of Waldo WWTP in fiscal years 2006 and 2007

Package Plants

Package plants are smaller pre-fabricated wastewater treatment plants designed to treat the domestic wastewater for a localized area, such as a mobile home park or camp. There were 11 package plants located in Alachua County in the beginning of 2006 and 10 once Sunshine Mobile Home Park was abandoned. There used to be many more package plants in Alachua County, but the trend has been to abandon package plants as they are able to connect to the closest centralized wastewater collection system.

The package plant at Sunshine Mobile Home Park was inspected three times by ACEPD during 2006 before the park was sold and the plant was abandoned in September 2006. The effluent was in compliance with the FDEP permit during all of the ACEPD inspections.

The industrial park that feeds the Electro Energy (formerly Moltech) wastewater plant has been under ownership transition. There was no reported flow at the plant during 2006 and 2007, and the plant's permit expired on May 30, 2006. This plant was not inspected in 2006, but was inspected in 2007 to ensure that it was not discharging to Cellon Creek without an NPDES permit from FDEP. The plant is designed as a zero discharge plant. The effluent is stored in a tank and is used as process water at the industrial park. FDEP has indicated that they will not require a permit for this WWTP.

The effluent quality varies among the package plants (Figure 16). The level of treatment tends to be lower at package plants compared to municipal plants; however, the volume is much less at package plants. The high total nitrogen concentrations at many of the plants are a concern. Even though most of the nitrogen is not in the mobile nitrate form, it is likely to get converted to nitrate once released to the environment. The individual package plants are discussed in the following sections of this report.

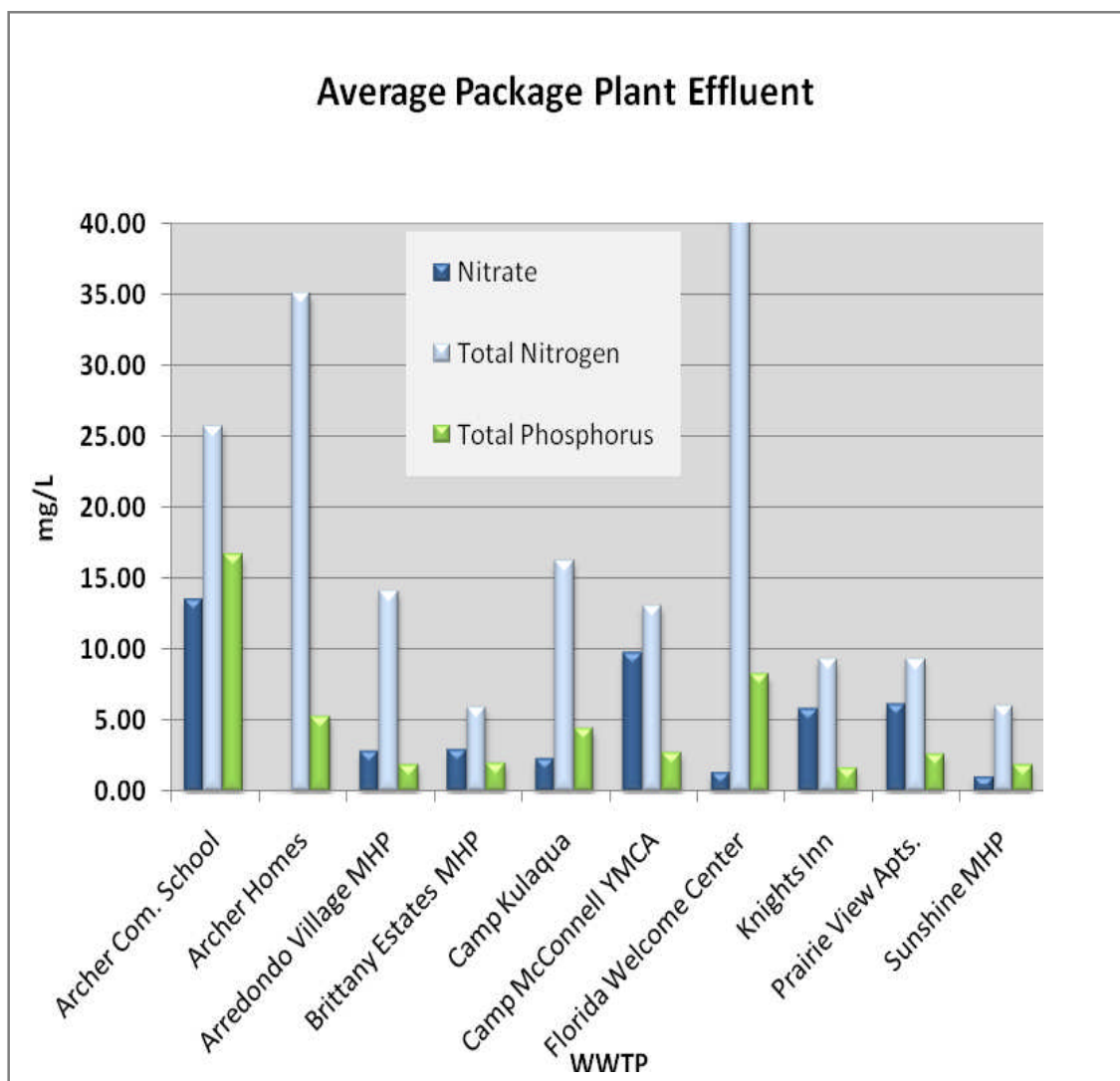


Figure 16: Averages of the effluent data from grab samples collected during the ACEPD inspections at package plants in 2006 and 2007.

Archer Community School

Facility size: 0.005 MGD

Permitted effluent disposal: three rapid infiltration basins (0.124 acres)

Residuals disposal: Hauled off-site

Permit expiration date: July 8, 2009



The package plant at the Archer Community School is an extended aeration activated sludge plant. This facility was inspected seven times in the 2006 and 2007 fiscal years. The parameter coverage analyzed was expanded in July of 2006 to include nitrogen species and phosphorus (Figure 17). Total nitrogen values at this plant were high during the sampling events and nitrate levels exceeded the FDEP permit limitation of 12 mg/L during three of the sampling events. FDEP was notified concerning these permit violations.

An aeration basin at the Archer Community School WWTP.

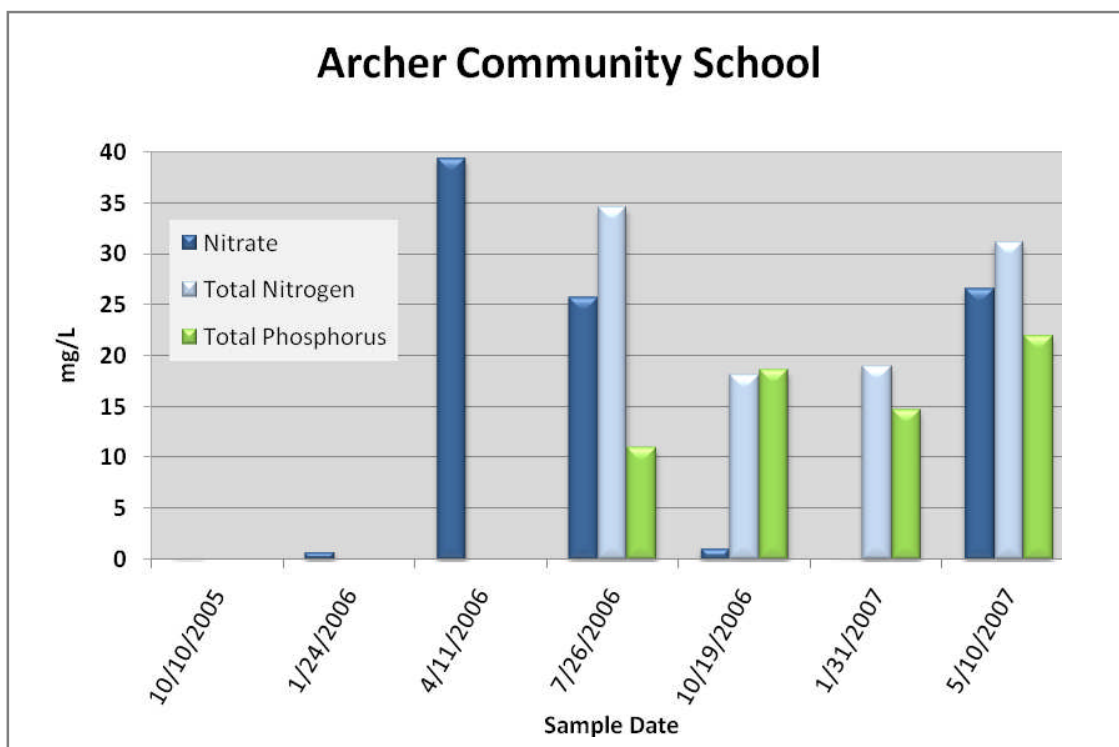


Figure 17: Effluent data from grab samples collected from the Archer Community School WWTP during the ACEPD inspections in 2006

Archer Homes

Facility size: 0.0083 MGD

Permitted effluent disposal: 0.22 acre absorption field

Residuals disposal: Hauled off-site

Permit expiration date: July 28, 2010



Solids in the final basin at the Archer Homes WWTP.

The package plant at Archer Homes is an extended aeration treatment plant. This facility was inspected seven times by ACEPD in the 2006 and 2007 fiscal years. The parameter coverage was expanded in July of 2006 to include nitrogen species and phosphorus. Sand filters were installed and permitted in 2006 to improve the effluent quality leaving this plant. However, the sand filters did not operate properly during 2006 and 2007.

The total suspended solids (TSS) permit limitation of 10 mg/L was exceeded in six out of the seven sampling events, and solids were consistently found in the chlorine contact chamber. The effluent was high in ammonia, indicating the oxygen levels in the plant may not be sufficient to support de-nitrification. High nitrogen values in this effluent (Figure 18) are a concern in this area where the aquifer is unconfined. Although the nitrogen in the effluent is not in the mobile nitrate form, it is likely to get converted to nitrate under the aerobic conditions in the unsaturated zone of the unconfined Floridan aquifer. The permit violations and nutrient concerns have been expressed in the inspection letters sent to the operator, owner, and FDEP.

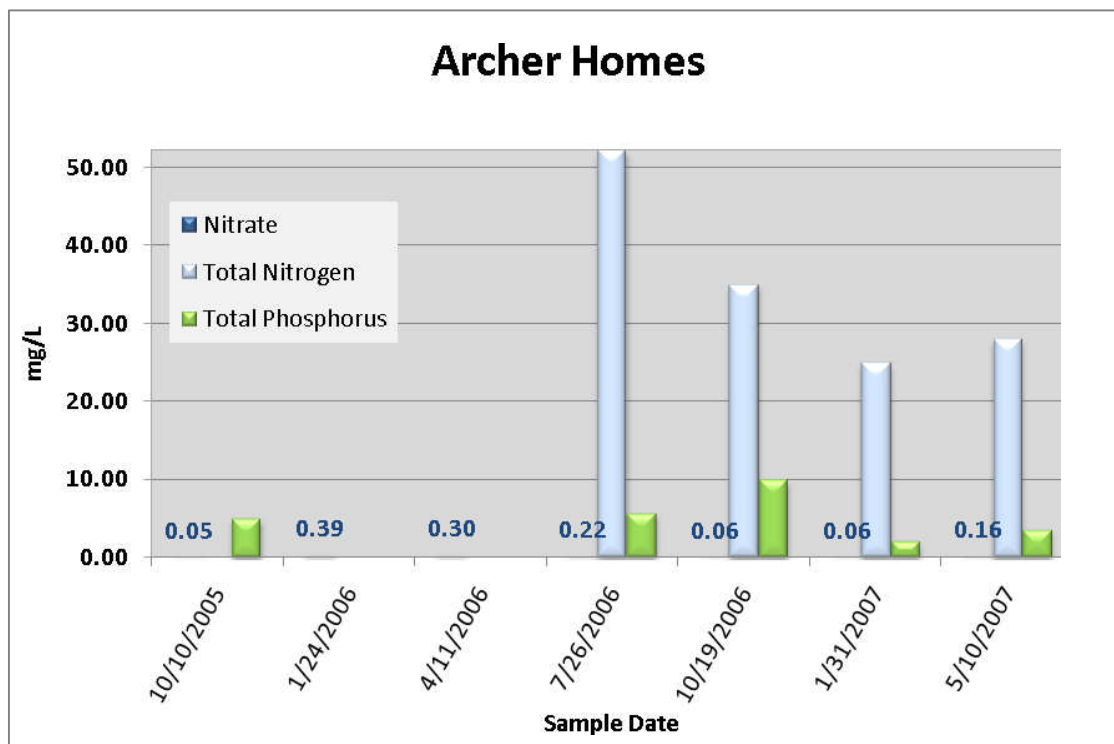


Figure 18: Effluent data from grab samples collected from the Archer Homes WWTP during the ACEPD inspections in 2006 and 2007. The nitrate concentrations are denoted on the graph.

Arredondo Farms Mobile Home Park (MHP)

Facility size: 0.060 MGD

Permitted effluent disposal: two rapid infiltration basins

Residuals disposal: Hauled off-site

Permit expiration date: May 14, 2010



Inspector looking at one of the clarifiers at the Arredondo WWTP

The package plant at Arredondo Farms MHP is an extended aeration treatment plant. This facility was found out of compliance by ACEPD during four of the seven inspections conducted during the 2006 and 2007 fiscal years. Non-compliance was caused by: solids in the rapid infiltration basin, uncovered screenings containers, a residual chlorine level less than the FDEP permit requirement, and an exceedance of the total suspended solids (TSS) permit requirement.

The parameter coverage was expanded in July of 2006 to include additional nitrogen species and phosphorus. Total nitrogen levels appear to be rising (Figure 19); however a longer period of record would be needed to confirm this possible trend.

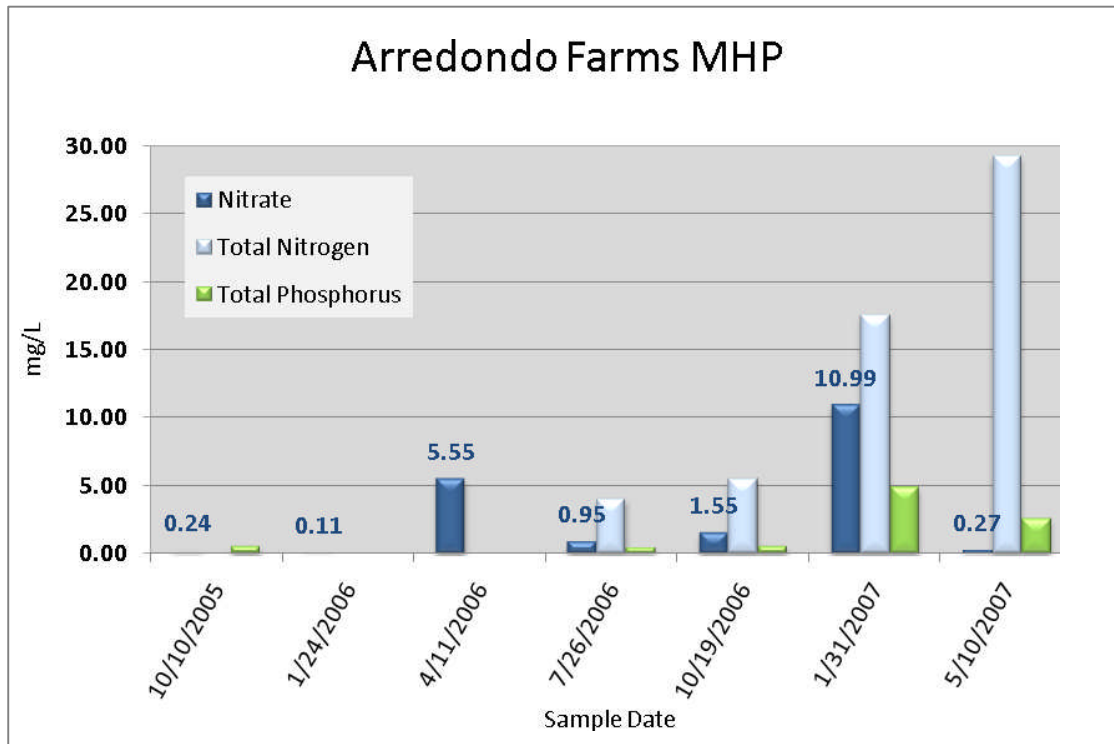


Figure 19: Effluent data from grab samples collected from the Arredondo Estates WWTP during the ACEPD inspections in 2006 and 2007. The nitrate concentrations are denoted on the graph.

Brittany Estates Mobile Home Park (MHP)

Facility size: 0.06 MGD

Permitted effluent disposal: Little Hatchet Creek

Residuals disposal: Hauled off-site

Permit expiration date: October 1, 2011



The Brittany estates Package WWTTP

The package plant at Brittany Estates MHP can be operated as an activated sludge extended aeration or contact stabilization plant. This facility was found out of compliance during three of the six inspections conducted by ACEPD during the 2006 and 2007 fiscal years. The violations were caused by residual chlorine levels less than or greater than the FDEP permit limitations. Effluent nitrogen levels tend to be very low at this plant, which is important since this plant discharges to a tributary of Little Hatchet Creek. Nitrate + nitrite levels were high (10.2 mg/L) in May 2006 (Figure 20), but the operator adjusted the plant to address the issue. The nutrient levels increased again in July 2007.

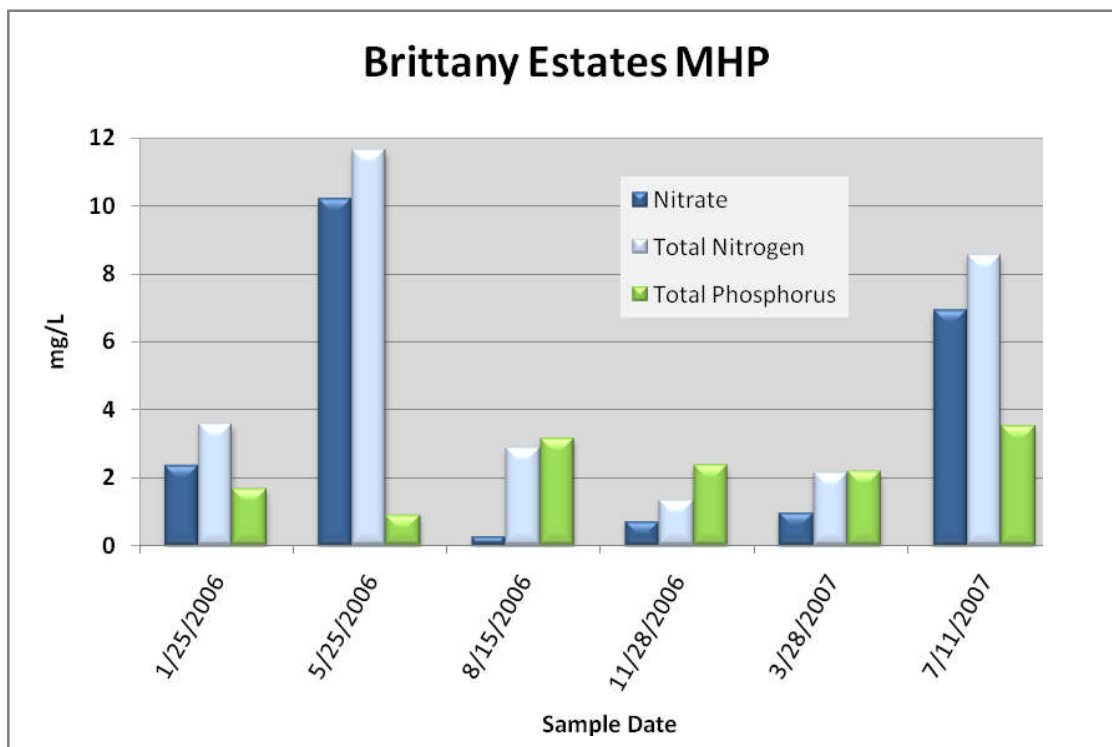


Figure 20: Effluent data from grab samples collected from the Brittany Estates WWTP during the ACEPD inspections in 2006 and 2007.

Camp Kulaqua

Facility size: 0.0201 MGD

Permitted effluent disposal: Two rapid infiltration basins (0.372 acres)

Residuals disposal: Hauled off-site

Permit expiration date: October 27, 2009



Aeration basins, clarifier, and chlorine contact chamber at the Camp Kulaqua WWTP.

The package plant at Camp Kulaqua in High Springs is an extended aeration activated sludge treatment plant. This facility was inspected six times in the 2006 and 2007 fiscal years. During two of the inspections the chlorine residual was under the FDEP permit limitation, and the effluent CBOD (72.3 mg/l) exceeded the 60 mg/L FDEP permit limitation during the June 2006 sampling event.

The high nitrogen values during some of the sampling events (Figure 21) are a concern with the proximity of Hornsby Springs and the Santa Fe River. Although the nitrogen in the effluent is not in the mobile nitrate form, it is likely to get converted to nitrate under the aerobic conditions in the unsaturated zone of the unconfined Floridan aquifer. In 2009 the City of High Springs will look into connecting this plant to its centralized wastewater collection system. Permit violations and nutrient concerns were expressed in the inspection letters sent to the plant owner, operator, and FDEP.

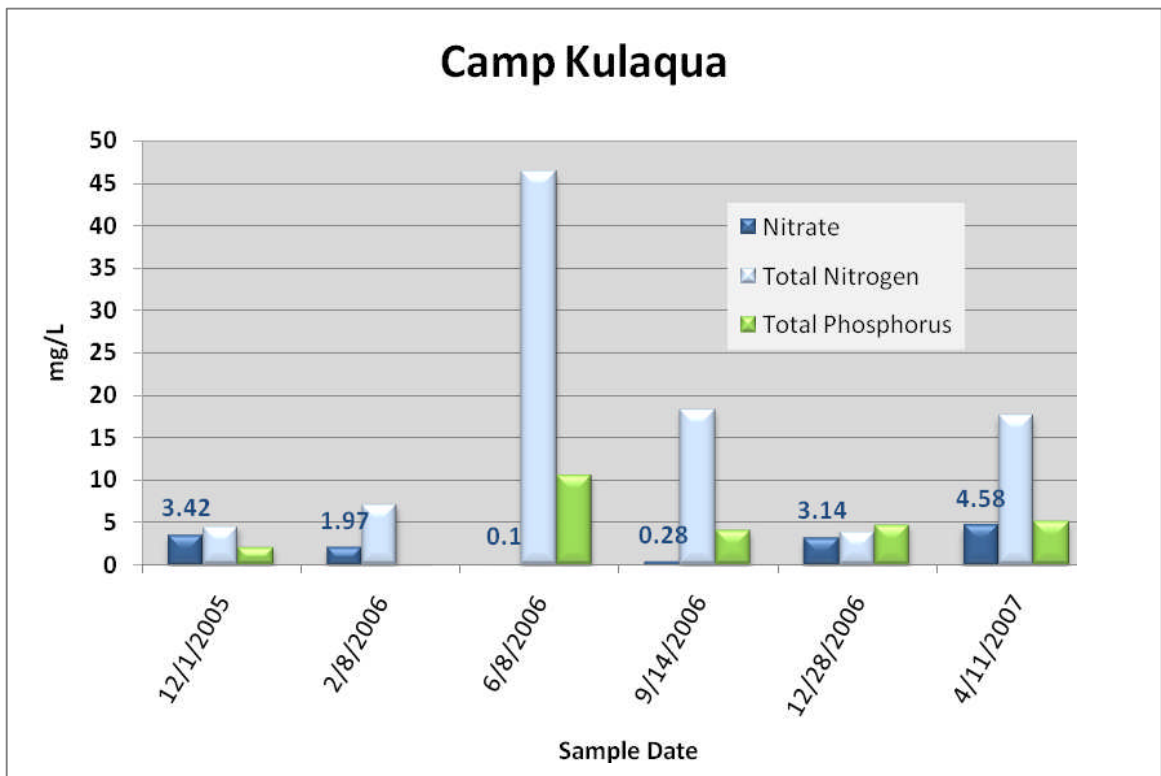


Figure 21: Effluent data from grab samples collected from the Camp Kulaqua WWTP during the ACEPD inspections in 2006 and 2007. The nitrate concentrations are denoted on the graph.

Camp McConnell- YMCA

Size: 0.0075 MGD

Permitted effluent disposal: Two absorption fields (0.0388 acres)

Residuals disposal: Hauled off-site

Permit expiration date: December 8, 2009



An inspector looking towards the aeration basins at the Camp McConnell WWTP

The package plant at Camp McConnell is an extended aeration plant. ACEPD conducted seven inspections at this facility during the 2006 and 2007 fiscal years. Effluent exceeded the FDEP permit limitation for total suspended solids (TSS) of 10 mg/L during the October 2005 inspection and exceeded the nitrate limitation of 12 mg/L during the August 2006 (26.6 mg/L) inspection. High nutrient concentrations in the effluent (Figure 22) are a concern with the proximity to Georges Pond. However, the nutrient levels dropped in 2007. The flow rate at this facility is intermittent and is dependent on the programming at the camp. The operator often adds dog food as food for the microbes that are essential to the proper operation of this plant. Permit violations and nutrient concerns were expressed in the inspection letters sent to the plant owner, operator, and FDEP.

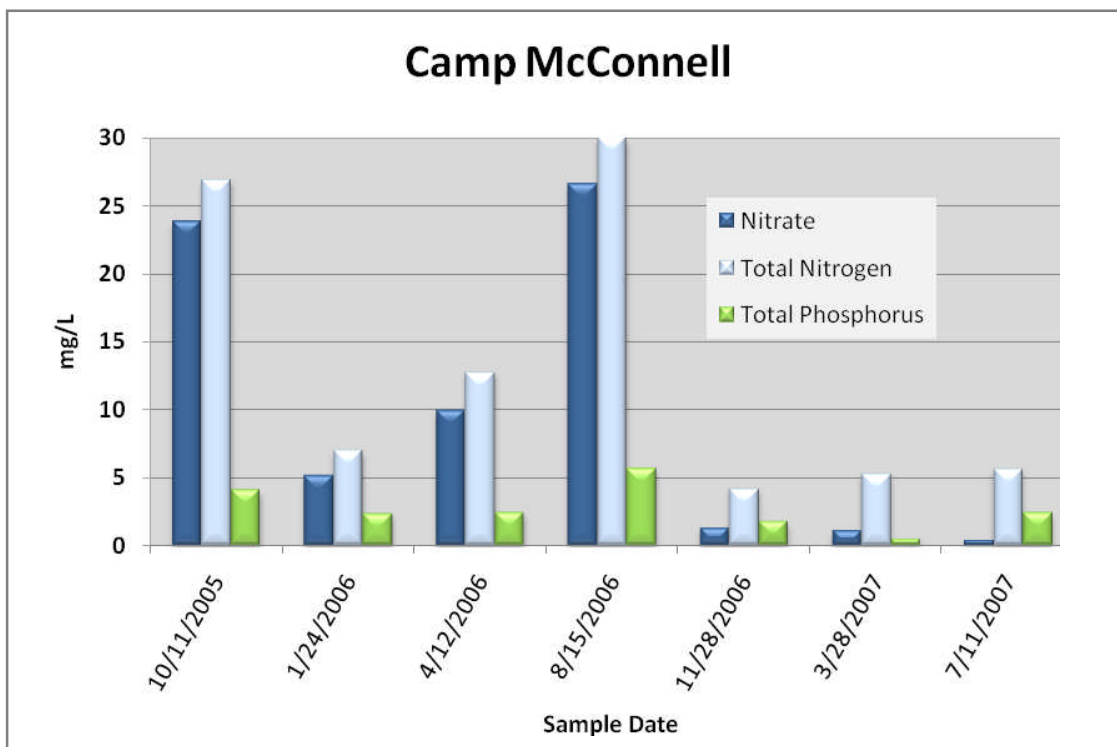


Figure 22: Effluent data from grab samples collected from the Camp McConnell WWTP during the ACEPD inspections in 2006 and 2007

The Florida Welcome Center

Facility size: 0.009 MGD

Permitted effluent disposal: Rapid infiltration basin (0.25 acres)

Residuals disposal: Hauled off-site

Permit expiration date: September 5, 2010



Aeration basins and blower at the Florida Welcome Center WWTP

The Florida Welcome Center wastewater treatment plant is an extended aeration plant. This facility was found in compliance during four of the six inspections conducted by ACEPD during the 2006 and 2007 fiscal years. During the December 1, 2005 inspection there were solids in the chlorine contact chamber. During the December 28, 2006 inspection, the plant was turbid and the effluent had a fecal coliform concentration of 4,800 CFU/100 ml, which exceeded the permit one time maximum concentration of 800 CFU/100 ml. The plant was likely operating at higher flows than it could effectively treat during the December 2006 inspection, due to holiday travelers.

The effluent was normally in compliance with the nitrate limitation set by the FDEP permit, but the high total nitrogen concentrations (Figure 23) are of concern in such close proximity to the Santa Fe River and its springs. Although the nitrogen in the effluent is not in the mobile nitrate form, it is likely to get converted to nitrate under the aerobic conditions in the unsaturated zone of the unconfined Floridan aquifer.

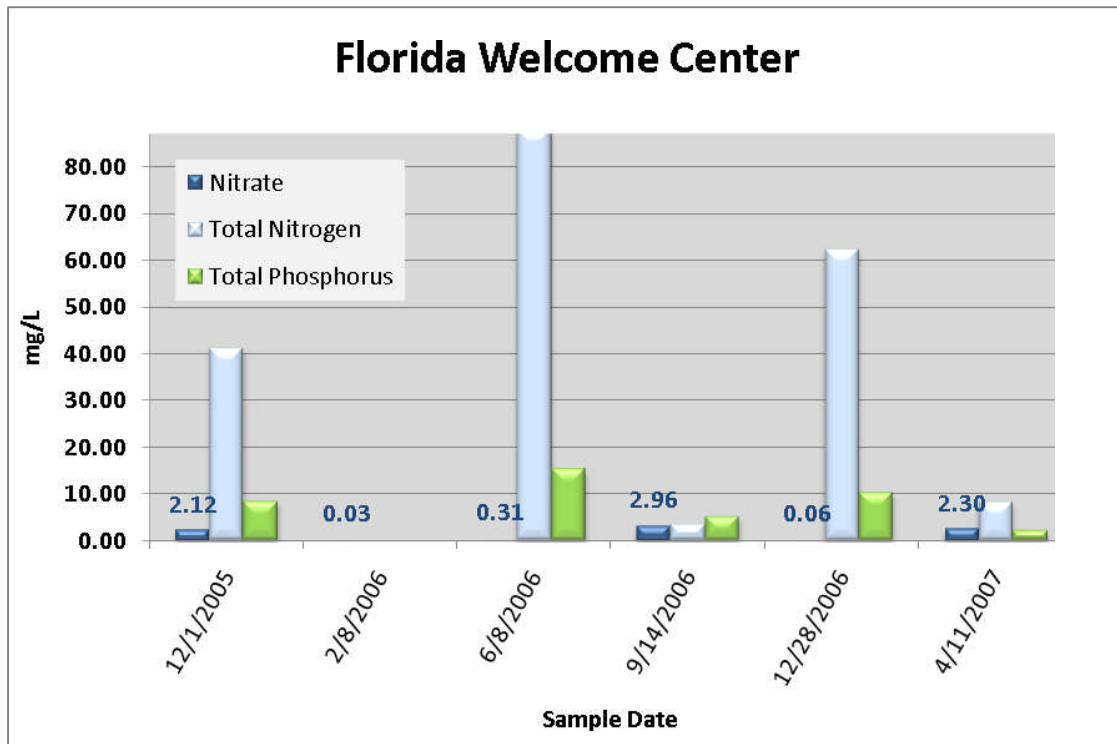


Figure 23: Effluent data from grab samples collected from the Florida Welcome Center WWTP during the ACEPD inspections in the 2006 and 2007 fiscal years. The nitrate concentrations are denoted on the graph.

The Gainesville Raceway

Facility size: 0.00825 MGD

Permitted effluent disposal: Spray irrigation (3.25 acres)

Residuals disposal: None Produced

Permit expiration date: January 23, 2008



An aeration basin at the Gainesville Raceway WWTP

The Gainesville Raceway plant is an extended aeration batch treatment system that was designed to treat the intermittent flows of the Gainesville Raceway including the extreme flows of Gator Nationals. This facility was not inspected during 2006 or 2007. This plant operates during special events at the Gainesville Raceway and receives and treats wastewater pumped from portable toilets. This plant is over-designed and historically has been found to be in compliance. Due to its intermittent nature, this plant is not required to pay wastewater fees to the County. This plant was inspected in 2005 and will be inspected again in 2008.

Knights Inn

Facility size: 0.015 MGD

Permitted effluent disposal: 1.26 acre sprayfield

Residuals disposal: Hauled off-site

Permit expiration date: April 21, 2010



The Knights Inn Package WWTP

The package plant at the Knight's Inn Hotel in Micanopy is an extended aeration plant. This facility was inspected seven times by ACEPD during the 2006 and 2007 fiscal years. The plant was found in non-compliance during two of the inspections due to an uncovered container for waste screenings and solids in the chlorine contact chamber. During all of the inspections the effluent was in compliance with the FDEP permit limitations. There is no nitrate limit set by the FDEP permit. The elevated nutrients in the April 2006 and July 2007 effluent (Figure 24) are of concern.

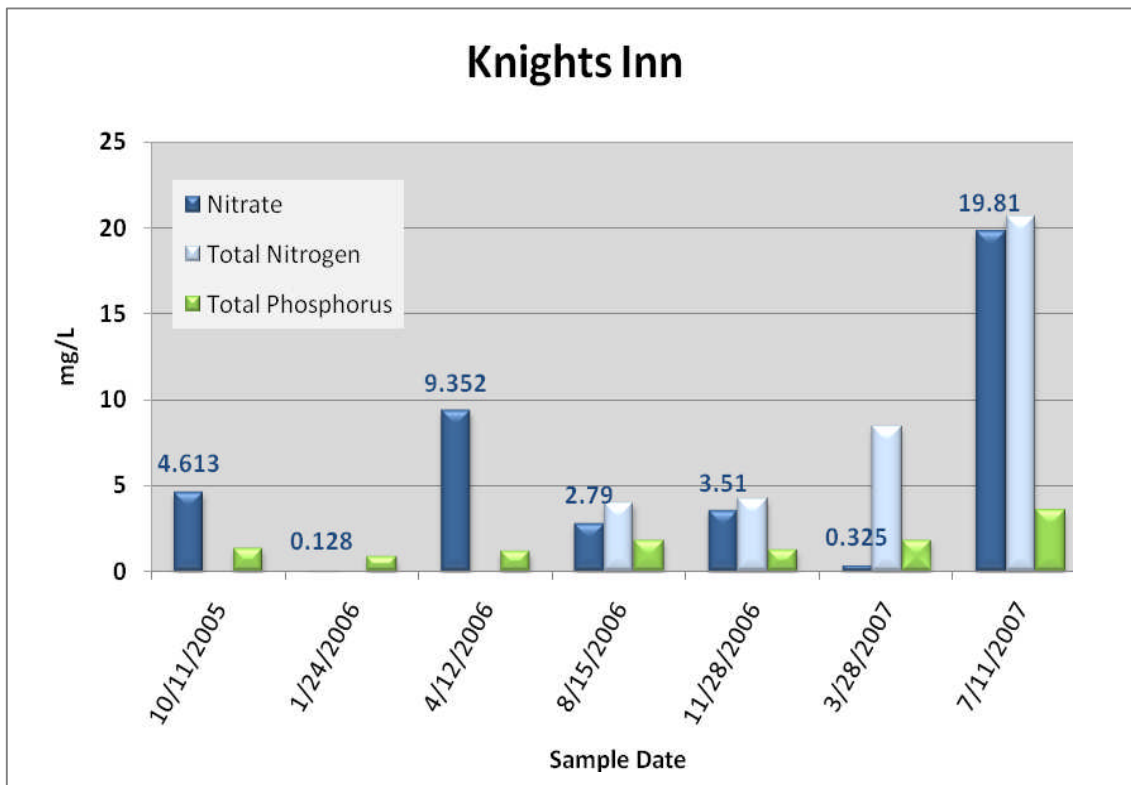


Figure 24: Effluent data from grab samples collected from the Knights Inn WWTP during the ACEPD inspections in the 2006 and 2007 fiscal years. Nitrate values are denoted on the graph.

Prairie View Apartments

Facility size: 0.00424MGD

Permitted effluent disposal: percolation pond (6,608 square feet)

Residuals disposal: Hauled off-site

Permit expiration date: April 25, 2010



Prairie View package WWTTP

The package plant at Prairie View Apartments is an activated sludge secondary treatment plant. This facility was found out of compliance during all seven of the inspections conducted by ACEPD during the 2006 and 2007 fiscal years. During five of the inspections the chlorine residual was less than the FDEP permit minimum concentration of 0.5 mg/L. During the July 2006 inspection the total suspended solids (TSS) in the effluent was very high at 138 mg/L and exceeded the 10 mg/L permit limitation. Solids were observed in the chlorine contact chamber during half of the inspections. During the March 2007 inspection, the effluent had a fecal coliform concentration of 4,000 CFU/100 ml, which exceeded the FDEP one time maximum concentration of 800 CFU/100 ml.

The operator, plant owner, and FDEP were notified concerning these compliance issues. The poor effluent quality (Figure 25) is of concern because when Paynes Prairie is under high water conditions, the effluent disposal is directly connected to the prairie, an Outstanding Florida Water. The effluent is permitted as discharging to a rapid infiltration basin, but due to high water and the soil conditions, it acts more like a wetland or a surface water discharge.

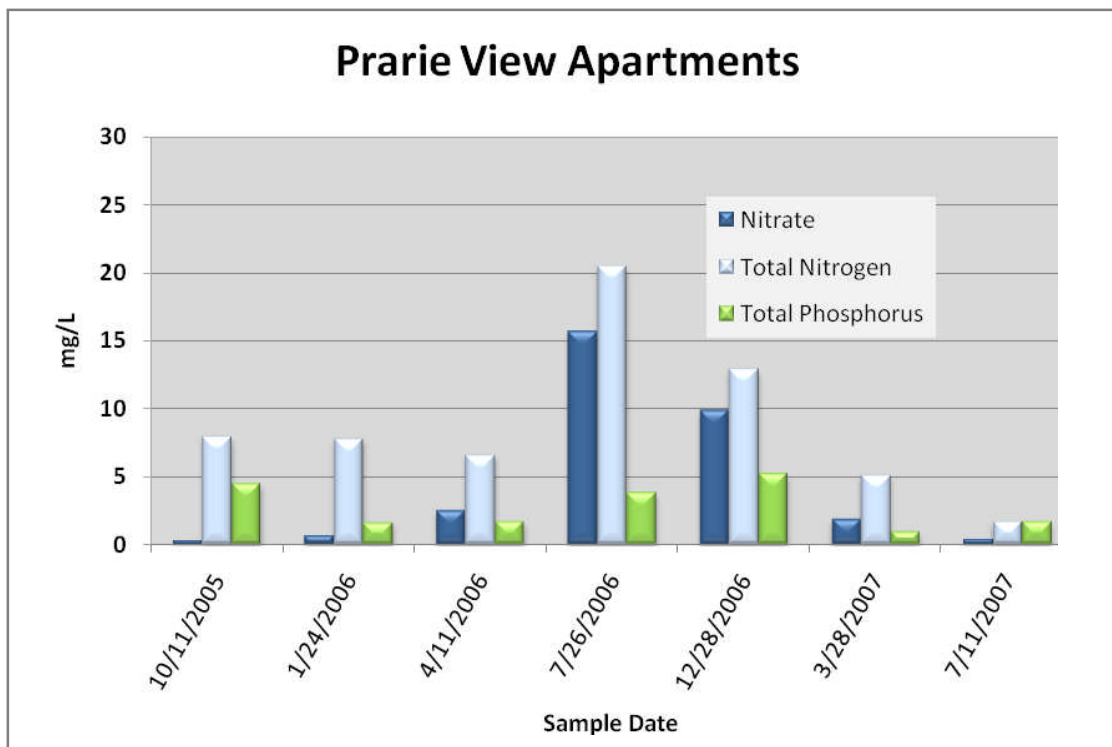


Figure 25: Effluent data from grab samples collected from the Prairie View WWTP during the ACEPD inspections in 2006 and 2007

Recommendations

ACEPD will continue to monitor the WWTPs in Alachua County. Effluent will be analyzed for nutrient species and additional parameters at ACEPD's discretion. If the effluent is discolored and appears to be out of compliance with its FDEP permit limitations, parameters such as fecal coliform, CBOD, and TSS may be monitored to assist FDEP in enforcing permit limitations.

ACEPD plans to increase communication concerning problematic plants with the Florida Department of Environmental Protection Domestic Wastewater Compliance Staff. It is ACEPD's hopes to assist in getting all of the WWTPs in compliance with their FDEP permits. In 2009 ACEPD anticipates adding enforcement capabilities to its wastewater program, which will give ACEPD the authority to issue civil citations for effluent and reporting violations.

ACEPD will continue to encourage all of the wastewater treatment plants to upgrade to advanced treatment with the goal of reducing nutrient concentrations in treated effluent. An emphasis will be placed on treatment facilities within the delineated springsheds of the springs of the lower Santa Fe River and to those in the watersheds of Outstanding Florida Waters or Impaired Waters.

ACEPD will promote additional nutrient monitoring (nitrogen species and total phosphorus) requirements for inclusion in FDEP permits. Some of the Alachua County waterbodies, including Lake Santa Fe, are phosphorus limited. The Santa Fe River, Newnans Lake, and Orange Lake are on FDEP's Impaired Waters list for phosphorus.

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