

**Marguerite McLean**090349-WS

**From:** Trina Collins [TCollins@RSBattorneys.com]  
**Sent:** Monday, January 11, 2010 4:56 PM  
**To:** Filings@psc.state.fl.us  
**Cc:** smlubertozzi@uiwater.com; keweeks@uiwater.com; pcflynn@uiwater.com; Curt Mouring; Jennifer Brubaker; Martin Friedman; Christian W. Marcelli; Trina Collins  
**Subject:** Filing in Docket No.: 090349-WS; Cypress Lake Utilities, Inc.'s Application for a Limited Proceeding Water and Wastewater Rate Increase in Polk County, Florida  
**Importance:** High  
**Attachments:** PSC Clerk 14 (Response to 5th Data Request).ltr.pdf

- a. Martin S. Friedman, Esq.  
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[cmarcelli@rsbattorneys.com](mailto:cmarcelli@rsbattorneys.com)
- b. Docket No. 090349-WS; Cypress Lake Utilities, Inc.'s Application for a Limited Proceeding Water and Wastewater Rate Increase in Polk County, Florida - Filing the response of Cypress Lake Utilities, Inc. to Staff's fifth data request dated December 18, 2009.
- c. Cypress Lakes Utilities, Inc.
- d. 15 Pages.
- e. Letter to Commission Clerk and response attachments - 15 pages.

DOCUMENT NUMBER-DATE

00262 JAN 11 2010

FPSC-COMMISSION CLERK

1/11/2010

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REPLY TO CENTRAL FLORIDA OFFICE

January 11, 2010

CENTRAL FLORIDA OFFICE  
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**E-FILING**

Ann Cole, Commission Clerk  
Office of Commission Clerk  
Florida Public Service Commission  
2540 Shumard Oak Boulevard  
Tallahassee, FL 32399

Re: Docket No. 090349-WS; Cypress Lake Utilities, Inc.'s Application for a Limited Proceeding Water and Wastewater Rate Increase in Polk County, Florida  
Our File No. 30057.182

Dear Ms. Cole:

Enclosed for filing in the above-referenced docket is the response of Cypress Lake Utilities, Inc. (the "Utility") to Staff's fifth data request dated December 18, 2009. Staff has requested the following information in order to complete its analysis in the above-referenced docket.

1. Assuming the wastewater treatment plant expansion was not necessary to accommodate Phase 12, would the DEP have required any additional improvements to the existing plant facilities.

1. **RESPONSE:** Years before Cypress Lakes Associates considered the purchase and development of the raw land that eventually became Phase 12, the Florida Department of Environmental Protection ("DEP") identified in its correspondence to the developer/owner of the Utility at that time that the existing flow equalization tank was insufficient in order for the Cypress Lakes WWTP to meet the water quality limits identified in the plant's operating permit. The attached portion of the 1998 Domestic Wastewater Facility Permit (attached hereto) describes the planned construction of additional flow equalization volume as a component of the plant modifications and improvements that were approved at that time. Subsequently, in November of 2000, DEP approved revised

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FPSC-COMMISSION CLERK

construction plans that continued to reflect the need for an expansion of the plant's flow equalization capacity (see the attached Permit Modification & Revision, dated November 14, 2000).

Cypress Lakes Utilities was able to postpone construction of this additional tankage for an eight-year period by maximizing the use of the constructed facilities while yet remaining in compliance with the plant's operating permit. In 2006, after a significant increase in customer connections as well as an increase in the wastewater flow treated at the plant during the peak flow months of January through March, it was evident from an operational perspective that plant improvements were needed in order for the plant to remain in compliance with Chapters 62-600 and 62-610, F.A.C. At about this time, Cypress Lakes Associates requested sewer service sufficient to serve 120 proposed lots in Phase 12 and commissioned HDR Engineering to evaluate the plant's design to determine if sufficient sewer treatment capacity was available. In HDR's summary and recommendations (attached hereto), HDR identified that "The Cypress Lakes WWTP does not have capacity to handle the buildout flows with Class I Reliability if flow equalization is not provided. Currently, the surge tank does not have the capacity to handle peak events at the current (2005) flows (emphasis added). Although the secondary treatment and filtration units have sufficient capacity at the current peak flows, the limited capacity of the surge tank impacts the chlorine contact chamber capacity with a reduced contact time at the current flows."

In addition, DEP staff indicated verbally to the Utility during the permitting process that the design of the plant improvements must include headworks screening equipment and a dewatering screw, and if the design did not include such equipment, the design would not be approved. Irrespective of Phase 12, DEP staff clearly agreed that the existing plant would fail to produce effluent with Class I reliability that would meet water quality limits for a slow-rate, Part III public access irrigation system, and in the absence of an alternative disposal method, it was necessary to address this deficiency. By virtue of delaying the investment in plant associated with additional surge tank facilities, the rate payers benefited over the last eight years by having lower wastewater rates than they would have had otherwise, by having the developer contribute funds toward construction of the project that would otherwise not have been contributed, and by imposition of service availability fees paid by future customers.

2. Please provide copies of letters between the DEP and the Utility for the past three years, including correspondence, concerning improvements beyond the plant expansion needs for Phase 12.

**RESPONSE:** Please see the documents attached in response to Item No. 1, above.

3. In past rate proceedings for several of Cypress Lakes' sister utilities, Utilities, Inc. has stated that the purpose of the Project Phoenix was to improve the Utility's capabilities and processes in their accounting, customer service, customer billing, and financial and regulatory reporting areas. As Project Phoenix has been fully deployed for nearly one year, please provide the benefits realized as a result of the Project Phoenix in regard to the Utility's accounting, customer service, customer billing, and financial and regulatory reporting areas, including the cost savings realized and all quantifiable benefits.

**RESPONSE:** The purpose of Project Phoenix was to improve the Utility's capabilities and processes in our accounting, customer service, customer billing and financial and regulatory reporting areas. Project Phoenix has been completed for one year as of December 3, 2009 and the Utility has already realized many benefits in the above listed areas.

UI management selected JD Edwards Enterprise One ("JDE") as the financial system, including asset management, and Oracle's Customer Care and Billing System ("CC&B") as the customer information system. These systems are integrated in a manner that allows for the sharing of crucial information between the Utility's different operational organizations, as well as providing access from multiple locations because the system is web based.

JDE is a significant asset to UI and its operating subsidiaries, it allows for enhanced tracking and integration components, which improve the Utility's ability to record and retrieve data. UI is utilizing the accounts payable system for cash management. It is used to issue checks, perform electronic funds transfers, and perform bank reconciliations and expense reimbursements. The system has enhanced record keeping and retrieval functions, making the production of financial and regulatory reports easier; this is evidential in many sectors but

specifically in the time capture module, which enables all employees to enter their time for tracking purposes, have time approved by their supervisor, and charge it directly to capital projects, if applicable. In addition, the reports are becoming more accurate. The system also reduces manual effort and reliance on spreadsheets, which improves the reliability of reports, as is evident in the fixed assets reporting function that covers the asset management requirements of UI. Assets are tracked throughout their entire lifetime, including automatic depreciation, retirements and tax calculations, which ultimately benefits customers by improving the management decision making process and allowing the Utility to more efficiently deliver reliable information to regulators. The capital project and job cost functionality covers the project budget setup and schedule, and also allows management to monitor its costs. UI uses these functionalities in order to improve visibility of project status. As cost and purchases are updated in JDE, this same information is viewed in real-time. Capital project approvals are also included in JDE using the procurement module approval process. JDE is allowing employees to manage projects and costs in a more effective manner, which benefits the Utility and customers. JDE also allows UI to utilize requisitioning which is dealt with within the procurement module of JDE, covering purchases from outside vendors. The procurement module is used to record and track purchases against capital projects, assets such as maintenance and replacement parts, IT-related purchases and various other purchases such as office supplies and furniture. The procurement module approval process is used to record capital project approval as well.

UI's legacy customer care and billing system was fully customized and unsupported. The system had several weaknesses. Customer and premise information were linked in one account. As residents moved, the service order history at the premise was purged and prior service activities eventually became unavailable for viewing. This resulted in the loss of valuable information. In addition, field personnel were sent daily service orders either through e-mail or fax. They did not have access to the legacy billing system. Upon completion of the service orders, the information was e-mailed or faxed back to the billing office for closure of the orders. The process was manually intensive and led to untimely responses due to incomplete fax transmissions. Additionally, as residents moved from one premises to another within the Utility, they were issued a new account number. There was no efficient means of tracking a customer and transferring

payment information, service history and billed services (debt) from one account to another.

CC&B allows the Utility to focus on either a customer or a premises. Field activity information at a premises is stored in the records indefinitely, allowing field personnel to retain prior history of past service issues at a residence. This allows them to act in a cost effective manner when considering repair or replacement of equipment or lines at a premise. In addition, CC&B automates field activities to the field. A background process makes key decisions about assignments and timing. CC&B automates field activity dispatching and allows for uploading and downloading to hand-held devices. The system allows the field operators to complete field activities in a live environment so that CSR's (customer service representatives) have the information available to them as soon as the order is completed.

CC&B system has several other improvements when compared to the legacy system. For instance, the billing estimation function is improved. It now includes a three tier process that incorporates customer history from last year's same period, customer history for last three to six months, and trend data from the customer's trend area (CIS Division) and trend class (Residential and Commercial). In addition to the billing estimation function, the system also provides for the automatic proration of billings based on number of days in a read period or bill period. This functionality has reduced the type of bill proration issues UI subsidiaries have faced in the past.

CC&B also allows for the automated dispatching of Field Orders/Field Activities to operators for a more timely response to customer and service issues. The system also allows for an efficient means of billing customers who have one account, but more than one premises. In addition, CC&B also allows customer service representatives more customer history and information to better facilitate questions from customers by providing both a history of meter reads and a history of billings (the Legacy system only held the previous twelve months). Field Operations now has access to customer premises and service point information as well as meters and meter readings. The system also allows account numbers to stay with the customer for life. This gives the Utility the ability to track a

Ann Cole, Commission Clerk  
Office of Commission Clerk  
Florida Public Service Commission  
January 11, 2010  
Page 6

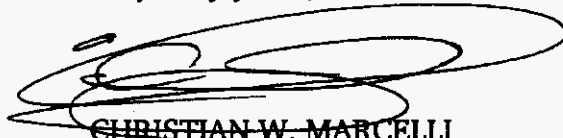
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customer from location to location. The system also produces randomly generated account numbers, which has reduced the number of misapplied payments. CC&B provides more information displayed on one screen for customer service to assist customers. The legacy system required moving from one screen to another. CC&B also features an automatic collections and severance process which reduces error from input, and as a result accidental disconnections for a customer for non-payment have been reduced. And finally, updates to the system are real time with respect to the completion of field activities, customer payments and adjustments and customer information.

There have been many advantages and improvements to Utilities, Inc. and its subsidiaries since the implementation of Project Phoenix, and there are many more that will be realized over time, but, at this point it is difficult to determine the quantifiable cost savings and benefits because the system is still being acclimated to all aspects of the company.

Should you or the Staff have any questions regarding this filing, please do not hesitate to give me a call.

Very truly yours,



**CHRISTIAN W. MARCELLI**  
For the Firm

CWM/der

cc: Steven M. Lubertozi, Executive Director of Regulatory Accounting and Affairs (w/enclosures) (via e-mail)  
Kirsten E. Weeks, Manager of Regulatory Accounting (w/enclosures) (via e-mail)  
Patrick C. Flynn, Regional Director (w/enclosures) (via e-mail)  
Curt Mouring, Division of Economic Regulation (w/enclosures) (via e-mail)  
Jennifer Brubaker, Esquire, Office of General Counsel (w/enclosures) (via e-mail)

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Lawton Chiles  
Governor

# Department of Environmental Protection

Southwest District  
3804 Coconut Palm Drive  
Tampa, Florida 33619

Virginia B. Wetherell  
Secretary

## STATE OF FLORIDA DOMESTIC WASTEWATER FACILITY PERMIT

### PERMITTEE:

Mr. Steven Sembler, Vice President  
Cypress Lakes Associates, Ltd.  
11300 4<sup>th</sup> Street North, Suite 200  
St. Petersburg, FL 33716

PERMIT NUMBER: FLA013123-001-DW2P  
ISSUANCE DATE: November 9, 1998  
EXPIRATION DATE: November 8, 2003  
FACILITY I.D. NO: FLA013123

### FACILITY:

Cypress Lakes WWTF  
10000 North US Hwy. 98  
Polk County  
Lakeland, FL 33809  
Latitude: 28° 10' 46" N Longitude: 81° 59' 32" W

This permit is issued under the provisions of Chapter 403, Florida Statutes, and applicable rules of the Florida Administrative Code. The above named permittee is hereby authorized to operate the facilities shown on the application and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

### TREATMENT FACILITIES:

*An existing*, 0.160 mgd maximum month average daily flow (MMADF), Type II, extended aeration activated sludge domestic wastewater treatment plant consisting of: one (1) flow equalization basin of 15,045 gallons, five (5) aeration basins of 160,552 gallons total volume, two (2) clarifiers of 27,145 gallons total volume, two (2) chlorine contact chambers of 5,700 gallons, a dual media filter of 100,000 gallons, and two (2) aerobic digesters of 13,874 gallons total volume. This plant is operated to provide secondary treatment with high-level disinfection.

*After construction/modification*, 0.240 mgd maximum month average daily flow (MMADF), Type II, extended aeration activated sludge domestic wastewater treatment plant consisting of: one (1) flow equalization basin of 41,100 gallons, six (6) aeration basins of 240,240 gallons total volume, two (2) clarifiers of 51,200 gallons total volume with a surface loading rate of 346 gallons per day per square foot, three (3) dual media filters designed to handle 3.0 gpm per square foot, three (3) chlorine contact chambers of 1,800 gallons total volume, and one (1) sludge holding tank of 17,000 gallons. This plant will be operated to provide secondary treatment with high-level disinfection.

"Protect, Conserve and Manage Florida's Environment and Natural Resources"

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PERMITTEE: Mr. Steven Sembler, Vice President  
FACILITY: Cypress Lakes WWTF

PERMIT NUMBER: FLA013123-001-DW2P  
EXPIRATION DATE: See Page 1

**REUSE:**

**Land Application:** An existing 0.240 mgd MMADF permitted capacity slow-rate public access (R001) system in which disinfected effluent is stored off-site in three (3) unlined storage ponds of 2.0 million gallons capacity each, which is then directed to the 137-acre Cypress Lakes Golf Course for reuse. Land application system R001 is located approximately at latitude 28° 10' 46" N, longitude 81° 59' 32" W.

**IN ACCORDANCE WITH:** The limitations, monitoring requirements and other conditions as set forth in Pages 1 through 24 of this permit and attached DMR.



# Department of Environmental Protection

Lawton Chiles  
Governor

Southwest District  
3804 Coconut Palm Drive  
Tampa, Florida 33619

Virginia B. Wetherell  
Secretary

November 9, 1998

In the matter of an  
Application for Permit  
by:

Cypress Lakes Association, Ltd.  
11300 4<sup>th</sup> Street North, Suite 200  
St. Petersburg, FL 33716

DEP File No.: FLA013123-001-DW2P  
Polk County

Atten.: Mr. Steven Sembler, Vice President

Enclosed is Permit Number FL0013123-001-DW2P to operate an existing Type II, domestic wastewater treatment plant, issued under section(s) 403.087(1), Florida Statutes.

Any party to this order (permit) has the right to seek judicial review of the permit under section 120.68 of the Florida Statutes, by the filing of a Notice of Appeal under rule 9.110 of the Florida Rules of Appellate Procedure, with the Clerk of the Department of Environmental Protection, Office of General Counsel, Mail Station 35, 3900 Commonwealth Boulevard, Tallahassee, Florida 32399-3000 and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within thirty days after this notice is filed with the Clerk of the Department.

Executed in Tampa, Florida.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION

Michael S. Hickey, P.E.  
Water Facilities Administrator  
Southwest District

**CERTIFICATE OF SERVICE**

The undersigned duly designated deputy agency clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of business on Nov 9, 1998 to the listed persons.

**FILING AND ACKNOWLEDGMENT**

FILED, on this date, under section 120.52(7), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Jaqueline M. Price      Nov 9, 1998  
[Clerk]                                      [Date]

**Copies furnished to:**

Sharon Sawicki, P.E., FDEP/DW  
Michael J. Gaylor, P.E.  
DEP Office of General Council  
Ms. Amy Bodine, E.I., DEP



Jeb Bush  
Governor

# Department of Environmental Protection

Southwest District  
3804 Coconut Palm Drive  
Tampa, Florida 33619  
November 14, 2000

copy provided to PF  
David B. Strubbs  
Secretary

Donald Rasmussen, Vice-President  
Cypress Lakes Utilities, Inc.  
200 Weathersfield Avenue  
Altamonte Springs, Florida 32714

Polk County  
Cypress Lakes WWTP

Permit Modification & Revision  
Permit No: FLA013123

Dear Mr. Rasmussen:

We are in receipt of your request, application number FLA013123-004-DW2P/RO, for a substantial modification of the above-referenced domestic wastewater treatment plant and revision of the associated permit, originally issued November 9, 1998 and expiring on November 8, 2003. The conditions are hereby changed as follows:

<u>Condition</u>	<u>From</u>	<u>To</u>
Treatment Facilities	As Issued	See * below
Reuse	As Issued	See ** below

### TREATMENT FACILITIES:

*An existing*, 0.160 mgd maximum month average daily flow (MMADF), Type II, extended aeration activated sludge domestic wastewater treatment plant consisting of: one (1) flow equalization basin of 15,045 gallons, five (5) aeration basins of 160,552 gallons total volume, two (2) clarifiers of 27,145 gallons total volume, two (2) chlorine contact chambers of 5,700 gallons, a dual media filter of 100,000 gallons, and two (2) aerobic digesters of 13,874 gallons total volume. This plant is operated to provide secondary treatment with high-level disinfection.

• *After construction/modification* 0.175 mgd annual average daily flow (AADF), Type II, Extended Aeration domestic wastewater treatment facility consisting of three (3) parallel treatment trains. A flow equalization basin with a volume of 48,000 gallons feeds all three treatment trains and includes a manual bar screen and flow splitter box. Treatment Train 1 consists of one (1) aeration basin with a total aeration volume of 79,100 gallons, one (1) clarifier with a total volume of 18,000 gallons and a surface area of 240 ft<sup>2</sup>, and one (1) gravity sand filter with a surface area of 50 ft<sup>2</sup>. Treatment Train 2 consists of one (1) aeration basin with a total aeration volume of 79,100 gallons, one (1) clarifier with a total volume of 18,000 gallons and a surface area of 240 ft<sup>2</sup>, and one (1) gravity sand filter with a surface area of 50 ft<sup>2</sup>. Treatment Train 3 consists of three (3) aeration basins with a total aeration volume of 92,000 gallons, one (1) clarifier with a total volume of 10,150 gallons and a surface area of 228 ft<sup>2</sup>, and one (1)

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gravity sand filter with a surface area of 40 ft<sup>2</sup>. Effluent from the treatment trains is commingled at a junction box and redistributed to two (2) chlorine contact chambers with a total volume of 5,000 gallons. The facility has two (2) sludge holding tanks with a total volume of 17,000 gallons. This facility is designed to provide secondary treatment with high level disinfection using chlorine gas.

**\*\*REUSE:**

**Land Application:** an existing 0.175 mgd AADF permitted capacity slow-rate public access (R001) irrigation system consisting of delivery of high-level disinfected reclaimed water to three (3) off-site unlined holding ponds with a capacity of 2.0 million gallons each, and subsequent application to the 137-acre Cypress Lakes Golf Course. The facility has a lined holding pond with a total volume of 175,000 gallons for effluent not meeting reuse standards. Land application system R001 is located approximately at Latitude 28° 10' 46" N, Longitude 82° 59' 32" W.

By this plant modification and permit revision you are authorized to perform the work and modify the plant in accordance with drawings, plans, documents or specifications submitted to and retained on file at the FDEP Southwest District Office. These are hereby incorporated by reference and made a part hereof. A Notification of Completion of Construction, DEP Form 62-620.910(12), is required prior to placing the modifications into operation.

This permit revision, FLA013123-004-DW2P/RO, authorizing the aforementioned changes must be attached to your original permit (FLA013123) and, together with any other preceding revision(s), becomes a part of that Permit. All future correspondence should reference the permit number FLA013123.

Sincerely,



Timothy J. Parker, P.E.  
Water Facilities Administrator  
Southwest District  
3804 Coconut Palm Drive  
Tampa, FL 33619-1352

TJP/jsg

cc: David A. Webber, P.E., PBS&J  
Michele Duggan, FDEP  
Steve Thompson, FDEP

Note: Sidebars indicate changes.

Reference Program Guidance Memo DOM-97-01

11/00 Permit Revision & Modification  
File #: FLA013123-004-DW2P/RO

June 23, 2006

Mr. Alan Taylor  
VP Land Development  
Cypress Lakes, LTD  
11300 4<sup>th</sup> Street North  
St. Petersburg, FL 33716

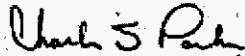
Re: Cypress Lakes Wastewater Treatment Plant Process Evaluation Technical  
Memorandum

Dear Mr. Taylor:

Please find attached two (2) copies of the final Process Evaluation Technical  
Memorandum for the Cypress Lakes Wastewater Treatment Plant for your use.

Thank you for allowing us this opportunity to perform this work and if you have any  
questions or comments regarding the attached documents, please do not hesitate to  
contact me at your earliest convenience.

Sincerely,  
HDR ENGINEERING, INC.



Charles S. Parker, P.E.  
Project Manager

c: Timothy Haws, Blair Communities  
Tony Wierzbicki, E.I., Utilities, Inc. of Florida (2 Copies)  
Lina Posso, E.I., HDR  
File

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## SECTION 4 SUMMARY AND RECOMMENDATIONS

### 4.1 SUMMARY

A summary of the capacities discussed in section 3, is presented in Table 4.1. The required capacities are based on Class I Reliability at buildout design flow and the design criteria and calculations presented in section 3. The buildout design flow corresponds to a total of 1,608 units connected to the sewer system at wastewater production rate per unit of 96 gpd,

TABLE 4.1 EXISTING AND REQUIRED CAPACITIES PER PROCESS UNIT.

Component		Basis	Units	Existing Capacity	Required Capacity at Buildout <sup>1</sup>		New Capacity <sup>2</sup>	
					Without EQ	With EQ	Option A	Option B
Equalization Tank		Volume	gallons	15,045	-	36,185	58,645	37,000
Aeration Train 1	Aeration Tank	Volume	gallons	79,100	64,328 <sup>3</sup>	64,328	-	-
	Clarifier	Surface Area	ft <sup>2</sup>	240	180	77	-	-
Aeration Train 2	Aeration Tank	Volume	gallons	79,100	64,328 <sup>3</sup>	64,328	-	-
	Clarifier	Surface Area	ft <sup>2</sup>	240	180	77	-	-
Aeration Train 3	Aeration Tank	Volume	gallons	122,660	64,328 <sup>3</sup>	64,328	83,060	-
	Clarifier	Surface Area	ft <sup>2</sup>	228	180	77	-	-
Filters		Total Surface Area	ft <sup>2</sup>	140	144 <sup>4</sup>	90	(See note 5)	
Chlorine Contact Chambers		Total Volume	gallons	5,000	5,629	2,412	(See note 6)	

1. Flow was assumed to be equally distributed among the three aeration trains, clarifiers, and filters.
2. Option A: Modifications to existing surge tank and aeration Train 3  
Option B: Addition of new equalization basin.
3. Capacity for a maximum HRT of 30 hours at AADF; typical value for extended aeration reported by M&E 4<sup>th</sup> Edition.
4. Total surface area required calculated based on a maximum loading rate of 4.0 gpm/ft<sup>2</sup>
5. Attenuation of the peak flow at buildout will drop the loading rate to 1.8 gpm/ft<sup>2</sup>, resulting in enough surface area to handle the design peak flows.
6. Attenuation of the peak flow will result in increased capacity of the chlorine contact chamber providing a contact time of 31 min at buildout.

The Cypress Lakes WWTP does not have capacity to handle the buildout flows with Class I Reliability if flow equalization is not provided. Currently, the surge tank does not have the capacity to handle peak events at the current (2005) flows. Although the secondary treatment and filtration units have sufficient capacity at the current peak flows, the limited capacity of the surge tank impacts the chlorine contact chamber capacity with a reduced contact time at the current flows. Moreover,

the filtration and disinfection units will not have enough capacity at buildout if the peak flows are not equalized and the PHF is used as the design flow. It should be noted that equal distribution of the flow is just as important as providing flow equalization. For instance, if flow equalization is provided but the flows are not equally distributed to each aeration train, the clarifier 3 serving the aeration Train No.3 will receive approximately half the flow (44% as shown in Table 3.3) while having a smaller surface area than the other two clarifiers, which will result in SOR higher than the recommended and overloading of the clarifier.

#### 4.2 RECOMMENDATIONS

Based on our analysis of the existing process in conjunction with the projected build out flows, the following is recommended:

1. Provide a new pre-treatment structure to include (1) mechanical band screen with 1/4-inch openings, one (1) by-pass static bar rack and one (1) grit removal system. Each of the pretreatment structure elements would be sized to handle the build out PHF of 0.540 MGD.
2. Provide sufficient flow equalization upstream following pretreatment to attenuate the PHF factor of 3.5 to a MDF factor of 1.5. This could be realized with two options.

Option A. Convert the first section of aeration Train No. 3 which is contiguous with the existing surge tank to a larger flow equalization tank with a combined volume of 58,645 gallons. This will result in a reduction of the treatment volume of aeration Train No. 3 from 126,600 gallons to 83,000 gallons. As was discussed in Section 3.3.2 of the report, this reduction in volume will have no appreciable impact on the aeration capacity of the facility. In order to determine the feasibility of this option, a structural analysis of the existing tanks would be required. In addition a new splitter box is recommended outside of the flow equalization basin to split flow evenly between aeration Trains No. 1, 2 and 3. Three (3) submersible pumps (two in operation, one as standby) with variable frequency drives are recommended to pump the raw wastewater to the elevated splitter box.

Option B. Provide a total flow equalization capacity of approximately 37,000 gallons by either adding a new 37,000 gallon flow equalization tank or by adding a second flow equalization tank of approximately 22,000 gallons which would operate in conjunction with the new tank. This option would require six (6) transfer pumps to get the raw wastewater to the proposed splitter box described in Option A.

3. Rerate the existing facility to a maximum three month average daily flow of 0.181 MGD to account for the total number of build out units to be served by the facility of 1,608.