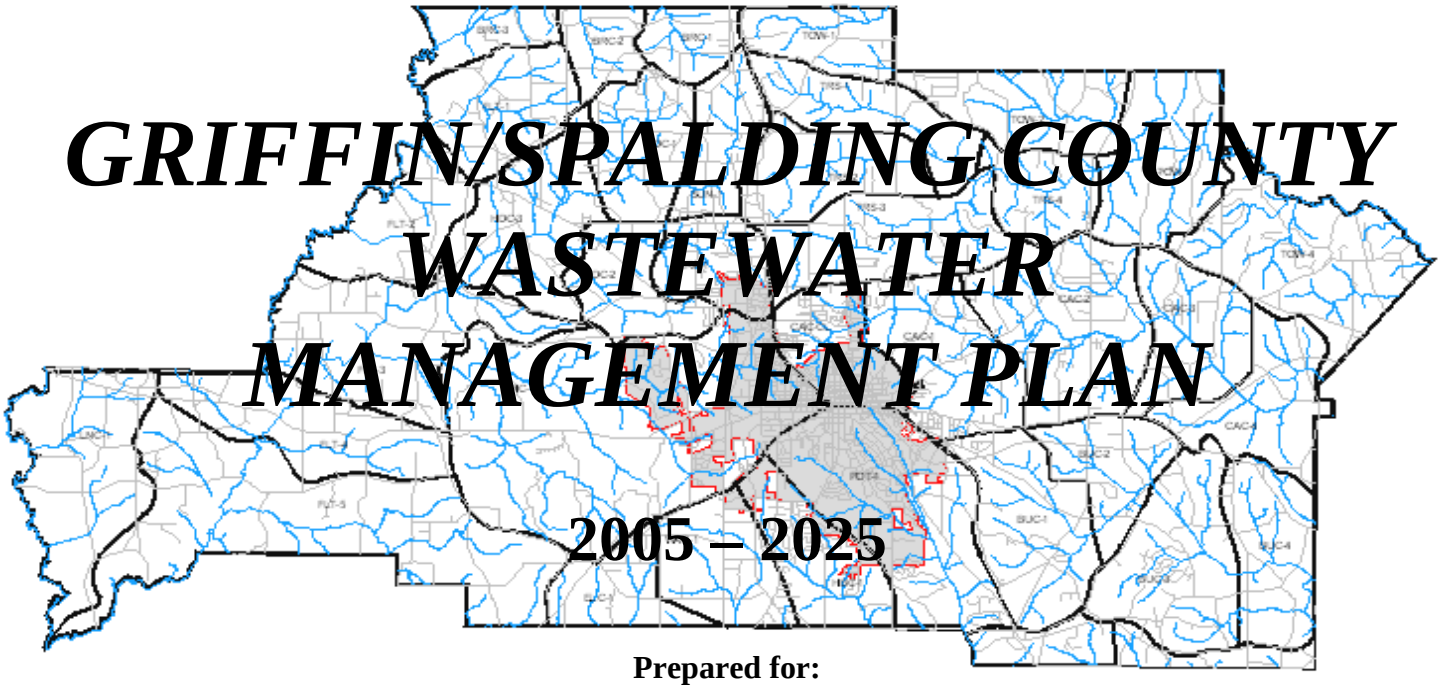

GRIFFIN/SPALDING COUNTY WASTEWATER MANAGEMENT PLAN

2005 – 2025

Prepared for:

City of Griffin and Spalding County, Georgia

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SECTION ES

EXECUTIVE SUMMARY

Background

This Wastewater Management Plan was prepared as an update of the existing plan developed in July, 1995 and updated in April, 2000. For the past 10 years, this plan has served as a guide for expansion and development of the wastewater system. Due to anticipated growth and capacity expansions at the City's wastewater treatment plants, it was determined that the plan needed to be updated so that educated decisions could be made regarding system improvements and the City's and County's ability to meet the needs of its residents. The plan presented here is intended to cover the wastewater system needs for the 20-year planning period ending in 2025.

This plan is intended to guide the City of Griffin and Spalding County in the development of the wastewater infrastructure within their respective service areas. For the purpose of this report, general reference to "City" shall mean the City of Griffin and to "County" shall mean Spalding County and all associated municipalities unless indicated otherwise.

The most recent Wastewater Management Plan (April 2000) identified service areas and potential infrastructure that would be required to provide public wastewater to specific areas of the County. The recent completion of Comprehensive Plans for both the City and County indicate that development of a public wastewater system in the County is limited to specific defined areas where development density is suitable for covering the cost of a wastewater system. These defined areas are identified as "village nodes" and "commercial nodes" in the Future Land Use Plan. These areas will have medium density development which will require a centralized treatment system at each node to handle the wastewater demand. These systems will be a privately constructed system built to County standards and ownership of the treatment facilities may be transferred in the future to the County. In the rural areas of the County, the planned development densities are such that the cost of a sewer system would be too great on a per customer basis to make a county wide system feasible. This plan primarily focuses on the existing City service area.

The plan was prepared using the following approach: 1) take an inventory of the existing facilities and their performance, 2) identify the existing service area and determine if it is sufficient for the projected future growth, 3) project the future wastewater flows generated in the service area, and 4) develop alternatives for collection and treatment of the wastewater generated. The plan also includes discussion of septage handling within the County and management of sludge produced in the City's treatment plants.

Existing Wastewater System

City of Griffin

The City currently owns and operates wastewater facilities in three separate drainage basins. Each basin is served by its own treatment plant; the Cabin Creek Wastewater Treatment Plant (WWTP), the Potato Creek WWTP, or the Shoal Creek WWTP. Permitted and recent flows to each facility in million gallons per day (MGD) are as follows:

Facility	Permitted Capacity (MGD)	2005 Average Daily Flow (MGD)
Cabin Creek	1.5	1.11
Potato Creek	2.0	1.82
Shoal Creek	2.25	1.885

All three facilities are operating well and complying with their permit requirements. The Cabin Creek and Potato Creek plants have point source National Pollutant Discharge Elimination System (NPDES) permits and the Shoal Creek plant has a land application system (LAS) permit for its on site spray fields and its associated Blanton's Mill land application site. Each facility is suitably located to provide service to the associated drainage basin. Because of this, it is recommended to maintain the existing locations of the plants and expand capacity as needed on the existing sites.

The collection system is aging and will continue to require rehabilitation. Therefore, it is recommended to maintain the current Infiltration and Inflow (I/I) program for identifying and correcting the most problematic areas of the collection system. Additionally, as the service area continues to develop, it will be necessary to expand some gravity sewers and pump stations to meet the needs of the system.

Spalding County

The County currently owns the Highland Mills WWTP which is located in the northern part of Spalding County and serves a small portion of the Troublesome Creek Basin (TRS-3). Permitted and recent flows to this facility in million gallons per day (MGD) is as follows:

Facility	Permitted Capacity (MGD)	2005 Average Daily Flow (MGD)
Highland Mills WWTP	.019	. 016

There are currently 7 other treatment facilities located in Spalding County these facilities are listed below:

- Springs Industries
- Jackson Road Elementary School
- Florida Rock Industry
- Mortell Company
- Pomona Mobile Home Park
- Southhampton Mobile Home Park
- Beaver Brook School

These facilities are privately owned and operated and have minimal excess capacity. There are no plans for the County or the City to take over operation of these facilities.

Future Service Area

The service area for the City of Griffin was previously defined and agreed to by both the City and the County in the Service Delivery Strategy Agreement dated August 22, 2000. This study reconfirms that this area is and can be reasonably served by the City with one minor modification. The City's service area identified in this report is identical to the existing area with the exclusion of a portion of the Cabin Creek sub-basin (shown as CAC-1) downstream of the Cabin Creek WWTP. The proposed service area can be seen in Figure 3-1. Verification of the reasonableness of this service area was accomplished by evaluating the County's land use plan and the population projections for the County. The proposed change to the service area will require amending the Service Delivery Agreement.

To remain consistent with previous plans, the original 36 drainage sub-basins were used in the preparation of this plan with the addition of one new sub-basin near Orchard Hill. This sub-basin is identified as ORH-1 and has been included due to the agreement by the City to accept wastewater from Orchard Hill. Of these 37 sub-basins, nine (9) are included within the City's service area.

City of Griffin Service Area Future Flow Projections

Following the identification of the service area, the future flow projections were developed. Flow projections were developed using multiple methods based on the plan year, population growth, and land use. The short-term projections for plan years 1 through 4 (2006 – 2009) are based on known planned development activity. These developments have requested sewer service from the City. These short-term flow rates have been used to identify the immediate needs of the wastewater system, primarily related to treatment capacity. These projections are the primary reason for the recommendations to expand the capacity of both the Shoal Creek and Potato Creek WWTPs prior to 2010.

The long-term projections from plan years 5 through 20 (2010 – 2025) are calculated using both population projections and land use plans. The use of both of these methods provides a range of potential future wastewater flows, with the land use method being the more conservative approach. The long-term projections have been used to plan capital projections over the next 20 years and gain an understanding of the anticipated treatment capacity needs throughout the planning period. The following table summarizes the service area size and projected 2025 wastewater flows.

Treatment Plant	Sub-Basins Served	Total Area (Acres)	2025 Projected Average Daily WW Flow (MGD)
Cabin Creek WWTP	CAC-CL	2,240	1.19
Potato Creek WWTP	BUC-1, HBC-1, POT-1, ORH-1	13,550	2.88
Shoal Creek WWTP	CRV-1, HDC-2, SHC-1, WAC-1	19,230	3.59
TOTAL		**35,020**	**7.66**

Spalding County Service Area Future Flow Projections

Data established within the Spalding County Comprehensive Plan 2004-2024 states that the future population in 2025 is projected to range from 75,900 to 103,000. For planning purposes, it will be assumed that the median population will grow to 83,600 by the year 2025. Based on the plan projections that are also shown most of the growth will occur within the unincorporated areas in the County. Future flow projections will be based on this assumption and this growth will most likely occur in the designated village and commercial nodes that have been designated in the future land use map which is attached as Figure ES-1. These nodes are projected to encompass the following acreages with population and flow projections shown in the following chart.

Village Nodes

Village Node[1]	Sub-Basins	Total Area (Acres)	Estimated Households	Estimated Household WW Flow	Estimated Commercial WW Flow	2025 Projected Average Daily WW Flow (MGD)
Vaughn/Rio	FLT-2 , FLT-3	41.97	189	0.050	.010	0.060
Rover	ELC-1	20.86	94	0.025	.005	0.030
Heron Bay[2]	TOW-2, TOW-3	36.39	465	0.123	0.025	0.147
Towaliga[3]	TBD	46.68	210	0.055	.011	0.066
SunnySide	SUN-1, TOW-1, BRC-1, TRS-1	81.32	366	0.097	.019	0.116
155 Future Node[3]	TBD	64.08	288	0.076	.0152	0.091
TOTAL		**291.30**	**1612**	**0.426**	**.0852**	**.510**

1Orchard Hills is service by the Potato Creek WWTP.

2 Heron Bay will be serviced by the Henry County Water and Sewerage Authority (HCWSA).

3 The location to be determined.

Commercial Nodes

Commercial Node[1]	Sub-Basins	Total Area (Acres)	2025 Projected Average Daily WW Flow (MGD)
Vineyard Road and 19/41	TRS-2	64.95	0.0974
Sunnyside	BRC-1	50.18	0.0753
East Griffin	CAC-1	199.7	0.2996
TOTAL		**314.83**	**0.4723**

Other Developed Areas

Developed Area	Sub-Basins	Serviced Area (Acres)	2025 Projected Average Daily WW Flow (MGD)
Sun City Peachtree	TRS-1 TRS-2	1,544	1.350[1]
Highland Mills	TRS-3	32	.016
TOTAL		1,567	1.366

1 – Projected capacity dependent on GAEPD approval.

Policy has been established by the Spalding County Commission and the Spalding County Water and Sewerage Authority that the County will not provide public sewerage facilities in these densely developed areas. It will be the responsibility of each node's developers to provide adequate sanitary sewerage treatment facilities within each node. These facilities will be designed and constructed based on standards and requirements that will be established by the County. Approval of these facilities will be made by the Georgia Environmental Protection Division of the Department of Natural Resources as well as Spalding County.

Septage Management

The pumping and hauling of septage has been an issue between the City and the County over the past several years. As the wastewater flows to the City's treatment plants has increased, the plants' ability to handle the high strength loads from septage has decreased. This has led to some operational problems when excessive septage has been discharged to the receiving wastewater plant in too short a period of time. This problem has been compounded by not having adequate septage

receiving facilities at the wastewater plants that can slowly dose the high strength septage to the treatment process, thereby reducing shock loads.

The majority of the septic systems within the County are located outside of the Griffin City limits. Because the City's septage load is insignificant, there is no need for special septage receiving facilities to provide service to the residents of the City. However, it is estimated that there are over 10,000 septic systems in the County outside the City limits. This places a significant load on the City's treatment plants and requires the installation of septage receiving facilities if the City continues to accept septage from outside of the City limits. Because of this, it has been recommended to conduct negotiations between the City and County regarding the development of septage receiving facilities and the continued acceptance of hauled septage at the City's treatment plants.

Wastewater Management Alternatives

Once the flows were projected, it was possible to develop the alternatives for collection and treatment within each basin. An objective of the plan was to utilize as much of the existing system as possible for the future needs of the system. Several issues have a major impact on the alternatives for treatment of wastewater:

1. The capacity of the receiving stream such as Shoal Creek, Potato Creek and Cabin Creek to assimilate the treated wastewater during periods of low flow in the stream. Recent regulations impose strict limits on many pollutants in the receiving stream. A certain finite concentration of any particular pollutant is allowed in the stream and, consequently, if the flow in the stream is very low during drought periods, only a small amount of treated wastewater can be discharged before the pollutant limit is exceeded.
2. The Georgia Environmental Protection Division (EPD) recommends that land treatment of wastewater be selected over discharge to a surface water body when it is found to be feasible. Land treatment of wastewater, also called land application, involves treating the wastewater and then spraying the treated wastewater on the land. Additional treatment is provided by the crop growing on the land and by percolation through the soil layers.
3. It is difficult to obtain a permit for new surface water discharges of treated wastewater into streams for lakes located in a drinking water watershed unless the wastewater is treated to high

quality levels. In Spalding County, this includes the Heads Creek Reservoir and Flint River Intake in northwest Spalding County and the Henry County Intake/Reservoir watershed on the Towaliga River in northeast Spalding County.

4. Interbasin transfer of water must be minimized if it cannot be eliminated entirely. Interbasin transfer is defined by EPD as a withdrawal or diversion in which water is returned to a different basin than that from which it is withdrawn or diverted. In Griffin's case, all water is obtained from the Flint River and, consequently, any water returned to the Ocmulgee River basin (or any other basin) constitutes interbasin transfer. Because of the topography in Spalding County, there is not a feasible alternative to some interbasin transfer, and this issue has previously been approved by EPD for this plan.
5. Land treatment systems require large areas of land, typically in the range of 300 to 350 acres per million gallons per day of wastewater. With the growth and development of the county in the last several years, large tracts of undeveloped suitable land for spray irrigation are not as available as when the Blanton's Mill site was developed in 1998.

Using these guidelines, alternatives for each basin were developed and recommended in this plan.

Shoal Creek Basin

The Shoal Creek Basin is the largest of the three drainage basins within the City's service area. It currently has a treatment capacity of 2.25 MGD with disposal to the Blanton's Mill LAS. With an average 2005 influent flow of 1.88 MGD and the projected short-term maximum month flow of 2.87 MGD, it is recommended to begin immediate expansion of the treatment facility to a capacity of 3.25 MGD. Because of the lack of suitable land within the area and the cost of land, it is recommended to obtain a NPDES permit for discharge to Shoal Creek for the future flow over 2.25 MGD. A request for a wasteload allocation has already been sent to EPD so that the planning and design process is not delayed. This expansion is expected to provide adequate treatment capacity until 2015 when additional expansion will be required.

In addition to the treatment capacity expansions, other collection and conveyance system improvements have been recommended. Many of the improvements will not be required until the area of the basin served by the recommended improvement is developed. When this occurs, it is expected that developers will fund a portion of the improvements.

Potato Creek Basin

The Potato Creek Basin is projected to experience significant growth over the planning period. It currently has a treatment capacity of 2.0 MGD. With the projected short-term average daily flows expected to exceed this capacity by 2010 and the maximum month flows by 2007 it is also necessary to expand the Potato Creek WWTP. It has been recommended to expand the plant's capacity to 3.0 MGD, which is expected to provide adequate capacity beyond 2015. To help maximize the capacity of the existing facility and delay the need for expansion, it may be possible to re-rate the existing treatment plant for a higher capacity due to the relatively low strength wastewater received at the plant. A wasteload allocation has recently been provided by EPD for a discharge of 3.0 MGD into Potato Creek, which can be used for planning purposes.

There are also various recommended improvements within the collection and conveyance system in the drainage basin. Similar to the Shoal Creek Basin, it may be possible to have developers fund a portion of these improvements.

Cabin Creek Basin

The Cabin Creek Basin is the smallest of the three basin basins within the City's service area. It is also nearly built out in relation to the available land. Because of this, the increase in wastewater flows over the 20-year planning period is relatively low. With the current treatment capacity of 1.5 MGD, it is not expected that a capacity expansion will be required at the Cabin Creek WWTP. Similarly, there are no major collection and conveyance needs within the basin during the 20-year planning period.

Sludge Management

A sludge management plan was developed for the City of Griffin in September 2002. The sludge management plan has been updated to incorporate the recommended improvements of this plan. The most significant impact of the recommended improvements in this plan to the sludge management plan is the addition of sludge producing facilities at the Shoal Creek WWTP by addition of a mechanical wastewater treatment plant to the existing lagoon system. If the recommendations are carried out, it will be necessary to stabilize and dispose of sludge from the Shoal Creek WWTP, similar to the Cabin Creek and Potato Creek WWTPs.

Currently, all sludge produced in the wastewater treatment process is disposed of through hauling liquid sludge and applying to farm land. The land used for application is privately owned and there is no guarantee the current owners will continue to allow sludge disposal in the extended future. Because of this, it is recommended to utilize the existing effluent land application site at the Shoal Creek site that has been out of service since the development of the Blanton's Mill site. Based on preliminary soil testing, the site is hydraulically limited for future effluent disposal. However, with the lower hydraulic loading from sludge application, the 150 acres is expected to be adequate for the sludge produced by the wastewater system. The site can be utilized as private owners stop allowing sludge disposal on their property.

Financial Planning

The improvements shown in this report have an estimated cost of $45.5 million extending through 2025. As mentioned, it is recommended to have developers of the properties to be served provide a portion of the funding for some of the improvements. However, the costs shown are only for the major treatment plant projects and trunk sewers. It is likely there will be additional cost for collector lines and other minor facilities that are beyond the scope of the study.

Financing of the recommended improvements is expected to come from revenue bonds, low interest loans through the Georgia Environmental Facilities Authority (GEFA), and Tap-on Fees. The recommended Tap-on Fees are intended to replace the current Capacity Recovery Fees. The range of required fees is shown in Section Nine of this report with a recommended fee comparable to that of other utilities within area.

Infiltration and Inflow

Infiltration and Inflow (I/I) is a common problem with older wastewater systems. The City has been actively working to reduce the I/I within its system for the past twelve years. To date, there have been three phases of sanitary sewer rehabilitation and several other projects related to helping reduce the I/I in the collection system. The program is starting to have an impact based on a reduction in the 5-year rolling average of the maximum month peaking factor at the treatment facilities over the past ten years. The Potato Creek and Shoal Creek peaking factors have decreased significantly, especially over the past four years. The Cabin Creek factor has remained constant despite recent

years of heavy rainfall; however, this is the oldest portion of the sewer system and is still in need of rehabilitation work. Because much of the Cabin Creek Basin is in the lower income areas of the City, it is recommended to attempt to obtain grant funds to cover the cost of this I/I work.

Industrial Pretreatment Program

The Georgia EPD approved the City of Griffin's Industrial Pretreatment Program (IPP) on September 29, 2000, and subsequently revised the wastewater treatment plant permits to include the provisions of the IPP. Since then, Griffin has been managing the program, including reviewing reports submitted by industrial users, sampling and testing each permitted industrial user at least once every year, reviewing local limits annually or as needed, preparing and submitting an annual report to EPD, and enforcing the program through the Enforcement Response Plan and the Sewer Use Ordinance.

The program has been successful in limiting the pollutants discharged into the sewer system by the most significant industrial users. Several users have improved their pretreatment systems and, as in the case of one user, have constructed brand-new pretreatment facilities.

Recently, a concern has been raised with high concentrations of copper in the effluent of the Potato Creek WWTP. Monitoring of industrial users and further sampling in the collection system, if needed, are recommended in Section 11.

Regulatory Issues

There are several regulatory issues that impact wastewater systems. These issues range from treatment and disposal regulations to collection system maintenance. The key issues that are of a primary concern as related to this plan are as follows:

- NPDES and LAS permitting and compliance monitoring.
- Plan review for treatment plants, gravity sewers and pump stations.
- Sanitary Sewer Overflow (SSO) monitoring and control.
- Review and approval of Industrial Pretreatment Programs and annual reports.
- Sludge management and disposal.

Each of these has an impact on the planning and operations of a wastewater system and each is discussed in Section 12. If not complied with and violations occur, it is possible that fines or consent orders will be issued by EPD.

SECTION ONE

INTRODUCTION

1.1 Background

In the early 1900's, the City of Griffin began installation of a public sewer system. Since that beginning, the system has been improved and extended to serve all but a few isolated areas within the city limits of Griffin. In many instances when no other viable wastewater alternatives exist, the sewer system has been extended beyond the City limits to provide wastewater service to adjacent areas of unincorporated Spalding County. However, a large portion of unincorporated Spalding County remains unserved by a public wastewater system due to either the lack of demand or the infeasibility of developing a system. However, continued growth in recent years, both in the city and in the unincorporated area of Spalding County, has highlighted the need for a plan to provide wastewater service to meet future growth of the area.

The current wastewater management plan for the Griffin-Spalding County area was completed in July 1995 and updated in April 2000. For the past 10 years, this plan has served as a guide for expansion and development of the wastewater system. With the continued growth within the City and County, and the implementation of updated Comprehensive Plans (2004 – 2024), it is necessary to update the Wastewater Management Plan to meet the future needs of the area. The plan for wastewater management will affect many other decisions and areas of government such as water supply planning, land use planning, industrial development and residential development.

Wastewater facilities, by their nature, must be planned to fit the lay of the land, not to match invisible political boundaries. Therefore, it must be emphasized that successful implementation of any plan will depend upon the exercise of good leadership by local government officials. In this case, that responsibility will rest primarily with the City of Griffin and with Spalding County. After the engineering aspects of the plan are accepted it will be imperative that Griffin and Spalding County decide upon their respective roles for the implementation of the plan. These roles must be based on a cooperative approach that avoids duplication of services, ensures efficiency and is generally based upon doing what is best for the citizens of the community.

1.2 Scope, Purpose and Goal of the Wastewater Management Plan

The purpose of this plan is to provide a long-range master plan for the orderly development of wastewater facilities in the Griffin and Spalding County area over the next twenty years. The plan will serve as a tool for setting of priorities and schedules for construction of the various facilities that make up the wastewater system.

This study focuses mainly on the technical and engineering aspects of wastewater planning, which involves the following general steps:

1. Estimating the future need for wastewater treatment with respect to population, industrial and commercial development, areas to be served, volume of wastewater, etc.
2. Preparing an inventory of major existing wastewater facilities.
3. Evaluation of natural features related to wastewater planning such as topography, drainage basin configuration, location and characteristics of streams in the area, etc.
4. Evaluation of regulatory constraints that affect wastewater planning for this area.
5. Application of engineering techniques to develop and prepare preliminary plans and alternatives for wastewater facilities.
6. Screening of alternatives and preparation of preliminary cost estimates for construction and operation; evaluation of other factors related to feasibility of alternatives.

Topography in Spalding County is such that the county can be divided into 37 separate, natural drainage basins as shown on Figure 1-1. Each of these basins forms a natural unit which may be considered individually with regard to design of sewers. Presently, only 9 of these basins have access to the City's wastewater system. One basin has access to a privately developed wastewater system. This study projects that over the next 20 years the wastewater system within the 9 basins served by the City will be expanded to meet the growth and provide improved wastewater service to the area. The basins served by the wastewater system are highlighted on Figure 1-1. The other areas of the County which may need wastewater treatment include future village nodes, commercial centers, industrial areas and other large developed areas. The village nodes and commercial centers are intended to be pedestrian-friendly neighborhood centers. This plan identifies the major facilities (treatment facilities, pump stations and outfall sewers) that will be needed over the next 20 years.

This plan does not attempt to identify collector sewers that may be needed to serve individual neighborhoods.

1.3 Previous Studies and Reports

Previous reports used as references for this report include:

1. Griffin-Spalding County Facilities Plan, Griffin Engineering Company, January 1977.
2. Water Resources Management Study, South Metropolitan Atlanta Region, Documentation Report, U.S. Army Corps of Engineers, September, 1989.
3. Engineering Report for 1993 Bond Issue, Welker & Associates, Inc. Engineers, October 12, 1993.
4. Concept Study for a County-Wide Sewerage System for Spalding County, Southern Engineering, December, 1992.
5. Census Report, Office of Planning and Budget, 2000.
6. Spalding County 1994 - 2014 Comprehensive Plan, Final Draft, Precision Planning, Inc.
7. City of Griffin 2024 Comprehensive Plan, JJ&G, Inc.
8. Spalding County 2024 Comprehensive Plan, JJ&G, Inc.
9. Wastewater Management Plan 1995 – 2015, Welker and Associates, Inc.
10. Wastewater Management Master Plan 2000 – 2015, Engineering Strategies, Inc., and HDR/WL Jorden

These reports were used as sources of information for demographics, land use planning, economics, water and wastewater service demands and the comparison of the actual to projected population and growth trends.

1.4 Planning Period

Since passage of the Federal Water Pollution Control Act Amendments of 1972, the general practice has been to limit the planning period for water and wastewater facilities to 20 years. The period selected for this Plan is the 20-year period from 2005 to 2025.

1.5 Local Governmental Coordination

This study has been a joint effort by the City and the County and has been funded by both governments. The City's and County's engineers worked together in the preparation of this study with Engineering Strategies, Inc. and Paragon Consulting Group, Inc. serving as consultants to the City of Griffin and Spalding County, respectively. Findings of the study will be presented for review by each local government unit.

SECTION TWO

EXISTING WASTEWATER SYSTEM

2.1 Introduction

Griffin's wastewater system serves the vast majority of the municipal sewer users in Spalding County. There are several privately-owned treatment facilities located in the county as well as the County owned Highland Mills WWTP. These facilities are listed in sections 2.5 and 2.7 of this report. However, these private systems were specifically created to serve an individual need. It is unlikely that these systems will contribute significantly to any public system which evolves. Further, it is expected that as the public system becomes available, these private systems will be taken out of service.

2.2 City of Griffin Existing Wastewater Facilities

Griffin's wastewater system consists of over 195 miles of sewers, 18 lift (pumping) stations and three wastewater treatment plants as shown in Figure 2-1. The Shoal Creek and the Potato Creek plants are located in the Flint River basin and the Cabin Creek plant is located in the Lower Ocmulgee River basin. Each of the drainage areas and treatment facilities are described in detail below.

2.2.1 Shoal Creek Wastewater Drainage Area

The Shoal Creek drainage area is primarily located to the west of the City of Griffin. This drainage area includes four sub-basins; CRV-1, HDC-2, SHC-1, and WAC-1. Wastewater collected in the Crestview Heights (CRV-1) and Heads Creek (HDC-2) areas northwest of the City is pumped into the Shoal Creek collection system. Similarly, the wastewater collected in the Wasp Creek (WAC-1) area southwest of the city is also pumped into the Shoal Creek collection system. There are a total of eight (8) pump stations that transfer flow into the Shoal Creek collection system from outside of the Shoal Creek (SHC-1) sub-basin.

The wastewater collected within the Shoal Creek Drainage Area is treated at the Shoal Creek Wastewater Treatment Plant. The Shoal Creek plant was constructed in 1986; at that time, the old plant located further upstream on Shoal Creek was abandoned. The table below presents the

discharge limits for the Shoal Creek plant. This plant is located on Shoal Creek about 6.5 miles west of the City. Wastewater treatment is accomplished with aerated lagoons and aerobic ponds followed by land application of the effluent. See Figure 2-2 for a flow schematic of the Shoal Creek WWTP. Sludge generated in this plant accumulates in the aerated lagoons and in the aerobic ponds and must be pumped out or dredged periodically, generally every 8 to 10 years.

SHOAL CREEK WWTP CURRENT LAS PERMIT PARAMETERS	
Parameter	**Monthly Average**
Flow, MGD	2.25
Biochemical Oxygen Demand (5-day), mg/L	50
Suspended Solids, mg/L	90
pH shall be not less than 6.0 nor greater than 9.0	

In 1998, an expansion of the facility to 2.25 MGD was completed. With this expansion, a new land application site was developed approximately five miles away on Blanton's Mill Road. The existing land application site adjacent to the treatment facility was removed from service and is currently idle. All pre-application treatment continues to be performed at the Shoal Creek site.

Current flow into the plant averages 1.74 MGD (average June 2003 through June 2005), or 77 percent of the design capacity of 2.25 MGD, as shown in Figure 2-3. Figures 2-4 and 2-5 show monthly average effluent BOD_5 and suspended solids results as compared to permit limits. As seen in these figures, this is a well operated plant with only four instances where permit limit were exceeded. Effluent data from January 2002 through May 2005 has been tabulated and is included in Appendix A.

Figures 2-6 and 2-7 present recent trends in influent BOD_5 concentration and organic (BOD_5) loading into the plant. Currently, the average organic loading of approximately 3,400 pounds of BOD_5 per day is 90 percent of the capacity used for design of the plant of 3,750 lb/day. The BOD_5 loading is a higher percentage of the design value than the influent flow because the influent BOD_5 averages 244 mg/L compared to the design value of 200 mg/L.

2.2.2 Potato Creek Wastewater Drainage Area

The Potato Creek drainage area is located to the south and southeast of the City of Griffin. It consist of four sub-drainage basins; BUC-1, HBC-1, POT-1, and ORH-1. The majority of the existing wastewater infrastructure is located in the Potato Creek (POT-1) sub-basin. Wastewater collected in the Buck Creek basin (BUC-1) is transferred to the Potato Creek collection system via a pump station and force main. These facilities were constructed and placed into operation in 1998. The force main was installed such that it can be converted to a gravity sewer in the future to provide collection of a significant portion of the BUC-1 wastewater flows.

Currently, a small portion of the Honey Bee Creek (HBC-1) sub-basin is served by the wastewater collection system. The wastewater collected in these areas is pumped into the collection system of the Potato Creek sub-basin. Similarly, a small portion of the core downtown area of the City that is located in the Cabin Creek sub-basin (CAC-1) also has its wastewater transferred to the Potato Creek basin for treatment and disposal. In total, there are eight (8) pump stations that transfer wastewater into the Potato Creek collection system from outside of POT-1. In addition to these areas that the City of Griffin maintains, the City of Orchard Hill also pumps its wastewater to the Potato Creek WWTP for treatment and disposal.

The wastewater collected with in the Potato Creek drainage area is treated at the Potato Creek wastewater treatment plant. The Potato Creek plant is located on Potato Creek at the Spalding/Lamar County line about 4 miles southeast of the City. It was constructed in 1976 and upgraded in 1988 to comply with more stringent discharge limits. The following table shows the discharge limits.

POTATO CREEK WWTP
CURRENT NPDES PERMIT PARAMETERS

Discharge to Potato Creek

Parameter	Monthly Average	Weekly Average
Flow, MGD	2.0	2.5
Suspended Solids, mg/L	30	45
Total Phosphorus, mg/L	Report	NA
Total Recoverable Zinc, mg/L	0.0652	0.0652
Total Recoverable Copper, mg/L	0.0102	0.0132
Fecal Coliform, per 100 mL	200	400

Seasonal Permit Limits

Month	BOD		Ammonia	
	Monthly Average, mg/L	Weekly Average, mg/L	Monthly Average, mg/L	Weekly Average, mg/L
January	30	45	17.4	26.1
February	30	45	17.4	26.1
March	30	45	17.4	26.1
April	30	45	10	15
May	20	30	5	7.5
June	11	16.5	4.1	6.2
July	11	16.5	4.1	6.2
August	10	15	4.1	6.2
September	10	15	4.1	6.2
October	15	22.5	5.6	8.4
November	27	40.5	9	13.5
December	30	45	17.4	26.1

pH shall be not less than 6.0 nor greater than 9.0.
Total Residual Chlorine shall be less than 0.011 mg/L.
Chronic Whole Effluent Toxicity testing: The No Observed Effect Concentration (NOEC) shall be greater than or equal to the Instream Wastewater Concentration (IWC) of 92%.
Effluent Dissolved Oxygen shall not be less than 2.0 mg/L from December through April and 6.0 mg/L from May through November.

This plant is a trickling filter/solids contact facility with a design capacity of 2.0 MGD and treatment consists of primary clarification, trickling filters, aeration, secondary clarification, and sludge digestion as shown in Figure 2-8. Digested sludge is transported to local sites and land applied for use as a soil amendment.

Current flow into the plant averages 1.52 MGD (average June 2003 through June 2005), or 76 percent of the design capacity of 2.0 MGD, as shown in Figure 2-9. Figures 2-10, 2-11 and 2-12 show monthly average effluent BOD_5, suspended solids and ammonia nitrogen results as compared to permit limits. The Potato Creek plant is well maintained and operated, as can be seen with its permit compliance over the past several years. Effluent data from January 2002 through May 2005 has been tabulated and is included in Appendix A.

Figures 2-13 and 2-14 present recent trends in influent BOD_5 concentration and organic (BOD_5) loading into the plant. Currently, the average organic loading of 2,220 pounds of BOD_5 per day is 66 percent of the capacity used for design of the plant of 3,335 lb/day. The influent BOD_5 averages 186 mg/l compared to the design value of 200 mg/l. This is down significantly from the previous update of the Wastewater Management Plan. The lower influent BOD_5 into the Potato Creek plant is likely a result of the industrial pretreatment program implemented by the City.

2.2.3 Cabin Creek Wastewater Drainage Area

The Cabin Creek drainage area is the smallest of the existing wastewater service basins. The entire service area is located within the upper reaches of the Cabin Creek basin (CAC-CL). The collection system is primarily confined to the City limits in this drainage area. There are two pump stations within the collection system to transfer the collected wastewater to the treatment plant.

The Cabin Creek wastewater treatment plant treats all of the wastewater collected in the Cabin Creek drainage area. It was constructed in 1936 and has been modified several times. The latest modifications involved upgrading the plant to provide phosphorus removal. The City is permitted to discharge 1.5 MGD of treated wastewater into Cabin Creek near North Hill Street. The table below is a tabulation of the current discharge limits. Treatment consists of primary clarification, trickling filter with recirculation and phosphorus removal through alum addition and sedimentation in reactor clarifiers. Digested sludge from this plant is disposed of through land application. See Figure 2-15 for the flow schematic of the Cabin Creek plant.

CABIN CREEK WWTP CURRENT NPDES PERMIT PARAMETERS		
Discharge to Cabin Creek		
Parameter	**Monthly Average**	**Weekly Average**
Flow, MGD	1.5	1.88
Biochemical Oxygen Demand (5-day), mg/L	30	45
Suspended Solids, mg/L	30	45
Fecal Coliform, per 100 mL	200	400
Total Phosphorus, mg/L	1	1.5
Total Residual Chlorine, mg/L	0.012	0.012
Seasonal Monthly Ammonia Permit Limits		
Month	**Monthly Average, mg/L**	
January	8.9	
February	9.9	
March	10.6	
April	7.4	
May	4.4	
June	3.5	
July	3.4	
August	3.3	
September	3.6	
October	5.0	
November	7.0	
December	7.9	
pH shall be not less than 6.0 nor greater than 9.0.		

Current flow into the plant averages 0.93 MGD (average June 2003 through June 2005), or 62 percent of the design capacity, as shown in Figure 2-16. Figures 2-17, 2-18, 2-19, and 2-20 show monthly average effluent BOD_5, suspended solids, ammonia nitrogen, and total phosphorus results as compared to permit limits. In general, this is also a well operated plant, as can be seen from its permit compliance over the last several years. Effluent data from January 2002 through May 2005 has been tabulated and is included in Appendix A.

Figures 2-21 and 2-22 present recent trends in influent BOD_5 concentration and organic (BOD_5) loading into the plant. Currently, the average organic loading of approximately 1,870 lb BOD_5/day

is 56 percent of the capacity used for design of the plant of 3,350 lb/day. The influent BOD_5 averages 241 mg/l compared to the design value shown in the Design Development Report for the plant expansion of 268 mg/l. The 268 mg/L value was used to include industrial discharges, however recently there have been no industrial discharges to the plant. The 241 mg/L value is more typical for domestic wastewaters.

2.3 Spalding County Existing Wastewater Facilities

Spalding County's wastewater system is limited to the Highland Mills WWTP. Its collection basin consists of 6600 feet of sewer and associated wastewater treatment plant as shown in Figure 2-23. The County assumed ownership of the facility when private owners discontinued operation of the plant and jeopardized the community that was served by the facility. A Community Block Development Grant was awarded to Spalding County to replace the existing collection network in order to reduce inflow and infiltration of groundwater due to the aging pipe network and manholes. The drainage areas and treatment facilities are described in detail below.

2.3.1 Highland Mills Treatment Plant

Highland Mills WWTP is located in the northern part of Spalding County and serves a small portion of the Troublesome Creek Basin (TRS-3).

HIGHLAND MILLS WWTP CURRENT NPDES PERMIT PARAMETERS		
Parameter	**Monthly Average**	**Weekly Average**
Flow, MGD	.019	.023
Biochemical Oxygen Demand (5-day), mg/L	30	45
Suspended Solids, mg/L	30	45
Fecal Coliform, per 100 mL	200	400
pH shall be not less than 6.0 nor greater than 9.0		

2.4 Sun City Peachtree Land Application System

Recently Minerva Properties, LLP has recently acquired a Land Application System Permit (LAS) to treat wastewater from the company's proposed 1726.60 acre mixed used development, Sun City Peachtree. The Sun City Peachtree drainage area is located north of the City of Griffin. This drainage area includes two sub-basins; TRS-1 and TRS-2. In addition, the wastewater treatment facility will provide sewage treatment outside of the Spring Forest development in Spalding County.

This area of service is outlined in figure 2-24 and will treat approximately 1025 acres at a net development density of 1 unit per acre. Although the treatment plant will be privately owned, there will be coordination with the County regarding development upstream to satisfy land use, zoning and development issues. The treatment plant will ultimately treat to a capacity of .550 MGD.

SUN CITY PEACHTREE PREAPPLICATION TREATMENT PLANT (INITIAL) CURRENT LAS PERMIT PARAMETERS	
Parameter	**Weekly Average**
Flow, MGD	.275
Biochemical Oxygen Demand (5-day), mg/L	5
Fecal Coliform Bacteria (#/100ml)	23
Turbidity (NTU)	3
Suspended Solids, mg/L	5
pH shall be not less than 6.0 nor greater than 9.0	

SUN CITY PEACHTREE PREAPPLICATION TREATMENT PLANT (UPGRADE) CURRENT LAS PERMIT PARAMETERS	
Parameter	**Weekly Average**
Flow, MGD	.550
Biochemical Oxygen Demand (5-day), mg/L	5
Fecal Coliform Bacteria (#/100ml)	23
Turbidity (NTU)	3
Suspended Solids, mg/L	5
pH shall be not less than 6.0 nor greater than 9.0	

2.5 Plant Permits

Plant permits are issued by EPD for a period of 5 years from the effective date of issuance. Listed below are the permit numbers and expiration dates. After which the State will review the treatment facilities and receiving streams before renewal:

CITY PERMITS

TREATMENT PLANT	PERMIT NO.	EXPIRATION
Shoal Creek	GA02-036	September 14, 2008
Potato Creek	GA0030791	December 31, 2008
Cabin Creek	GA0020214	June 18, 2003 (Operating under provisional extension)

COUNTY PERMITS

TREATMENT PLANT	PERMIT NO.	EXPIRATION
Highland Mills	GA0023752	September 17, 2007

OTHER/PRIVATE PERMITS

TREATMENT PLANT	PERMIT NO.	EXPIRATION
Sun City Peachtree	GA03-905	April 7, 2010

Copies of these permits are included in Appendix B of this report.

2.6 Lift Stations

As previously mentioned, there are currently 18 lift stations in the wastewater system. The location of these is shown in Figure 2-1 where the lift station numbers correspond to the following list:

Number	Location	Capacity (gpm)	Capacity (MGD)	Receiving WWTP
2	Stallings St.	55	0.0792	Potato Creek
3	Jackson Rd.	100	0.144	Potato Creek
4	Lincoln Rd.	340	0.4896	Cabin Creek
5	Westmoreland Rd.	750	1.08	Shoal Creek
6	Tuskegee Ave.	30	.0432	Cabin Creek
7	W. McIntosh Rd.	800	1.152	Shoal Creek
8	Kalamazoo Dr.	150	0.216	Potato Creek
9	Dewey St.	50	0.072	Potato Creek
10	Maddoxwood Dr.	160	0.2304	Potato Creek
11	W. McIntosh Rd.	180	0.2592	Shoal Creek
12	W. McIntosh Rd.	130	0.1872	Shoal Creek
13	Airport Rd.	172	0.2477	Potato Creek
14	Wasp Creek (Carver Rd.)	310	0.4464	Shoal Creek
15	Honey Bee Creek Dr.	200	0.288	Potato Creek
16	Buck Creek at Rehoboth Rd.	600	0.864	Potato Creek
17	Pecan Ridge (Cowan Rd.)	100	0.144	Shoal Creek
18	Club Estates Phase 3 (Ellis Rd.)	30	0.0432	Shoal Creek
19	Odell Rd.	50	0.072	Shoal Creek

2.7 Sewer System Evaluation and Rehabilitation

Since 1993, the City has been conducting a comprehensive evaluation of the wastewater collection system. The purpose of the evaluation is to reduce infiltration and inflow of rain and ground water into the sewer system and to prevent wastewater overflows from manholes and lift stations. Extensive sewer rehabilitation work has been completed and is expected to continue for several years. A more detailed discussion of this work is included in Section 10.

2. 8 Other Treatment Facilities in Spalding County

The following table is a list of other permitted treatment facilities in Spalding County. It is expected that most of these will continue in operation until wastewater collection and treatment services are made available by the City or County.

OTHER WASTEWATER TREATMENT FACILITIES IN SPALDING COUNTY

Facility Name	Sub-Basin	Plant Location	Permit No.	Plant Capacity (MGD)
Springs Industries	Cabin Creek, Towaliga River	Griffin	GA0037702	1.0
Jackson Rd. Elem. School	Cabin Creek, Towaliga River	Griffin	GAG550108	0.016
Florida Rock Ind. – Flat Creek	Flat Creek, Flint River	Griffin	GA0024872	0.016
Mortell Co.	Honey Bee Creek, Flint River	Griffin	-	0.010
Pomona MHP	Heads Creek, Flint River	Pomona	GA0023531	NA
Southhampton MHP	Thompson Creek, Towaliga River	Sunny Side	GA0025305	0.053
Beaver Brook School	Heads Creek, Flint River	Sunny Side	GAG550107	NA
TOTAL				**1.095**

SECTION THREE

SERVICE AREA AND FLOW PROJECTIONS

3.1 Introduction

One of the first steps in the preparation of a wastewater management plan is to determine the flow rate for which the system is to be designed. This design flow rate will dictate the physical size and cost of the system components. To define these sewer capacities in a long-range planning effort, it is necessary to extrapolate population and land use growth trends and subsequent wastewater generation rates from historic growth data and future land use plans. It is also necessary to identify the area to be served by the wastewater system. This area is generally defined by logical drainage boundaries and the need for a wastewater system. Once the service area is defined and flow rate estimates are prepared, the collection and treatment facilities necessary to serve that area can be planned.

3.2 Description of Planning Area

Spalding County is made up of approximately 128,000 acres bordered on the west by the Flint River and Line Creek. Elevations in the County vary from about 660 feet above mean sea level (MSL) near the Towaliga River to about 1,000 feet MSL near the City of Griffin. Approximately 55,000 acres, 43 percent of the total County area, drain to the east into tributaries of the Ocmulgee River, Altamaha River Basin. Approximately 73,000 acres drain to the west into tributaries of the Flint River. The City of Griffin encompasses approximately 8,700 acres on a plateau where the terrain slopes radially away in all directions. Streams and channels to the northeast and east of the City drain into the Ocmulgee River basin and those streams west and south of the City drain into the Flint River basin.

3.3 Selection of Service Area

Figure 1-1 shows Spalding County divided into 37 distinct drainage basins without the individual service areas for the treatment facilities. Trunk sewers in these drainage basins would typically follow the alignment of creeks, and rely on gravity flow as the primary means of conveyance. Lift stations can then be limited to those necessary to overcome specific topographic problems or transfer flows to another drainage basin to facilitate the management plan. The increase in collection system

costs due to the installation, operation, and maintenance of lift stations makes the delineation of these natural drainage basins a fundamental requirement. The abbreviations shown on the map stand for the following:

Descriptor	Name of Basin
BRC	Bear Creek
BUC	Buck Creek
CAC	Cabin Creek
CRV	Crestview Heights (in Heads Creek basin)
ELC	Elkins Creek
FLT	Flint River
HBC	Honey Bee Creek
HDC	Heads Creek
LNC	Line Creek
POT	Potato Creek
ORH	Orchard Hill
SHC	Shoal Creek
SUN	Sunny Side (in Heads Creek basin)
TOW	Towaliga River
TRS	Troublesome Creek
WAC	Wasp Creek

All thirty seven basins were analyzed for growth potential and the need for wastewater management within the planning period. These basins were reviewed for development potential mainly by evaluating the future land use plan presented in the 2024 Comprehensive Plans for Spalding County and the City of Griffin. The geographic location and topography of each basin was also considered in deciding which areas would most likely have need for, and a reasonable chance for providing access to, sewers during the planning period. Those basins with a low potential for development or a remote location from other areas of projected development were initially excluded from this planning effort. Other engineering considerations were then applied to determine whether any of these areas of lower projected development should be included into the service area. Some of the basins selected were not expected to experience significant change in land development but were included in the service area because of proximity to major highways, proximity to Henry County where population growth has been rapid, or need for interceptor sewers to convey wastewater to the treatment facilities.

Initially, the future land use plans for Spalding County and Griffin were compared to the existing conditions to identify areas of projected growth. Those basins where land development is expected to change significantly, or where development densities are projected to increase during the planning period were included in the service area. Once the growth areas were identified, the logical drainage areas, as defined by the individual basins, were selected.

3.3.1 Projected Service Area

The proposed service area for the wastewater system has reduced in size from the two previous versions of the Griffin – Spalding County Wastewater Management Plan. This is primarily due to the future land use plan for the unincorporated Spalding County area. The majority of Spalding County has been designated with an agriculture or low density residential land use. Because of this, the housing densities generally do not support the need for a public wastewater system. Based on this, basins expected to be served by sewers to some extent by the year 2025 total approximately 27 percent of the County area. These basins are shown in Figure 3-1 and are further described as:

CAC-CL:	Upper Cabin Creek basin extending from Highway 41 in North Griffin to the northeast city limits.
BUC-1:	Unnamed tributary of Buck Creek between East Griffin and east of McDonough Road.
POT-1:	Potato Creek basin between Downtown Griffin and the south Spalding County line.
HBC-1:	Honey Bee Creek basin between the City of Griffin and Spalding County line.
WAC-1:	Wasp Creek basin between Highway 362 and Spalding County line.
SHC-1:	Shoal Creek basin upstream of the existing treatment facility.
CRV-1:	Crestview Heights basin - Unnamed tributary to Heads Creek watershed north of the City of Griffin.
HDC-2:	Tributary of Heads Creek Reservoir from south of Highway 92 to the Crestview Heights basin.
ORH-1:	Area around Orchard Hill between POT-1 and Spalding County line.
TRS- 1:	Area east of Jordan Hill Road and south of TOW-2.
TRS- 2:	The southern most corner of the TRS-2 just west of Old Atlanta Highway.

Inclusion of a basin in the service area does not mean that the basin will be completely sewered by 2025. As will be seen later in this section, the basins are expected to be sewered to differing degrees during the planning period. This plan outlines the projected alignment of the interceptor sewers and provides only preliminary consideration to the installation of lateral lines to connect existing developments to these interceptors. The decision as to the extent of the sewer system to be installed will necessarily be based on the desires of the community and the financial impacts of the sewer expansion. Such decisions will not likely be finalized until development in a specific area has begun and can be more precisely defined. These detailed analyses are beyond the scope of this planning

effort. Similarly, some areas may not realize the expected growth during the planning period and may not require sewer service as anticipated. If such is the case, the community may re-evaluate its priorities and delay or forego installation of sewers in those areas.

Several basins in Spalding County are located in or near water supply watersheds. A water supply watershed is the land that drains into a stream, lake or reservoir which is used as a source of drinking water. Georgia EPD regulations impose certain restrictions on land usage near water supply sources. In general, these regulations require maintenance of vegetative buffers along stream corridors and adjacent to water supply reservoirs and place maximum limits on the percentage of land that can be developed within the watershed. Generally, suburban residential development would meet the watershed protection requirements with little change from normal standards. Spalding County has a zoning ordinance in place restricting the type and extent of development in water supply watersheds. It was assumed in this study that the Henry County Water Intake watershed in the Towaliga River basin will also be protected by Spalding County. Protected water supply watersheds for Griffin's Heads Creek Reservoir and Flint River Intake and for Henry County's intake and reservoir near Steele's Mill are shown in Figure 3-2.

Areas near the Flint River and the Heads Creek Reservoir were not considered to have great potential for development of sewers within the planning period and, subsequently, were not included in the projected 20-year sewer service area. Other areas considered outside the 20-year service area are those in northeast Spalding in the Towaliga River basin and southeast in the Lower Buck Creek Basin as well as areas in far southwest Spalding County.

Of the basins in the service area, those that drain into the Flint River are:

Basin Name	Basin Area	Descriptor
Shoal Creek	12,400 acres	SHC-1
Wasp Creek	2,740 acres	WAC-1
Honey Bee Creek	2,670 acres	HBC-1
Potato Creek	5,940 acres	POT-1
Orchard Hill	1,120 acres	ORH-1
Crestview Heights	1,920 acres	CRV-1
Heads Creek	2,170 acres	HDC-1
TOTAL	28,960 acres	

Existing wastewater treatment facilities which treat wastewater from these basins are currently located in the Shoal Creek and Potato Creek basins.

Drainage basins east of the City and in the eastern part of the County within the service area which flow into the Ocmulgee River are:

Basin Name	Basin Area	Abbreviation
Cabin Creek	2,240 acres	CAC-CL
Buck Creek	3,820 acres	BUC-1
Towaliga River	5,044 acres	TRS-1 TRS-2
TOTAL	11,104 acres	

The Cabin Creek WWTP located near downtown Griffin is the only permitted wastewater treatment plant in these basins.

The permitted facilities do not collect and treat all of the wastewater generated from these drainage areas. Most areas outside of Griffin do not have access to sanitary sewers and rely on individual septic systems for wastewater management.

3.4 Flow Projection Methodology

For the purpose of developing a workable wastewater management plan it is necessary to identify both the short-term and long-term needs. Because of this, flow projections were developed using multiple approaches based on the time frame being considered. For the short-term projections, proposed development records were used to identify the potential wastewater flow. For the long-term projections, population trends and future land use data were used for calculating potential wastewater flows. A more detailed description of each method is provided in the following sections.

The flow projection used assumes that sewer lines will be installed to serve mostly future growth in the unincorporated areas of the county. Areas inside the corporate limits of Griffin are already served by sewer with only a few exceptions where it has not been economically feasible to install sewer lines. It is projected that it will not be feasible to install sewer lines in unincorporated areas of the county where the population density is low. As will be explained later in this section, important assumptions were made as to the percentage of the existing population that will be served, future growth in each basin, and the percentage of existing and future developments that will be served.

3.5 Short-Term Projections

Short-term wastewater projections were developed for planning years 2006 through 2009. These projections are based on development activity within the service area. The development activity data was obtained from the Spalding County Community Development Department and the City of Griffin Planning and Development Department for the previous three years. Using this data along with information provided by the City of Griffin Public Works Department regarding developments that have requested sewer service, it was possible to develop tables projecting the additional wastewater flow to each of the three sewer service basins within the Griffin service area.

The projected wastewater flows for 2006 through 2009 are shown in Tables 3-1 through 3-4, respectively. Table 3-5 shows the total wastewater flow per treatment drainage basin for the end of each plan year. The tables include the following information:

- Sub-Basin – the drainage basin in which the development is located.
- Development Name – the name of the development on the application.
- No. of Units – the total number of housing units to be developed or the equivalent for commercial developments.
- Percent Contributing Flow – the percentage of the development that will be contributing wastewater flow by the end of the plan year.
- Total Flow Based on Units – the wastewater flow for the development based on the number of units times the percent developed times the average unit flow rate of 230 gallons per day (gpd) per unit.

The total projected flow to each treatment plant is calculated by adding the projected flows for the contributing sub-basins to the current flow for the respective treatment plant. The flow increase form year to year is the additional percentage developed for each development plus any other new development activity. The other new development activity is projected based on the historical average for the previous three years and is simply identified as a line item in the table such as “2006 Other New Developments”. This shows the average number of units for the other new developments and the corresponding wastewater flows.

The projected wastewater flows to each treatment plant for the short-term planning period are shown below.

		Projected Monthly Average Daily Wastewater Flow (MGD)			
Treatment Basin	**Current Capacity (MGD)**	**2006**	**2007**	**2008**	**2009**
Cabin Creek	1.5	1.01	1.07	1.08	1.09
Potato Creek	2.0	1.66	1.78	1.90	2.00
Shoal Creek	2.25	1.92	2.10	2.22	2.31
Highland Mills	.019	.016	.016	.016	.016
Sun City Peachtree	.550[1]	0.00	1.35[2]	1.35[2]	1.35[2]

1 – Current permitted capacity
2 – Projected capacity dependent on GAEPD approval.

3.6 Long-term Projections

As previously stated, the long-term wastewater flow projections are based on both the anticipated population growth and future land use plan within the service area. Data regarding the population and land use plans was obtained from the 2024 Comprehensive Plans for the City and County. Additionally, information on current water use for residential and commercial customers within the City and County was used in developing wastewater contribution rates for the projection calculations.

There are several reasons for using the two different methods to calculate the long-term wastewater flows. The land use projection method is more conservative than the population projection method and typically is more accurate in forecasting the long-term wastewater flows for a drainage basin. This is primarily because the population projection method does not incorporate non-residential growth as easily as the land use method. However, the land use method does not incorporate a rate of growth. The advantages of using both methods in this study are as follows:

- Using the two methods provides a reasonable check of each method's accuracy and provides a range of projected wastewater flows.
- Because the land use method includes a location aspect, it can be used to size infrastructure within the collection system.
- The population method helps in predicting the rate of growth over time for the area, which provides a timing component to the necessary improvements.

3.6.1 Population Projections

Recent population projections were completed for both the City and the County in their respective 2024 Comprehensive Plans. These projections were based on the 2000 census data and growth trends predicted for the City and County based on policy recommendations in the Comprehensive Plans. These plans provided three growth scenarios based on the historical growth. For the purpose of this study, the "medium" growth scenario was selected. This allows the wastewater facilities to be conservatively planned and sized with the least risk of being under- or over-sized.

The analysis of the population data as related to the proposed service area required breaking the 2000 census data into the individual census tracts within the County. Census tract data can be used to determine the average population density per acre in each respective census tract. The 2000 census tract population density data is presented in Table 3-6. Using this data, it was possible to estimate the current population of each basin, which is presented in Table 3-7.

Once the starting population was determined, each basin's population was increased at a calculated growth rate based on the information provided in the Comprehensive Plans. This growth rate (1.37% per year) is an average rate for the entire service area over the twenty year study period. Using this growth rate, the population increase over the 20-year study period was determined.

3.6.1.1 Flow Projection in Each Basin

It is necessary to project the wastewater flows in each basin to size the sewer lines, pump stations, and force mains. Additionally, by identifying which basins will flow to each treatment plant, it is possible to identify the required future treatment capacity at each treatment plant. Table 3-8 shows the projected wastewater flow increase for each drainage basin in the wastewater service area. The following paragraphs detail the methods for calculating the values shown in this table.

Column 2 – Estimated 2005 Population in Basin

The population data for each sub-basin is pulled from the data in Table 3-7. Table 3-7 was developed by using the census tract data from the 2000 census to determine the average density for each census tract. This average population density was then adjusted for the estimated growth between 2000 and 2005 using the projections in the comprehensive plans to develop the 2005

population density for each census tract. The sub-basins were then overlaid on the census tract map to determine the percent of each sub-basin in each census tract. The overlapping areas of the sub-basins and census tracts were then multiplied by the respective population density and summed for each sub-basin to provide an estimate of the population in each sub-basin. The estimated population in two of the sub-basins was adjusted. The HBC-1 sub-basin was adjusted based on previously conducted house counts, and the ORH-1 sub-basin was adjusted because it falls within a census tract with a low population density compared to the actual Orchard Hill community.

Column 3 - Percent of Existing Population Added to Sewer

Generally, it is estimated that only 5 to 20 percent of the existing population will be served by new sewers in the next 20 years, primarily due to population densities or cost limitations. However, basins HBC-1, ORH-1, and WAC-1 have higher population densities or commercial development potential that will allow existing population to be served. Therefore, a higher percentage of the existing population is expected to be added to the sewer system.

Column 4 – Flow Increase from Existing Population

Column 2 multiplied by 100 gallons per person per day and by Column 3 (in decimals). The figure of 100 gallons per person per day is typically used for new sewers and includes infiltration and inflow. Griffin's average contribution per person on a system wide basis is 73 gallons per person per day. This is lower than typical planning values, therefore, the 100 gallon per person per day value will be used to provide a conservative estimate.

Column 5 – Population Growth

As previously stated, the population growth data from the Comprehensive Plans was used for this study. Different growth rate scenarios are presented in the Comprehensive Plans for High, Medium, and Low growth. The Medium growth rate scenario is used for these calculations because it provides a conservative estimate while not over projecting the likely population increase. Additionally, because the majority of the new population growth is expected outside the City limits, the growth rate for the County was selected as representative for the entire service area. The 20-year increase in population is estimated to be 31 percent or 1.37 percent per year.

Column 6 – 2025 Projected Population in Basin

This is simply the existing population in the basin (Column 2) plus the projected growth (Column 5).

Column 7 – Percent of Population Growth Served

This was assumed to be 90 percent for all basins. Some areas will be developed with lots larger than one acre, which will not be economically feasible to provide sewer service.

Column 8 – Projected Flow form Population Growth

This equals the projected population growth (Column 5) multiplied by the percentage of new growth served (Column 7 in decimals) and multiplied by 100 gallons per person per day.

Column 9 – Projected Flow from Commercial Growth

This is estimated based on the current ratio of residential wastewater flows to commercial wastewater flows. The historical data for the breakdown in wastewater flows shows that the commercial flow is approximately 60 percent of the residential flow. Because much of the existing commercial will also serve new development, the additional commercial growth will be lower than the current ratio. It is estimated that future commercial wastewater flow will be 25 percent of the residential flow. Therefore, the projected flow from commercial growth is equal to the projected flow from population growth (Column 8) multiplied by 0.25.

Column 10 – Projected Flow from Industrial Growth

Similar to Column 9, the projected flow from industrial growth is calculated as a percentage of the residential and commercial flow. Based on the industrial flow records, the current industrial flow is approximately 10 percent of the residential and commercial flow. It is estimated that the future industrial contribution will be 5 percent of the combined residential and commercial flow.

Column 11 – Projected Flow Increase 2005-2025

This column is the sum of all of the projected flow increases (Columns 4, 8, 9, and 10). The total is the projected average daily increase in flow to all of the treatment facilities in the next 20 years and amounts to approximately 1.94 million gallons per day.

3.6.1.2 Total Project Flow in Each Treatment Basin

Table 3-9 shows the total flow projection for each treatment basin for the years 2010, 2015, 2020, and 2025. These projections also include the existing flow to each treatment plant. The values for the years 2010, 2015, and 2020 flow increase were calculated in the same manner as those for 2025, as shown in Table 3-8. Table 3-9 helps to show the impact of the future projected growth on the treatment capacities for each plant. The 2025 wastewater flow projections, based on population growth, to each treatment basin are as follows:

Treatment Basin	Projected Monthly Average Daily Flow (MGD) (based on Population Projection Method)
Cabin Creek	1.12
Potato Creek	2.26
Shoal Creek	2.78

3.6.2 Land Use Projections

The second methodology used to determine the long-term wastewater flows for the proposed service area was an evaluation of the future land use plans. This method is based on calculating the area of each different land use within a drainage basin and multiplying it by its corresponding wastewater flow contribution value on a per acre basis. The wastewater flow contribution value is developed by knowing the type of development and density allowed for each land use and having an understanding of typical wastewater flow values for those conditions.

Because the proposed service area is comprised of areas both inside and outside the city limits, it was necessary to evaluate the future land use plan for both the City of Griffin and Spalding County. Utilizing the land use plans provided in the 2024 Comprehensive Plans and the City and County zoning ordinances, it was possible to develop the per acre wastewater flow contribution for each land use category. The following chart shows the wastewater flows for each land use category.

City Land Use Classification	WW Flow Cont. (gpd/Ac.)	County Land Use Classification	WW Flow Cont. (gpd/Ac.)
Low Density Residential	460	Estate Density Residential	70
Medium Density Residential	920	Low Density Residential	230
High Density Residential	2,000	Medium Density Residential	920
Office – Transitional	1,100	High Density Residential	1,600
Office – Professional	1,100	Commercial	1,500
Neighborhood Business	200	Mixed Use	1,400
Commercial	1,500	Industrial	1,000
Mixed Use	1,400	Public/Institutional	200
Downtown Hub	1,100	Parks/Recreation/Conservation	50
Industrial	1,000	Transportation/Utilities	10
Public/Institutional	200	Forestry	0
Parks/Recreation/Conservation	50	Open Space	0
Transportation/Utilities	10		
Vacant/Undeveloped	0		

These values were used in calculating the wastewater flow rate for the individual drainage basins. They are calculated by applying a typical wastewater flow rate in gallons per day (gpd) to each unit that contributes flow. For the purposes of this study, a unit is defined as a residential lot, an individual apartment in a multi-family development, a commercial property, or an industrial facility. The typical wastewater flow rate was estimated using published design values in common professional texts.

3.6.2.1 Land Use Area Calculation

The land use areas within each drainage basin were calculated in a similar method as to the basin area in each census tract. Utilizing the GIS data provided by the City and County, it was possible to overlay each specific land use category with each drainage basin to calculate the area of each category within the basins. Table 3-10 shows the land use area for each basin for both the City and the County. A few of the drainage basins have little or no City land use within them. This is because the existing city limits either do not or minimally overlap into the respective drainage basins.

As can be seen, the vast majority of the county's land use within the proposed service area is for Estate and Low Density Residential. These two categories have relatively low wastewater contribution rates as compared to other developed categories. Significant variance from these categories in development activity may result in the future wastewater facilities being undersized. Because of this, it is critical that the City and County communicate with each other as to variances from the planned land uses within the service area so that the appropriate adjustments to this plan can be made.

3.6.2.2 Flow Projections in Each Basin

The flow projections for the land use method were calculated by multiplying the land area for each land use category by the wastewater flow contribution and the percent developed. The critical component of these calculations is the percent developed value. The land area is constant, as is the wastewater contribution rate for each category. Therefore, the percent developed is the variable factor that causes the total wastewater flow to increase.

The initial percent developed values (2005) were estimated based on aerial photography, existing sewer system maps, and field investigations. Using the projected population data, development trends, and historical records the percent developed values were increased on an annual basis to predict the growth in wastewater flow within each drainage basin. The growth within the service area was not projected uniformly for each basin. Each basin's growth was projected based on the types of land use, proximity to major transportation corridors, and the percent currently developed.

Once the growth rates were estimated, the projected wastewater flow for each drainage basin was calculated for plan years 2010, 2015, 2020, and 2025. The results of these calculations are presented in Table 3-11. Table 3-11 also is segregated into the total flow for the respective treatment basins; Cabin Creek, Potato Creek, and Shoal Creek. The 2025 wastewater flow projections, based on land use, to each treatment basin are as follows:

Treatment Basin	Projected Monthly Average Daily Flow (MGD) (based on Land Use Method)
Cabin Creek	1.19
Potato Creek	2.88
Shoal Creek	3.59

3.6.2.3 Flow Projections for Future Nodes

The County has several future village and commercial nodes outlined in their future land use plan. These villages and commercial nodes will be service by privately owned and operated treatment plants. The following charts where constructed based on the areas of these villages and commercial areas. The village nodes areas where calculated and then multiplied by the units per acre (4.5 units), the average persons per (2.64), and the assumption that the average person would produce 100 gallons of wastewater a day. Twenty percent of the total household flow of each village node was calculated to estimate daily flow from the commercial areas servicing the village node. For the commercial nodes the rate of 1,500 gallons per acre was applied.

Village Node[1]	Estimated Households	Estimated Household WW Flow	Estimated Commercial WW Flow	2025 Projected Average Daily WW Flow (MGD)
Vaughn/Rio	189	0.050	.010	0.060
Rover	94	0.025	.005	0.030
Heron Bay	164	0.043	.009	0.052
Towaliga[2]	210	0.055	.011	0.066
SunnySide	366	0.097	.019	0.116
155 Future Node[2]	288	0.076	.0152	0.091
TOTAL	**1311**	**0.346**	**.069**	**.415**

1Orchard Hills is service by the Potato Creek WWTP.

2 The location to be determined.

Commercial Node[1]	Total Area (Acres)	2025 Projected Average Daily WW Flow (MGD)
Vineyard Road and 19/41	64.95	0.0974
Sunnyside	50.18	0.0753
East Griffin	199.7	0.2996
TOTAL	**314.83**	**0.4723**

Other Developed Areas

Developed Area	Serviced Area (Acres)	2025 Projected Average Daily WW Flow (MGD)
Sun City Peachtree	1,544	1.35
Highland Mills	32.00	.016
TOTAL		1.366

3.7 Flow Projection Summary

As shown with the different methods of flow projections, the future wastewater flow to each facility may vary depending on how the growth in the service area occurs. Figures 3-3, 3-4, and 3-5 graphically show the projected wastewater flows through the planning period for the Cabin Creek, Potato Creek, and Shoal Creek facilities, respectively. As can be seen, when the short-term data is combined with the long-term data there is a much smoother transition from year to year when the land use method is used. The population projection method shows a drop in flow when the projections are transitioned from short-term to long-term.

The most accurate data is the short-term projections which uses currently planned developments to project the wastewater flows for the next several years. The further in the planning period the projections are from the present time, the less accurate they will become due to uncertainties in policies that impact the growth of a community and many other factors. Because of this, the long-term data shows the widest range of variations depending on the method used to project the wastewater flows. Based on the population growth data, the total flow in each basin is projected to be less than when calculated using the land use method. For the purposes of planning the system needs, it is recommended to use the land use projections for the long-term planning period. This is a more conservative approach that provides the security of being able to manage the higher flows. Additionally, the difference in the two projection methods at the end of the planning period is relatively insignificant as related to the sizing of wastewater collection infrastructure.

SECTION FOUR

SEPTAGE MANAGEMENT

4.1 Introduction

An increasing concern with wastewater systems is the handling of septage. Septage is generally defined as the sludge produced in individual on-site wastewater disposal systems, principally septic tanks and cesspools. The problem associated with septage is the high strength (pollutant concentrations) compared to typical domestic wastewater. Typically, septage has the following characteristics:

	Septage Concentration (mg/L)		
Constituent	**Range**	**Typical**	**Typical Domestic Wastewater (mg/L)**
Total Solids (TS)	5,000 – 100,000	40,000	720
Suspended Solids (SS)	4,000 – 100,000	15,000	220
Volatile Suspended Solids (VSS)	1,200 – 14,000	7,000	165
5-day Biochemical Oxygen Demand (BOD_5)	2,000 – 30,000	6,000	220
Chemical Oxygen Demand (COD)	5,000 – 80,000	30,000	500
Total Kjeldhal Nitrogen (TKN as N)	100 – 1,600	700	40
Ammonia (NH_3 as N)	100 – 800	400	25
Total Phosphorus (as P)	50 – 800	250	8
Heavy Metals	100 – 1,000	300	Trace Amounts

If managed correctly, septage can be received and effectively treated at a wastewater treatment plant. The key factor is having the proper facilities to receive the septage and gradually dose it to the treatment facility so that there are no shock loads placed on the treatment process. In order to accommodate this, it is necessary to have an understanding of the potential septage loads to a receiving facility. This section will analyze the potential septage loads within the county and identify possible options for receiving, treating, and disposing of septage with respect to the existing wastewater infrastructure.

4.2 Septage Loads

The primary source of septage in Spalding County is the pumping of septic tanks in the unsewered areas of the county. Based on the population data presented in the Spalding County 2024 Comprehensive Plan, in 2000 there were approximately 12,500 occupied housing units in the county (outside of the city limits) with 1,700 being multi-family. Approximately 850 of these housing units are connected to the City sewer system. If it is assumed that 50 percent of the multi-family is served by some form of public or community sewer, the total number of active septic tanks in the county in 2000 was approximately 10,800.

The Comprehensive Plan indicates that the average housing growth from 1990 to 2000 was approximately 1.03 percent per year. Assuming this growth rate remains relatively the same, the number of housing units in the County in 2005 served by septic systems is approximately 11,350.

A major concern regarding septic system pumping and hauling is the possibility of mandatory septic tank cleaning. There have been discussions within the State Legislature to require all septic tanks to be pumped out a minimum of once every (five) 5 years. For the purposes of this planning effort, it is assumed that this type of requirement is in effect. Based on this, Table 4-1 was prepared and shows the projected loads from septage hauling that will have to be handled at a wastewater treatment plant or a dedicated septage facility. This table demonstrates that while the volume of septage to handle is relatively low compared to domestic wastewater volumes, the pollutant loadings are high. For comparison purposes, the BOD_5 loading of the projected 2025 septage loading is equivalent to approximately 425,000 gpd of typical domestic wastewater.

4.3 Impact on Wastewater Treatment

As previously stated, septage can have a significant impact on wastewater treatment processes if it is not managed properly. The high loading of solids can create upsets with clarifiers and sludge handling systems. This has already been an issue at the Potato Creek WWTP when too great a volume of septage is discharged to the facility in a short period of time. Similarly, the high organic and nutrient loadings can create low oxygen levels within biological treatment processes, which will reduce the effectiveness of treatment and potentially result in permit violations.

Tables 4-2 and 4-3 show the impact on influent wastewater strength when the projected septage is added to the flow for the Potato Creek WWTP and the Shoal Creek WWTP, respectively. These

tables show the projected flows and wastewater strengths for each facility prior to septage being added, the septage characteristics, and the wastewater characteristics after the septage is blended with the influent wastewater. As can be seen, even though there is a negligible flow increase, the wastewater strength is significantly increased (nearly 60% increase for the TSS concentration at the Potato Creek WWTP). If the plant is not planned and designed to handle this additional load, it may not be capable of treating the higher pollutant loads due to the septage.

4.4 Septage Handling Options

As shown above, septage can have a significant impact on a wastewater treatment facility. However, it is relatively common for domestic wastewater treatment plants to receive and treat septage without problems if these facilities were designed to receive, handle, and treat septage. Essentially, there are two options for managing the septage currently hauled and projected to be hauled within the county. These options are 1) construct a dedicated septage treatment facility or 2) upgrade existing systems. Below is a discussion of these options.

4.4.1 Dedicated Septage Treatment Facility

This option involves the design and construction of a dedicated septage handling facility within the County. The facility would only receive septage from haulers. However, it could be designed to also receive grease from grease trap pumping if desired. In general, the facility would include some type of receiving station, a screening system, grit removal, and biological treatment with solids separation. Effluent disposal would likely be through land application because it is unlikely that EPD would permit a discharge for a facility of this nature. Residuals management would be through aerobic or anaerobic digestion with disposal either via land application or dewatering and dumping at a landfill. Total site area for a land application system is estimated to be approximately ten (10) acres.

Constructing a new treatment facility has advantages and disadvantages, which must be considered before making a decision on the best option for dealing with septage in the county. To assist in the evaluation, the following table summarizes the major advantages and disadvantages of a dedicated septage treatment facility.

Advantages	Disadvantages
• No impact to wastewater treatment plants and capacity is reserved. • Can optimize process for septage. • Could accept oil and grease from grease traps. • Could locate centrally in county. • Ownership and responsibility could be with County instead of City.	• New facility that must be operated and maintained. • Potential source of odor problems. • Process residuals (sludge) have to be managed. • Additional permit adds additional risk for violations. • Higher capital and operating cost.

The cost for developing a treatment facility for septage is similar to the cost of a facility for domestic wastewater. The equipment and process used would be the same. For budgeting purposes, costs of a system of this type are estimated as follows:

Item	Estimated Cost
Property (10 acres @ $10,000/acre)	$100,000
Surveying, Engineering, & Inspection	$100,000
Construction	$500,000
Contingency (20%)	$100,000
Total	**$800,000.00**

4.4.2 Upgrade Existing Treatment System

This option involves the addition of needed facilities at one of the existing wastewater treatment plants to accept and treat septage. Currently, there are three existing publicly owned and operated wastewater treatment plants within the county; the Cabin Creek WWTP, the Potato Creek WWTP, and the Shoal Creek WWTP. It would be possible to install the necessary septage handling facilities at any of these treatment plants, however, it is recommended to focus on either the Potato Creek WWTP or the Shoal Creek WWTP. There are several reasons the Cabin Creek WWTP is not considered a good alternative, as identified below.

- The Cabin Creek Influent flow is lower than the other facilities and is projected to remain relatively low. This offers less domestic wastewater to help dilute the septage prior to treatment.

- The Cabin Creek Site is the smallest site of the three treatment plants and the land area required for a septage system may be needed in the future for additional treatment processes.
- The Cabin Creek site is located in close proximity to the City and would create the highest risk of odor complaints from the septage.
- Cabin Creek has the strictest permit limits of the three facilities.

The facilities that would be required for the septage handling at either the Potato Creek or Shoal Creek WWTPs are essentially the same. To effectively manage the septage and minimize the risk to the treatment processes, the following equipment is required.

- Septage receiving station – the receiving station generally includes an area where septage haulers can park to discharge the septage into a holding tank. There is typically a coarse screen on the inlet to catch any large solids that may be in the septage prior to entering the holding tank. The holding tank generally has a volume equal to the projected daily septage volumes. Dosing pumps are used to pace the septage into the treatment process.
- Grit removal system – a grit removal system is needed to minimize the accumulation of grit from the septage in the treatment process. This can either be a system dedicated to the septage or one designed to receive all of the influent flow to the treatment plant.

With the proper dosing of the septage to the treatment process, both the Potato Creek and Shoal Creek WWTPs should be able to effectively treat the blended flow to the process. However, the Shoal Creek WWTP presents a better alternative for managing the hauled septage than does the Potato Creek WWTP for the reasons identified below.

- As shown in Tables 4-2 and 4-3, the septage has a more significant impact on the Potato Creek loading than it does on the Shoal Creek loading.
- With the strict permit limits on the Potato Creek WWTP, a greater percentage of the plant loading must be removed than at the Shoal Creek Plant.
- The lagoon treatment system is a more stable process with less risk of upset due to shock loadings from septage. The large volume of the lagoons and polishing ponds offer a buffer against potential shock loads and minimize the risk of permit violations.

- There is no regular sludge management with the lagoon system. Sludge accumulates in the bottom of the lagoons and is decomposed with both aerobic and anaerobic process. This is similar to the process involved in septic tanks. The Potato Creek WWTP has to manage the sludge levels within the process. The additional solids loading from the septage may upset this process or require expansion.

As with the option to construct a dedicated septage handling facility, this option also has its advantages and disadvantages, as presented below.

Advantages

- No new permits are required.
- Maximizes the use of existing facilities.
- No new land required or issues with locating a treatment facility near private property.
- Lower capital and operating cost than a dedicated facility.

Disadvantages

- Risk of upsetting treatment process resulting in permit violations.
- Potential source of odor problems.
- Higher influent loadings reduce the treatment capacity.
- May require upgrades to treatment process other than septage handling facilities.
- Not centrally located within county.
- City is responsible for septage from County.
- Additional operation and maintenance effort.

The estimated costs for adding septage handling facilities to the Shoal Creek WWTP are shown below. These costs would be similar if the facilities were to be added to the Potato Creek WWTP instead.

Item	Estimated Cost
Surveying, Engineering, & Inspection	$75,000
Construction	$220,000
Contingency (20%)	$59,000
Total	**$354,000.00**

It must be noted that treatment of septage at a wastewater treatment plant has associated costs not identified above. These costs include the loss of treatment capacity, higher O&M costs, and

additional sludge handling costs. The most significant and often, the most overlooked is the cost associated with the loss of treatment capacity. Even though the volume to be treated is relatively low and has little impact on the hydraulic capacity of the treatment plant, the increase in pollutant loading is significant and requires larger sized unit treatment processes be provided for an equivalent volume of capacity. For example, an aeration basin designed to treat a domestic wastewater with a BOD strength of 243 mg/L at a flow of 1.0 MGD will be smaller than a basin that is designed to treat 1.0 MGD of flow with a BOD strength of 280 mg/L. The larger basin cost more to construct.

Similar to this, because the loading to the treatment process is higher, the operating cost will also be higher. The amount of oxygen required for treatment in an aeration basin is a function of the loading to the basin. The higher pollutant concentrations from septage, increases the loading (as shown in Tables 4-2 and 4-3), which requires an increase in the supplied oxygen. To increase the oxygen supply, additional power is required, which produces greater operating costs.

Finally, as shown in Table 4-1, septage has a high solids loading. The majority of these solids when removed in the treatment process generate sludge. The increase in the volume of sludge to treat and dispose of creates additional costs. This can be significant as related to the cost of hauling the sludge for land application.

4.5 Recommendation

Based on the review of the alternatives and the advantages and disadvantages presented by each, it is recommended that the City and County negotiate the best alternative that meets both of their needs. Acceptance of septage at the City's WWTP adds cost to future expansions (in the form of larger unit processes) and higher O&M costs. An agreement is currently being drafted between the City, County and Water Authority for handling future septage needs. The agreement states that the Spalding County Water Authority will fund up to $354,000 of a capital improvement project for a septage facility at the Shoal Creek WWTP and the users fees will off set the O&M costs of that septage facility. Septage dumping rates will be adjusted annually in order to cover O&M costs for the facility.

SECTION FIVE

SHOAL CREEK WWTP DRAINAGE AREA

WASTEWATER MANAGEMENT ALTERNATIVES

5.1 Introduction

After flow projections were made for each basin, alternative plans were devised to collect and treat the wastewater generated. This section focuses on the needs of the Shoal Creek WWTP Drainage Area. This area is comprised of four sub-basins, including CRV-1, HDC-2, SHC-1, and WAC-1. The future flow projections for this drainage area were calculated in Section 3 and are summarized below.

Plan Year	Projected Monthly ADF (MGD)	Projected Max. Month Flow (MGD)
2006	1.92	2.38
2007	2.10	2.60
2008	2.22	2.75
2009	2.31	2.86
2010	2.35	2.91
2015	2.68	3.32
2020	3.09	3.83
2025	3.59	4.45

The existing Shoal Creek WWTP, which currently serves this drainage area has a permitted capacity of 2.25 MGD. The wastewater undergoes preliminary treatment at the Shoal Creek site and is pumped to the Blanton's Mill land application site for effluent disposal.

This section will discuss alternatives for improvements and upgrades to the Shoal Creek WWTP, as well as other major infrastructure for collection and transmission of wastewater. These alternatives were prepared with consideration given to the number and locations of major lift stations needed to accommodate adverse topography, the need to serve areas of high projected growth, and the limitations of the existing facilities to meet short-term and long-term projected needs.

5.2 Wastewater Treatment Needs

The wastewater treatment needs are primarily driven by two factors; the projected wastewater flow and the method for disposing of the treated effluent. These two factors are related in that the volume of water to be treated impacts the effluent disposal method. As the flow increases, it becomes more cost prohibitive to utilize certain disposal methods such as, land application. Additionally, EPD now uses Total Maximum Daily Loads (TMDL) for developing permit limits for wastewater discharges to surface water bodies. Consequently, as the volume of treated effluent to be discharged increases, the allowed effluent pollutant concentrations decrease. This impacts the technology used to treat the wastewater, which in turn creates higher costs.

5.2.1 Treatment Capacity Needs

The projected wastewater flows to the Shoal Creek WWTP are presented above. These projections and how they were derived are discussed in detail in Section 3. As can be seen from the projections, the maximum month average daily flow will exceed the current permitted capacity in 2006. EPD recommends planning for expansion to wastewater treatment plants begin when the average daily flow reaches 80 percent of the permitted capacity. For the Shoal Creek WWTP, 80 percent of the permitted capacity is 1.8 MGD. The current average daily flow for 2005 is approximately 1.75 MGD. As can be seen, it is important that a plan be developed for expansion of the Shoal Creek WWTP.

The first step in planning an expansion for the Shoal Creek WWTP is deciding what the required capacity will be. Once the capacity is determined, it is possible to identify the available options for treatment and disposal. Knowing the capacity is also necessary to develop budgetary numbers that can be used for funding acquisition. Design capacities are generally selected to provide a minimum of 10 years before further expansion is required while considering capital cost and the potential for over-sizing the facility. Based on this, it is recommended to initially expand the Shoal Creek WWTP by 1.25 MGD to a total capacity of 3.5 MGD. This capacity gives the facility the ability to handle the projected wastewater flows beyond plan year 2015.

5.2.2 Effluent Disposal Needs

Effluent disposal is often times the driving factor in the size and type of wastewater treatment plant expansions. Currently the treated effluent from the Shoal Creek WWTP is disposed of through spray

irrigation on the Blanton's Mill land application site. The Blanton's Mill site comprises approximately 780 acres and has a permitted disposal capacity of 2.25 MGD.

The Shoal Creek WWTP site has approximately 150 acres of land that were previously used for land application. Soil testing was conducted on this site in April and May of 2005 to determine the feasibility of redeveloping a land application system on the site. Preliminary estimates indicate that the site would be able to accept approximately 500,000 gpd of treated effluent during the summer months and essentially no effluent in the winter months due to high water tables and water balance conditions. Because of this it is important to identify other possible means of effluent disposal. Possible options that will be addressed include the following:

- Land Application
- Seasonal Discharge Permit
- Direct Discharge
- Reuse Water System

In preparing this document, discussions with EPD were conducted to determine their likelihood of approving these disposal options and to obtain potential permit limits that would have to be met. Details of EPD's preliminary verbal indication are presented in the evaluation of alternatives presented later in this section.

5.3 Alternatives for Effluent Disposal

An objective of this study is to determine the best alternative for effluent disposal for additional capacity at the Shoal Creek WWTP. This required detailed evaluation of the four options previously listed and discussions with EPD in regards to likely regulatory approval. The following is a summary of the evaluation and findings for each alternative.

5.3.1 Land Application System

This alternative involves developing additional spray irrigation sites for disposal of the treated effluent similar to the Blanton's Mill site. It may be possible to use a portion of the Shoal Creek site where suitable soils are present. For general planning purposes, it is typically assumed that between 200 and 250 acres of land are required for disposal of 1.0 MGD of effluent. However, based on

recent soil testing and the remaining land available in the county, it is recommended to use 300 to 350 acres for planning and budgeting purposes. Based on the recommendation to expand the capacity of the Shoal Creek facility to 3.5 MGD, disposal capacity for an additional 1.25 MGD is required. Therefore, approximately 375 to 438 acres of suitable land are needed. Suitable land would be described as land with relatively mild slopes, a deep water table, no rock outcroppings, and well drained soils. Soils that can accept between 1.75 and 2.5 inches of treated effluent per week are desired.

Land application of treated effluent is a preferred disposal method by EPD. Land application minimizes the risk of degradation of the state's surface waters and helps to replenish the water table. EPD has developed detailed guidelines for planning and designing land application systems, which can be found in the document "Criteria for Slow Rate Land Treatment and Urban Water Reuse". A copy of this document is included in the Appendix.

Land application systems have been used for many years in Georgia for effluent disposal, including by the City of Griffin. Over this time several advantages and disadvantages have been recognized for land application systems. The following list details many of these for consideration.

Advantages

- EPD tends to promote LAS over discharges to surface waters.
- Permit limits for a LAS are constant year round and less stringent than for a discharge.
- Treatment systems for a LAS are less complicated than for other disposal methods.
- Permit limits are less likely to change over time.
- Typically there is less public opposition to a LAS than to a discharge.

Disadvantages

- A large area of land is required.
- Often times the disposal site is not adjacent to the treatment site making O & M more difficult.
- Maintenance of irrigation system and fields can be extensive.
- Harvesting program for cover crop is generally required.
- Groundwater monitoring program is required.

The cost associated with a disposal option must also be considered. In the case of a land application system, the cost is generally significant compared to the cost for a direct discharge. However, it should be noted that the costs of the treatment component for a land application system are generally less than the costs of the treatment component for a direct discharge. The main components of the cost are the cost for the property and the cost for construction of the irrigation system. The table

below presents general cost estimates for a land application system sized for 1.25 MGD. These costs only represent the cost associated with the land application system and do not include any cost associated with the pre-treatment system, which will be discussed later in this section.

Item	Estimated Cost
Property (438 acres @ $10,000/acre)	$4,380,000
Surveying, Engineering, & Inspection	$500,000
Sprayfield Construction (220 acres @ $8,700/acre)	$1,914,000
Force Main Const. (10,000 LF of 12" FM)	$400,000
Contingency (20%)	$462,800
Total	**$7,656,800**

5.3.2 Seasonal Discharge Permit

The Shoal Creek WWTP previously operated under a seasonal discharge permit prior to development of the Blanton's Mill LAS. The permit allowed discharge of treated effluent to Shoal Creek between November 1st and April 30th of each year. The discharge limits were not as strict as the discharge limits for the City's other treatment facilities, which made it possible for the lagoon treatment system to meet them. It is unlikely that EPD will issue similar limits for a new seasonal discharge permit.

The seasonal discharge permit option is being considered because the City currently owns approximately 150 acres of land adjacent to the Shoal Creek WWTP that was previously used for land application. Preliminary soil testing on this site has indicated that disposal of effluent during the winter months may not be possible due to seasonal precipitation and high ground water. Because of this, it would be necessary to obtain a seasonal discharge permit for disposal of treated effluent. All of the same requirements and guidelines for the land application system alternative discussed above would also apply to this alternative for the summer months when land application would be used for effluent disposal. However, during the winter months there would be additional requirements for the direct discharge.

A direct discharge will require a higher level of treatment that is likely to include nutrient (ammonia and phosphorus) reduction. The existing lagoon system is not designed to perform this level of treatment and would likely have to be upgraded to meet discharge permit limits. It is necessary to

request a seasonal wasteload allocation (WLA) from EPD to gain a better understanding of what will be required for treatment during the winter months. Discussions with EPD indicate that the agency is unlikely to issue a seasonal discharge permit for a traditional LAS. Nevertheless, a WLA has been requested but was not completed prior to issuance of this report.

As with the land application system alternative, there are advantages and disadvantages for a seasonal discharge permit. Many of these are the same as with the LAS, others are summarized below.

Advantages

- City currently owns land that may be suitable for the LAS.
- The LAS site is adjacent to the treatment plant.

Disadvantages

- Will likely have to install a more advanced treatment process.
- Will have to monitor two effluent points during the winter (stream and Blanton's Mill LAS).
- Greater risk of permit violations.

The cost for utilizing this alternative will include the cost associated with developing a LAS and a treatment plant capable of meeting anticipated discharge permit limits. The costs for the treatment plant will be discussed later in this Section. Because the City already owns the majority of the land required for the LAS, this option will not require as significant a cost for property acquisition. The following table summarizes the estimated cost for the seasonal discharge alternative.

Item	Estimated Cost
Property (288 acres @ $10,000/acre)	$2,880,000
Surveying, Engineering, & Inspection	$400,000
Construction (220 acres @ $8,700/acre)	$1,914,000
Force Main Const. (10,000 LF of 12" FM)	$400,000
Contingency (20%)	$462,800
Total (not including mechanical treatment plant)	**$6,056,800**

5.3.3 Direct Discharge

The direct discharge option involves obtaining a NPDES permit from EPD for discharging the additional flow (flow above 2.25 MGD) to Shoal Creek or the Flint River. This would be similar to the effluent disposal methods used at the Cabin and Potato Creek WWTPs. A request for a WLA

has been sent to EPD, but the results from EPD were not completed prior to the preparation of this report. This option is the simplest of the effluent disposal alternatives. The advantages and disadvantages are presented below.

Advantages

- No need to purchase additional property.
- Minimal cost associated with operating a discharge.
- Discharges are generally not impacted by weather conditions.

Disadvantages

- Will likely have to install a more advanced treatment process to meet permit limits.
- Will have to monitor two effluent points (stream and Blanton's Mill LAS).
- Greater risk of public opposition to a discharge.

The costs associated with a direct discharge are generally minimal (excluding the cost of the advanced wastewater treatment plant that is required, which is discussed later in this section). The primary component is the cost associated with installing the outfall pipeline to the creek. In this case, an outfall to Shoal Creek would only be several hundred feet of pipe (there is an existing outfall pipe to Shoal Creek, which may be possible to reuse). On the other hand, if the discharge were to be located on the Flint River it would be necessary to construct a pipe line that is several miles long. For the purposes of this report, it is assumed the discharge would be located on Shoal Creek adjacent to the treatment plant site. Based on this the estimated costs are presented below.

Item	Estimated Cost
Surveying, Engineering, & Inspection	$20,000
Construction (500 LF of 30" DIP @ $160/LF)	$80,000
Contingency (20%)	$16,000
Total	**$116,000**

5.3.4 Reuse Water System

A reuse water system is a disposal method where highly treated wastewater is used for irrigation on golf courses and landscaped areas on residential and commercial property. These types of systems are generally used in urban areas where there is significant demand for irrigation water. Because the Shoal Creek facility is in a relatively rural location and there is little demand for reuse water, this alternative is not feasible due to the infrastructure that would be required to store and transfer the

reuse water to areas that could use it. Because of this further evaluation of this alternative was not performed.

5.4 Treatment Plant Expansion Alternatives

The process selected for expansion of the treatment plant is directly tied to the method of effluent disposal. A lagoon system, as currently in operation, works well with a land application system, however, is unlikely to meet potential permit limits for a direct stream discharge. It is also important to consider future expansion and permit requirements when selecting a treatment process. For example, knowing that it is unlikely to obtain sufficient land for a land application system for the 20-year projected flow of 4.5 MGD, it would be beneficial to utilize a treatment process that can easily be adapted to meet potential permit limits for a direct discharge. Consequently, only treatment processes with proven ability to meet strict discharge limits have been considered for the expansion of the Shoal Creek WWTP. Each of these processes has proven records of performance and unique characteristics that make them advantageous to use. The treatment systems that will be discussed in detail include:

- Constructed Wetlands
- Oxidation Ditch
- Sequencing Batch Reactor (SBR)
- Membrane Bio-Reactor (MBR)

All of these processes are in use in the metropolitan Atlanta area.

5.4.1 Cost Information

In evaluating each of the alternatives, budgetary costs have been developed for compartision purposes. The cost information presented with each alternative only includes the costs associated with the construction of the specific process. These costs do not include other facilities that would be used at a treatment plant such as head works, disinfection, etc. since these facilities would be similar for which ever process is selected. A detailed breakdown of the total costs for the recommended upgrades to the Shoal Creek WWTP is presented at the end of this section.

5.4.2 Wetlands Treatment System

After reviewing the results of the preliminary soil testing work completed on the Shoal Creek LAS site, it was decided to look into other possible uses of the land to increase disposal capacity. One possible use would be to develop constructed wetlands on the site for additional treatment and obtain a discharge permit. The terrain of the site is well suited for a wetlands system.

A wetlands treatment system would receive a portion of the flow from the lagoon effluent for further treatment. The concept is the vegetation within the wetlands utilizes the nutrients in the wastewater to grow and thereby reduce the pollutant concentrations in the wastewater. Several wetlands systems are being used or constructed in Clayton County, Georgia for treatment of their wastewater. These systems were reviewed for this study to gain a better understanding of the level of treatment possible with a wetlands type system. Based on discussions with the system operators and managers, it appears the wetlands provide moderate treatment of the wastewater. The influent to the wetlands in Clayton County is well treated (essentially meets the required discharge limits), which requires very little additional treatment through the wetlands. This would not be the case at the Shoal Creek WWTP. The effluent from the lagoons and polishing ponds would still require a relatively high level of treatment to meet typical discharge permit limits.

The Clayton County wetlands systems are designed with a loading of between 40,000 and 50,000 gpd per acre. However, Clayton County's influent flow to the wetlands is considerably cleaner than the anticipated influent flow from the Shoal Creek treatment system. Therefore, it is assumed a lower loading rate will be required to meet anticipated discharge limits. Using a loading rate of between 25,000 and 35,000 gpd per acre, it would be necessary to have approximately 50 acres of wetlands developed. It is expected that the wetlands can be developed within the decommissioned spray field property. The advantages and disadvantages for a wetlands system are presented below.

Advantages

- Simple to operate.
- Relatively low capital and operating cost.
- Maximizes the use of the existing property.
- If planned correctly, can become a nature center or walking trails.

Disadvantages

- May not be able to meet the required effluent discharge limits.
- Attract water fowl and other wetland animals that can reduce the performance of the wetlands.
- Not proven for high levels of treatment.
- Periodically have to harvest vegetation.
- To date, only a few permitted by EPD.

Costs for constructing a wetlands treatment system are primarily a function of the amount of earthwork required to construct the cells and the vegetation used to plant each cell. Based on cost data for the construction of the three wetlands systems used in Clayton County, the average cost for a wetlands system is approximately $1.8 million per MGD treated or $90,000 per acre. However, the projected loading rate for a wetlands system at the Shoal Creek Plant is between 60 and 70 percent of the loading in Clayton County. Therefore, construction costs are expected to be proportionately higher. With an expansion of 1.25 MGD on 50 acres, a budget between $3.5 and $4.5 million should be planned.

5.4.3 Oxidation Ditch

Oxidation ditches are currently in use at the Potato Creek WWTP for further treatment of the trickling filter effluent. The oxidation ditch is a modification of the activated sludge process designed to facilitate nitrification (ammonia removal) of the wastewater. Variations of this process allow for removal of other nutrients such as phosphorus and total nitrogen. The oxidation ditch has a proven history of meeting stringent effluent limits and is relatively easy to operate. Along with the actual oxidation ditch structure, clarifiers, and a sludge pumping station would also be required.

To prepare for the potential of more stringent permit limits in the future, an oxidation ditch capable of advanced treatment should be used or at least the provisions made to upgrade to this arrangement in the future. This allows the City to have flexibility in the future regarding treatment and disposal of its wastewater. The advantages and disadvantages of using the oxidation ditch process are presented below.

Advantages	Disadvantages
• Can be used to obtain advanced treatment levels. • Relatively low operating cost. • City is familiar with operation. • Some variations of the process offer significant flexibility.	• Can require relatively large land area. • Requires additional structures for solids separation. • Process treatment changes may require basin modifications.

The cost for construction of an oxidation ditch process is similar to the average for most conventional wastewater treatment processes. For general planning purposes the typical budgeting numbers used are $2.50 to $3.00 per gallon of capacity. Therefore, for the initial expansion of 1.25 MGD, the construction cost is estimated to be approximately $3.75 million.

5.4.4 Sequencing Batch Reactor

The SBR process is also a modification of the activated sludge process. This process has been widely used for all levels of wastewater treatment. It is one of the most flexible processes available with a proven record of success. The main feature of the SBR process is all of the treatment occurs in one basin eliminating the need for clarifiers and sludge pump stations. This creates a compact footprint and saves on construction of tankage. In most cases, the process is completely automated with programmable logic controller (PLC) controls that can easily be adjusted to optimize performance. The advantages and disadvantages of the SBR system are as follows:

Advantages	Disadvantages
• Can be used to obtain advanced treatment levels. • Process is very flexible. • Simple to operate. • Has a small footprint. • All of process treatment occurs in a single basin.	• Depending on process arrangement, shock toxic loads could eliminate biomass in the process. • More mechanical equipment than other processes.

The cost for a SBR system is similar to the cost for the oxidation ditch. There is some cost savings associated with fewer structures being required, however, the SBR basins are typically significantly larger than the structures required for other similar processes. Therefore, for general planning and

budgeting purposes, a cost of $2.50 to $3.00 per gallon of capacity can be used, which results in a cost of $3.75 million for a 1.25 MGD expansion.

5.4.5 Membrane Bio-Reactor

Membrane Bio-Reactors (MBR) are a relatively new technology in that they have been regularly used in wastewater treatment for approximately 10 to 15 years. The MBR process is another variation of the activated sludge process that is capable of achieving extremely high levels of treatment. The process basically operates as does a typical activated sludge process with the key difference being in how liquid-solid separation is performed. The MBR process uses submerged membranes within the activated sludge basin to filter the treated wastewater leaving the solids within the basin. The membranes provide a high level of filtration that generally provides a better effluent quality than other activated sludge processes. The major drawback for the MBR process is the membranes are expensive and require periodic replacement. The major advantages and disadvantages of the MBR process are presented below.

Advantages	Disadvantages
• Can be used to obtain advanced treatment levels. • Effluent can meet reuse standards without additional processing. • Has a small footprint. • All of process treatment occurs in a single basin.	• Relatively new technology with little information on longevity of process. • Membranes are expensive and will require replacement. • Requires extremely fine screening prior to the process. • More mechanical equipment than other processes.

Historical cost information for a MBR is not as readily available as for other processes. However, there have been several MBR processes installed in the Atlanta metropolitan area. Using the cost data from these installations, it is estimated that the cost for a MBR process is approximately $5.0 per gallon of treatment capacity. Based on this, a budget of $6.25 million can be used for a 1.25 MGD MBR process.

5.5 Alternatives Evaluation

As previously mentioned, the selection of the disposal method and treatment method are interdependent with each other. It is necessary to select a treatment process that is capable of

meeting the anticipated permit limits for the disposal method used. The following briefly describes which treatment options are best suited for each disposal method.

Disposal Alternative	**Treatment Option Compatibility**
Land Application	• Lagoon Systems and Wetlands treatment are well suited for land application due to the low effluent quality requirements. • The oxidation ditch, SBR, and MBR are capable of providing treatment for a LAS, but provide a higher level of treatment than required. This would result in a system that is over-designed for its need.
Seasonal Discharge	• All of the systems are suitable for a seasonal discharge, however, the wetlands system may not meet discharge limits on a consistent basis and is not recommended.
Direct Discharge	• With the anticipated discharge limits during the summer months, the most suitable options for treatment are the oxidation ditch, SBR and MBR. • A wetlands system may not be able to produce the low ammonia and phosphorus limits expected for a discharge permit.
Reuse Water System	• A wetlands system cannot produce the required effluent quality for a reuse water system. • The oxidation ditch, SBR, and MBR can all be used for reuse water systems. However, the SBR and MBR are the better options.

With the compatible alternatives identified, it is then possible to compare the entire treatment and disposal systems. This will be accomplished using several important factors that must be considered when selecting a system. The factors to be used for the evaluation are as follows:

- Permitability – the ability to obtain a permit from EPD for construction and operation.
- Flexibility – the ability for the process to be modified to meet potential changes in permit limits.
- Reliability – proven track record of performance in meeting similar permit requirements to those anticipated.
- Operation and Maintenance – the ease and cost for operating the system.
- Capital Cost – the cost to develop the system.

Using these categories each combination of alternatives was evaluated. A ranking system of 1 to 5 (1 being the best and 5 being the worst) was used for each category. Table 5-1 is a summary of the

rankings for each system combination. As can be seen from this table, the options involving the wetlands are poorly ranked. This is primarily due to wetlands treatment having poor flexibility and reliability in regards to the treatment required. The wetlands system is also only combined with the LAS or seasonal discharge (which also includes a LAS). Because of this, the high cost of land makes the capital cost high for these options.

The highest ranked options (the ones with the lowest scores) were associated with the direct discharge effluent disposal option. This is primarily because many of these types of systems have been permitted and are operational around the State of Georgia. The cost of the treatment process associated with a direct discharge is higher than for treatment cost for a LAS. However, the additional cost of the treatment system is offset because there is minimal cost associated with construction of a discharge compared to a LAS. Additionally, in evaluating the SBR and MBR, both have proven reliability and are extremely flexible in meeting potential future permit changes.

5.6 Alternative Recommendations

Based on the above evaluation of alternatives, it is recommended to plan for an expansion of the Shoal Creek WWTP. The initial expansion should be by 1.25 MGD to a total capacity of 3.5 MGD. The recommended treatment alternative is to develop a sequencing batch reactor facility for the expanded capacity and keep the existing lagoon system in operation. It is recommended that effluent disposal continue to the Blanton's Mill LAS for 2.25 MGD and to direct discharge for the expanded 1.25 MGD.

Preliminary planning and budgeting costs for this recommendation are presented in Table 5-2. These costs are based on building a 1.25 MGD SBR on the Shoal Creek site with effluent disposal to Shoal Creek. It was assumed that the required discharge limits will be similar to those required in the Potato Creek Permit. Significant changes from these limits may increase the estimated costs. As previously stated, the costs in Table 5-2 include all costs for the expansion of the facility and not just the cost for the SBR system. Additionally, the costs shown include minor modifications to the existing lagoons that are anticipated to be needed at the time of the expansion.

This expansion is expected to provide adequate treatment and disposal capacity through 2015. At that time, it will be necessary to expand the facility again to meet the projected 2025 flows of 4.5

MGD. Because of this, it is necessary to include the provisions for future expansion in the recommended current expansion.

5.7 Collection and Transmission System

In addition to the treatment and disposal needs within the Shoal Creek drainage basin, there are various collection and transmission system needs. The majority of these needs are the installation of new interceptor sewers for providing wastewater collection within the basin. In two situations a pump station and force main will also be required. Figure 5-1 shows the location of the proposed facilities. As can be seen in Figure 5-1, there are no major improvements required in the Crestview Heights sub-basin (CRV-1). This sub-basin is essentially built out as related to the major infrastructure and should only require smaller sewers that can be installed by developers as development progresses.

In the Heads Creek sub-basin (HDC-2) it is proposed to extend the existing interceptor sewer down the tributary to the Heads Creek Reservoir west of Westmoreland Rd and install a new interceptor along the southern tributary to the reservoir between Henry Jackson Rd. and the intersection of the two tributaries. A new pump station would be constructed at the intersection of the two tributaries to the reservoir to pump this flow to the Shoal Creek WWTP. This pump station would allow the decommissioning of the two pump stations on Westmoreland Rd. These improvements are recommended for early in the planning period as there is significant development activity in the area adjacent to the proposed pump station location.

Similar improvements are recommended in the Wasp Creek sub-basin (WAC-1). Interceptors are proposed along Wasp Creek and its tributary to the west. Both of these would discharge to the existing Wasp Creek Pump Station, which will require upgrades to handle the additional flow. The interceptor along Wasp Creek would be installed earlier in the planning period than the interceptor along its tributary.

Improvements in the Shoal Creek sub-basin (SHC-1) only involve the installation of interceptor sewers. The main improvement is the installation of a parallel sewer to the existing 21” Shoal Creek sewer. The existing line does not have the required capacity to handle the projected future wastewater flows. In addition to this, it is recommended to install interceptors along two tributaries

to Shoal Creek. The first would be installed from Oak Grove Rd. northwest across Hwy. 16 to Shoal Creek. The second would run from east of Maloy Rd. to the northwest across Hwy. 16 to Shoal Creek. Both of these interceptors are planned for later in the planning period as development begins to occur in the area.

The estimated cost of the proposed improvements is presented in Table 5-3. All of the costs shown are in 2005 dollars. There are some issues that are important when using these cost estimates for purposes other than long-range planning:

1. The same unit costs have been applied to all sewer and force mains of the same size. These would be expected to vary for the different projects due to conditions such as difficult excavation due to rock, pipeline protection due to poor soil conditions, high water table, wetlands, etc. The costs shown are an average calculated from a large number of projects involving outfall sewers without house or business service connections. Unit costs for the purpose of estimating the capital cost of improvements recommended in this plan are shown in Table 5-4.
2. The following lift station costs were used based on total horsepower required to pump the peak hourly flow assuming an overall efficiency of 50 percent:

Total HP	$/HP
0 – 30	5,400
30 – 60	5,100
60 – 90	4,200
90 – 135	3,600
135 – 180	3,100
180 – 300	3,000
300 – 450	2,900
450 – 690	2,800
Above 690	2,700

3. Sewers were generally sized to flow from 50% to 75% full at peak hourly flow using a peaking factor calculated based on the recommended formula in “Ten States Standards”.
4. Some improvements will be carried out in phases, however, the pipe sizes and lift station costs given are for the capacity required for the 2025 design flow. For example, lift stations

will likely be constructed so that pumps can be added in the future, however, the estimated cost includes all the pumps needed at the end of the planning period. Likewise, sewers and force mains may be constructed smaller initially to maintain minimum cleansing velocity with parallel pipes added later to increase the capacity to carry the 2025 design flows.

5.8 Schedule

An implementation schedule for the Shoal Creek Basin improvements has been developed to allow the City to plan and allocate their resources accordingly. This schedule is broken into four categories; immediate, short-term, intermediate, and long-term. The following is a discussion of the reasoning for each improvement's designation to a specific category.

5.8.1 Immediate Needs

The immediate needs include improvements that are required to meet or solve pressing issues within the drainage basin. Based on the evaluation of the existing infrastructure only one recommended improvement falls within this category. This improvement is the expansion of the Shoal Creek WWTP. As can be seen from the flow projection data, the facility is projected to exceed its permitted capacity by the end of 2006. To avoid regulatory actions by EPD it is necessary to begin the design and construction of the needed expansion. As previously discussed, it will be necessary to obtain a wasteload allocation from EPD for a discharge to Shoal Creek. This may take several months to obtain, however, the basic work can begin for facilities that are required regardless of the permit limits. It is recommended that the City move forward immediately with the expansion of the Shoal Creek WWTP to a capacity of 3.5 MGD.

5.8.2 Short-Term Needs

The short-term needs represent the improvements that are recommended to be completed within the next five (5) years. These are primarily driven by the currently planned developments within the service area. These improvements are primarily focused in the HDC-2 sub-basin. The northwest portion of this sub-basin near the intersection of West Vineyard Road and Hwy. 92 has several large developments planned. These developments are proposed to be connected to the sewer system, which will likely require new pump stations be installed to transport the wastewater back to the existing pump station on Westmoreland Rd. Doing so may require upgrades to this pump station and others that are used to transfer the wastewater to the Shoal Creek WWTP.

The area of the developments is close to the planned pump station located at the confluence of the two tributaries to the Heads Creek Reservoir just south of Hwy. 92. By installing the proposed pump station and associated interceptor sewers, the developments could be served with sewer and several existing lift stations could be decommissioned. Exact timing of these improvements can be determined by requesting the developers provide building schedules for their neighborhoods. This may also help to minimize the number of pump stations the City must maintain within the sewer system.

5.8.3 Intermediate Needs

The intermediate needs consist of improvements that are anticipated to be required between plan years 5 and 10 (2010 and 2015). The primary need during this time frame is the paralleling of the existing Shoal Creek Interceptor with a relief interceptor. This is required because the existing sewer does not have the capacity that will be required in the future. There are several developments planned along the existing interceptor near Williamson Rd. and South Pine Hill Rd. These are expected to stress the capacity of the interceptor. In addition to these developments, the wastewater flow from the WAC-1 sub-basin is also discharged into this portion of the Shoal Creek interceptor. With the developments expected in the WAC-1 sub-basin, even greater capacity needs will be required within the sewer.

Based on the preliminary projections, it is anticipated that the sewer will have sufficient capacity for at least the next five years. However, to minimize the risk of future wastewater spills, it is recommended that a detailed study be conducted on the existing interceptor to determine the remaining capacity and how the planned developments will impact it. A more accurate timeline can be prepared for the needed parallel sewer once the study is conducted.

The other anticipated intermediate need is the upgrade of the Wasp Creek Pump Station. There are four developments planned in the area of the pump station that may require its capacity to be increased. Additionally, it may be necessary to install portions of the interceptor sewers to collect wastewater from the planned developments. However, it may be possible to have the developers install these portions of the sewer.

5.8.4 Long-Term Needs

The long term needs include projects that are not anticipated to be required until beyond plan year 10 or 2015. These projects include the following:

- Interceptor from Maloy Rd. to Shoal Creek
- Interceptor from Oak Grove Rd. to Shoal Creek
- Wasp Creek Interceptor

Because these are located in more remote locations within the service area, need for wastewater service is not expected until late in the planning period. Because of this, these improvements can be postponed until growth and development activity require them. In doing so, it may be possible to have developers install portions of the sewers.

SECTION SIX

POTATO CREEK WWTP DRAINAGE AREA

WASTEWATER MANAGEMENT ALTERNATIVES

6.1 Introduction

Similar to the Shoal Creek Drainage Area, the Potato Creek Drainage Area has several needs that must be addressed to continue to provide adequate wastewater service to the citizens within the City and County. Using the flow projections previously developed for each basin, alternative plans were devised to collect and treat the wastewater generated. This section focuses on the needs of the Potato Creek WWTP Drainage Area. This area is comprised of four sub-basins, including BUC-1, HBC-1, ORH-1, and POT-1. The future flow projections for this drainage area were calculated in Section 3 and are summarized below.

Plan Year	Projected Monthly ADF (MGD)	Projected Max. Month Flow (MGD)
2006	1.66	2.12
2007	1.78	2.28
2008	1.90	2.43
2009	2.00	2.55
2010	2.05	2.62
2015	2.27	2.91
2020	2.55	3.26
2025	2.88	3.69

The existing Potato Creek WWTP, which currently serves this drainage area, has a permitted capacity of 2.0 MGD. Wastewater treated at the Potato Creek WWTP is discharged to Potato Creek, a tributary of the Flint River.

This section will discuss alternatives for improvements and expansion of the Potato Creek WWTP, as well as other major infrastructure for collection and transmission of wastewater. These alternatives were prepared with consideration given to the population projections and land use plans, the number and locations of major lift stations needed to accommodate adverse topography, the need

to serve areas of high projected growth, and the limitations of the existing facilities to meet short-term and long-term projected needs.

6.2 Wastewater Treatment Needs

Evaluation of the wastewater treatment needs in the Potato Creek Drainage Basin is less involved than for in the Shoal Creek Basin. This is primarily due to the fact that a decision as to the means of effluent disposal is not necessary. The Potato Creek WWTP effluent is currently discharged to Potato Creek. Additionally, a wasteload allocation (WLA) has been obtained from EPD for discharge of up to 3.0 MGD of treated effluent to Potato Creek. This WLA is based on the allowable TMDL for Potato Creek. If a discharge volume over 3.0 MGD is required, a new WLA will have to be requested from EPD. The following table is a summary of the WLA provided by EPD.

Parameter		
Design Flow (MGD)	2.5	3.0
5-Day Biochemical Oxygen Demand (BOD_5), mg/L		
December - February	30	30
March - May	13	13
June - August	9	9
September - November	10	10
Ammonia (NH_3), mg/L		
December - February	2.4	2.2
March - May	1.4	1.2
June - August	0.7	0.7
September - November	0.7	0.7
Total Residual Chlorine (TRC), mg/L (daily maximum)		
December - February	0.019	0.017
March - May	0.019	0.017
June - August	0.014	0.014
September - November	0.013	0.012
Total Suspended Solids (TSS), mg/L	20	20
Fecal Coliform Bacteria, MPN	200/100mL	200/100mL
Dissolved Oxygen (D.O.), mg/L	6.0	6.0
pH, Standard Units	6.0 – 8.5	6.0 – 8.5
Total Phosphorus	1.0	1.0

As can be seen from the table above, the limits are identical with the exception of ammonia-nitrogen, which is slightly lower for 3.0 MGD.

The projected wastewater flows to the Potato Creek WWTP were developed in Section 3 and are summarized above. As can be seen from the projections, the maximum month average daily flow will exceed the current permitted capacity in 2006 and the monthly averaged daily flow is projected to reach the current design in 2009. EPD recommends planning for expansion to wastewater treatment plants begin when the average daily flow reaches 80 percent of the permitted capacity. For the Potato Creek WWTP, 80 percent of the permitted capacity is 1.6 MGD. The current average daily flow for 2005 is approximately 1.82 MGD. As can be seen, it is important that a plan be developed for expansion of the Potato Creek WWTP. It must be noted that significant inflow and infiltration (I/I) studies and repairs are being conducted in the Potato Creek basin. If this work reduces the flows to the plant, the expansion may be delayed for a few years.

The planning for expansion of the Potato Creek WWTP begins with determining the design capacity for the expanded facility. It is desirable to select a capacity that will provide a minimum of ten years before additional expansion is required. Based on this, it is recommended to initially expand the Potato Creek WWTP by 1.0 MGD to a total capacity of 3.0 MGD. This capacity gives the facility the ability to handle the projected maximum month wastewater flows beyond plan year. With the I/I work being performed in the Potato Creek basin, it may be possible to reduce the maximum month peaking factor, which will further extend the time frame for a second future expansion.

6.3 Treatment Plant Expansion Alternatives

Knowing the desired treatment capacity and the means of effluent disposal allows the identification of possible treatment alternatives for the expanded capacity. There are numerous treatment technologies available that are capable of providing the level of treatment required to meet the WLA limits provided by EPD for discharge into Potato Creek. However, it is desirable to maintain some level of consistency in technology for the City's wastewater system, as well as, to minimize the cost for constructing and operating the system. Based on this, the reasonable alternatives for the expansion of the Potato Creek WWTP are as follows:

- Trickling Filter
- Oxidation Ditch
- Sequencing Batch Reactor
- Combination of Trickling Filter and Oxidation Ditch

Each of these technologies is used or recommended to be used within the City's wastewater system. They have all been proven to provide efficient treatment of wastewater in the past and are discussed in greater detail below.

6.3.1 Trickling Filter

Trickling filter technology is currently used at both the Potato Creek WWTP and the Cabin Creek WWTP. A trickling filter is considered an attached growth system, which means the bacteria used to remove the pollutants from the wastewater grows in a film on the media (typically rock or plastic media) within the trickling filter. The wastewater is distributed over the top of the media and flows down through the media. Oxygen is provided through the air within the media or in some cases blown up through the media with blowers. The wastewater exits the trickling filter below the media and flows to a clarifier for solids separation. In most cases, a trickling filter requires a recirculation pump station so that a percentage of the flow can be pumped back through the trickling filter.

Generally, trickling filters are easy to operate and require little maintenance. They are effective at meeting most secondary discharge limits, however, may have difficulty meeting strict ammonia limits. Because of this, it is sometimes necessary to have additional treatment processes following a trickling filter, as is the case at the Potato Creek WWTP. The advantages and disadvanatages of a trickling filter are as follows:

Advantages

- Simple to operate.
- Low operating cost.
- Currently in use at Potato Creek WWTP.
- Efficient BOD removal.

Disadvantages

- May have difficulty meeting low ammonia limits.
- Tend to have nuisance flies around them.
- Not flexible in regards to future expansion or upgrades.
- Typically require primary clarification prior to trickling filter.

The cost for construction of a trickling filter is generally less than other biological treatment systems. However, since it is likely that a primary clarifier will be required prior to the trickling filter this cost must also be included. Based on this, budgetary costs for a trickling filter system are between $2.00 and $2.50 per gallon of treatment capacity. For the recommended 1.0 MGD expansion, this results in a cost of $2.5 million.

6.3.2 Oxidation Ditch

Oxidation ditch technology is also in use at the Potato Creek WWTP. The existing oxidation ditches are located after the trickling filters to provide additional treatment for ammonia removal. The oxidation ditch was discussed in detail as an alternative in Section Five, which has been repeated below.

The oxidation ditch is a modification of the activated sludge process designed to facilitate nitrification (ammonia removal) of the wastewater. Variations of this process allow for removal of other nutrients such as phosphorus and total nitrogen. The oxidation ditch has a proven history of meeting stringent effluent limits and is relatively easy to operate. Along with the actual oxidation ditch structure, clarifiers, and a sludge pumping station would also be required.

To prepare for the potential of more stringent permit limits in the future, an oxidation ditch capable of advanced treatment should be used or at least the provisions made to upgrade to this arrangement in the future. This allows the City to have flexibility in the future regarding treatment and disposal of its wastewater. The advantages and disadvantages of using the oxidation ditch process are presented below.

Advantages

- Can be used to obtain advanced treatment levels.
- Relatively low operating cost.
- City is familiar with operation.
- Some variations of the process offer significant flexibility.

Disadvantages

- Can require relatively large land area.
- Requires additional structures for solids separation.
- Process treatment changes may require basin modifications.

The cost for construction of an oxidation ditch process is similar to the average for most conventional wastewater treatment processes. For general planning purposes the typical budgeting

numbers used are $2.50 to $3.00 per gallon of capacity. Therefore, for an expansion of 1.0 MGD, the construction cost is estimated to be approximately $3.0 million.

6.3.3 Sequencing Batch Reactor

The sequencing Batch Reactor (SBR) technology has been recommended to be installed at the Shoal Creek WWTP for its expansion. As with the oxidation ditch, the SBR is discussed in detail in Section Five. This discussion is repeated below.

The SBR process is also a modification of the activated sludge process. This process has been widely used for all levels of wastewater treatment. It is one of the most flexible processes available with a proven record of success. The main feature of the SBR process is all of the treatment occurs in one basin eliminating the need for clarifiers and sludge pump stations. This creates a compact footprint and saves on construction of tankage. In most cases, the process is completely automated with programmable logic controller (PLC) controls that can easily be adjusted to optimize performance. The advantages and disadvantages of the SBR system are as follows:

Advantages	Disadvantages
• Can be used to obtain advanced treatment levels. • Process is very flexible. • Simple to operate. • Has a small footprint. • All of process treatment occurs in a single basin.	• Depending on process arrangement, shock toxic loads could eliminate biomass in the process. • More mechanical equipment than other processes.

The cost for a SBR system is similar to the cost for the oxidation ditch. There is some cost savings associated with fewer structures being required, however, the SBR basins are typically significantly larger than the structures required for other similar processes. Therefore, for general planning and budgeting purposes a cost of $2.50 to $3.00 per gallon of capacity can be used, which results in a cost of $3.0 million for a 1.0 MGD expansion.

6.3.4 Combination of Trickling Filter and Oxidation Ditch

This option is identical to the treatment processes currently used at the Potato Creek WWTP. The trickling filter and oxidation ditch are as discussed above, but would be used in series to provide

greater reliability in meeting the low ammonia limits. Using this type of arrangement also allows each process to be optimized for removal of a specific pollutant. The trickling filter can be designed for BOD removal and the oxidation ditch for ammonia removal. The advantages and disadvantages for this type of system are as follows:

Advantages	Disadvantages
• Can be used to obtain advanced treatment levels. • Provides better flexibility than a trickling filter alone. • Operating personnel are familiar with system. • Can optimize each process for specific treatment. • Can reduce the size of the trickling filter.	• Requires large land area. • Multiple processes to maintain. • Requires additional structures for solids separation. • Process treatment changes may require basin modifications. • Primary clarifiers would still be required.

The cost associated with development of a treatment system incorporating a trickling filter followed by an oxidation ditch will be higher than most other types of systems. It is not anticipated that it would be equal to the sum of each individual process due to some redundant features, however, it will be significantly more than either one of the processes independently. For budgeting purposes, a cost of $4.00 to $4.50 per gallon of capacity should be used. Therefore, for a 1.0 MGD expansion, the total cost would be $4.5 million.

6.4 Alternatives Evaluation and Recommendation

As with the alternatives for the Shoal Creek Basin, each of the alternatives presented above were evaluated against specific criteria important in process selection. The criteria used are as follows:

- Permitability – the ability to obtain a permit from EPD for construction and operation.
- Flexibility – the ability for the process to be modified to meet potential changes in permit limits.
- Reliability – proven track record of performance in meeting similar permit requirements to those anticipated.
- Compatibility – how well the process fits in with the existing treatment system used at the plant.

- Operation and Maintenance – the ease and cost for operating the system.
- Capital Cost – the cost to develop the system.

Using these categories each alternative was evaluated. A ranking system of 1 to 5 (1 being the best and 5 being the worst) was used for each category. Table 6-1 is a summary of the rankings for each alternative. As can be seen, the oxidation ditch and the SBR alternatives are the highest ranked options (the ones with the lowest scores). The SBR offers slightly better process flexibility and reliability, however, since the oxidation ditch is already in use at the Potato Creek WWTP it has a significant advantage in being compatible with the existing system. Because of this, it is recommended that the expansion of the Potato Creek WWTP to a capacity of 3.0 MGD be accomplished using oxidation ditches.

Preliminary planning and budgeting costs for this recommendation are presented in Table 6-2. These costs are based on building a 1.0 MGD oxidation ditch system on the Potato Creek site with effluent disposal to Potato Creek. It was assumed that the required discharge limits will be consistent with those provided by EPD in their January 27, 2005, WLA letter. Significant changes from these limits may increase the estimated costs. The costs in Table 6-2 include all costs for the expansion of the facility and not just the cost for the oxidation ditch system.

This expansion is expected to provide adequate treatment and disposal capacity through a minimum of 2015 and potentially longer as the collection system I/I is reduced. As the 3.0 MGD capacity is approached, it will be necessary to expand the facility again to meet the projected 2025 flows of 3.69 MGD. It is likely the second expansion would be for a total capacity of 4.0 MGD, which would provided adequate treatment capacity for the service area well beyond 2025.

6.5 Zinc and Copper Issues

Zinc and copper are metals that can be found in wastewater in high concentrations typically due to some type of manufacturing/industrial process. Typically, the concentration of the zinc and copper are below the level of concern and do not require any special consideration. However, recently, zinc and copper concentrations in the effluent from the Potato Creek WWTP have caused permit violations. Because of this, it is necessary to address these issues.

Zinc and copper entering the wastewater system from manufacturing and industrial sources is regulated under the City's Industrial Pretreatment Program (IPP). It is possible that this is a source of the high zinc and copper concentrations, however, because these sources are monitored, it would mean there is a new industry that is not being monitored or an existing industry is illegally violating its discharge limits. This is addresses further in Section 11 of this report.

Another possible source is from storm water runoff. Metals deposited on streets and parking lots from automobiles are likely to contain relatively high concentrations of zinc and copper. During rain events, these metals are washed off the paved surfaces and into the storm water drainage system. Due to the known I/I problems within the collection system, the storm water containing the zinc and copper is able to enter the sewer system and ultimately the effluent from the treatment plant. This makes it even more critical to identify and correct I/I issues within the collection system, as much as possible. Further discussion of this issue is provided in Section 10 of this report.

6.6 Collection and Transmission System

There are several collection and transmission system needs within the Potato Creek WWTP Drainage Basin that need to be considered. These needs include installation of new interceptor sewers for providing wastewater collection within the basin. There is also one new pump station and force main required and upgrade of the existing Buck Creek Pump Station. Figure 6-1 shows the proposed facilities for the Potato Creek WWTP Drainage Basin.

It should be noted that no work is recommended in the Orchard Hills sub-basin (ORH-1), primarily, because the community of Orchard Hills has developed its own collection and transmission system that pumps its wastewater to the Potato Creek WWTP. Additionally, no infrastructure improvements are required in the Potato Creek sub-basin (POT-1) because the primary infrastructure for serving this sub-basin is in place and only smaller collection sewers are likely to be required during the planning period.

In the Honey Bee Creek sub-basin (HBC-1), it is proposed to install an interceptor sewer along Honey Bee Creek from Airport Rd. to the County Line. A new pump station and force main would be installed near Honey Bee Creek and County Line Rd. to transfer the collected wastewater to the Potato Creek WWTP. This interceptor would essentially allow the entire sub-basin to be served with no other major infrastructure required.

In the Buck Creek sub-basin (BUC-1), it is proposed to install interceptor sewers along a tributary to Buck Creek that parallels Futral Rd. It is also necessary to install an interceptor along the existing Buck Creek force main alignment. The existing force main was installed so that it could be converted to a gravity sewer. Therefore, it may be beneficial to use this as the gravity sewer and install a new force main for pumping the flow from the Buck Creek pump station to the Potato Creek WWTP. It is also necessary to expand the capacity of the existing Buck Creek pump station so that it can meet the needs of its drainage basin.

The estimated cost for the proposed improvements is presented in Table 6-3. These costs were developed in the same manner as the cost for the Shoal Creek Basin with all assumptions regarding sizing and pricing being the same.

6.7 Schedule

An implementation schedule for the Potato Creek Basin improvements has been developed to allow the City to plan and allocate their resources accordingly. This schedule is broken down into four categories; immediate, short-term, intermediate, and long-term. The following is a discussion of the reasoning for each improvement's designation to a specific category.

6.7.1 Immediate Needs

Immediate needs are those improvements that require action to be taken within the next year. Based on the evaluation of the existing infrastructure, there are no immediate needs within the Potato Creek WWTP Drainage Basin. Even though the maximum month flow at the Potato Creek WWTP is projected to exceed the plant's capacity, it is expected that the plant will continue to meet the permit limits until significant sources of I/I are found and corrected, which would then allow expansion of the plant to be delayed.

6.7.2 Short-Term Needs

The short-term needs represent the improvements that are recommended to be completed within the next five (5) years. These are primarily driven by the currently planned developments within the service area. The most critical short-term need is the expansion of the Potato Creek WWTP to 3.0 MGD. Even with the I/I reduction work, it will be necessary to expand the treatment plant to meet the wastewater flows generated from the currently planned developments. Because this work will

not start within one year of the date of the latest wasteload allocation, it will be necessary to request a new wasteload allocation as the need for the expansion moves closer. The WLA will probably need to be requested in mid 2006, to allow sufficient time for EPD to conduct the study.

The other potential short-term need is the in the HBC-1 sub-basin. However, depending on the rate of development activity, this work may be moved to the intermediate category. This work will include the installation of the interceptor along Honey Bee Creek from Airport Rd. to County Line Rd. and the construction of the Honey Bee Creek pump station and force main. If this interceptor and pump station are not constructed, then each new development will likely require a pump station to transfer the wastewater to the existing collection system in the POT-1 sub-basin. This would increase the cost of operation and maintenance of the collection system. If the City moves forward with the interceptor and pump station, it may be possible to have the developers pay for the majority of the work since they would no longer need to install the individual pump stations and force mains.

6.7.3 Intermediate Needs

The intermediate needs consist of improvements that are anticipated to be required between plan years 5 and 10 (2010 and 2015). Based on the current growth projections and known development activity, there are no intermediate needs for the Potato Creek Basin. However, this could change if land within the BUC-1 sub-basin begins to develop or the industrial park expands. Additionally, the widening of Highway 16 will likely spur faster growth, which may move some of the long-term projects into the intermediate category.

6.7.4 Long-Term Needs

The long term needs include projects that are not anticipated to be required until beyond plan year 10 or 2015. These projects include the following:

- Interceptor along tributary to Buck Creek parallel to Futral Rd.
- Interceptor along Buck Creek force main alignment
- Expansion of Buck Creek Pump Station

All of these projects are located within the BUC-1 sub-basin. There is very little development activity taking place in this basin with little projected early in the study period. Because of this,

these improvements can be pushed out until growth and development activity require them. In doing so, it may be possible to have developers install portions of the system.

SECTION SEVEN

CABIN CREEK WWTP DRAINAGE AREA

WASTEWATER MANAGEMENT ALTERNATIVES

7.1 Introduction

The Cabin Creek WWTP Drainage Area is the smallest of the three drainage areas within the City's overall wastewater service area. The area is nearly entirely contained within the city limits. This service area consists only of the CAC-CL sub-basin. As with the Shoal Creek and Potato Creek basins, future flow projections were developed for this basin in Section 3. The following table summarizes the projected flows for the 20 year planning period.

Plan Year	Projected Monthly ADF (MGD)	Projected Max. Month ADF (MGD)
2006	1.01	1.33
2007	1.07	1.41
2008	1.08	1.42
2009	1.09	1.44
2010	1.10	1.45
2015	1.13	1.49
2020	1.16	1.53
2025	1.19	1.57

The Cabin Creek WWTP currently serves this area and has a permitted capacity of 1.5 MGD. The wastewater treated at the Cabin Creek WWTP is discharged to Cabin Creek, a tributary to the Ocmulgee River basin. Because the effluent is discharge to the Ocmulgee River basin there is an inter-basin transfer of water. This results when water is withdrawn from one basin (the Flint River Basin in the case of the City of Griffin) and discharged to another basin. In the last several years, EPD has worked to minimize the inter basin transfers in the state. This is due to several reasons though primarily to prevent one area of the state with limited water supply from pulling water from another area. In the case of Griffin, this is not the case and EPD has generally accepted the practice for communities that are located on basin divides, as is Griffin. However, if the communities below Griffin along the Flint River begin to make an issue regarding the inter-basin transfer, EPD may

require the City to pump the treated effluent back to the Flint River basin. If this occurs, the required discharge limits are likely to change as well.

This section will discuss the concerns in the Cabin Creek WWTP Drainage Basin as related to the infrastructure and future needs. Because the basin is nearly built out in regards to land use, there are minimal infrastructure needs. The primary concern is with the potential for discharge permit changes and maintenance of the collection system.

7.2 Wastewater Treatment Needs

As can be seen from the flow projections, the monthly average daily flow is not projected to exceed the facility's permitted capacity within the planning period. The maximum month flow is projected to exceed the permitted capacity by 2025. However, significant infiltration and inflow study and repairs are being conducted in the basin, which is expected to reduce the maximum month to average peaking factor. Since the projected flow approaches capacity toward the end of the planning period, treatment capacity improvements are not expected to be required over the next 20 years within the Cabin Creek drainage basin.

It is important to note that the Cabin Creek WWTP operating permit expired on June 18, 2003. The plant has been operating under a provisional extension since that time. Knowing this, it is likely that the effluent requirements within the permit will become more stringent once a new permit is issued. If this occurs, it may be necessary to perform treatment improvements. EPD provided the City with a WLA for the Cabin Creek WWTP in December 2004. The following table is a summary of the WLA, which can be used to provide an idea of what future permit limits may be. However, it would potentially result in wasted effort to attempt to plan potential treatment improvements now, without knowing what the effluent limits may become.

Parameter	Winter	Spring	Summer	Fall
Flow (MGD)	2.1	2.1	2.1	2.1
5 Day Biochemical Oxygen Demand (BOD_5), mg/L	7.2	7.8	8.1	8.0
Ammonia (NH_3), mg/L	1.2	0.8	0.6	0.7
Dissolved Oxygen (D.O.), mg/L	6.0	6.0	6.0	6.0
Total Suspended Solids (TSS), mg/L	20	20	20	20
Total Residual Chlorine (TRC), mg/L*	0.012	0.012	0.012	0.012
Total Phosphorus, mg/L	0.7	0.7	0.7	0.7
pH, Standard Units	6.0 – 8.5	6.0 – 8.5	6.0 – 8.5	6.0 – 8.5
Fecal Coliform Bacteria, MPN	200/100 mL	200/100 mL	200/100 mL	200/100 mL

Parameter	Winter	Spring	Summer	Fall
Flow (MGD)	2.5	2.5	2.5	2.5
5 Day Biochemical Oxygen Demand (BOD_5), mg/L	5.8	6.4	6.7	6.5
Ammonia (NH_3), mg/L	1.2	0.8	0.6	0.7
Dissolved Oxygen (D.O.), mg/L	6.0	6.0	6.0	6.0
Total Suspended Solids (TSS), mg/L	20	20	20	20
Total Residual Chlorine (TRC), mg/L*	0.012	0.012	0.012	0.012
Total Phosphorus, mg/L	0.6	0.6	0.6	0.6
pH, Standard Units	6.0 – 8.5	6.0 – 8.5	6.0 – 8.5	6.0 – 8.5
Fecal Coliform Bacteria, MPN	200/100 mL	200/100 mL	200/100 mL	200/100 mL

* Daily Maximum

Even though these WLAs are for flows greater than the future projected flow, it is possible that EPD could reduce the allowable effluent limits to similar levels at the current flow of 1.5 MGD. If this occurs, it is unlikely that the existing trickling filter system will be capable to provide the level of treatment required.

7.3 Collection and Transmission System

As previously mentioned, the Cabin Creek basin is essentially built out with only small parcels remaining to be developed. Because of this, there is no need for major new infrastructure for the

collection and transmission system. New sewers required to serve future development are expected to be in smaller sizes and should be installed by the developers.

The more critical issue for the Cabin Creek basin is the collection system primarily serves the original city limits of Griffin and has some of the oldest sewer piping and manholes in the system. Because of this, there are I/I issues with the system. The I/I problems are currently being investigated and the City has planned to continue locating and correcting these problems. It is important to continue the I/I work because if the problems are left unchecked, they will likely worsen overtime and create greater risk for spills and capacity issues within the basin. Therefore, it is recommended to maintain the current I/I investigation program.

SECTION EIGHT

SLUDGE MANAGEMENT PLAN

8.1 Introduction

A critical issue in operating a wastewater system is how to deal with the sludge or biosolids produced in the treatment of the wastewater. Currently, the City has three treatment plants where sludge is produced from the biological treatment of the wastewater. At the Shoal Creek WWTP, the sludge produced within the lagoon system accumulates on the bottom of the lagoon where the organic matter will decompose over time. The inert material in the sludge will accumulate and eventually has to be removed. Accumulated sludge was recently removed from the lagoons and the aerobic ponds at the Shoal Creek WWTP.

At the Potato Creek and Cabin Creek WWTPs the waste sludge is digested in aerobic or anaerobic digesters. Sludge digestion is intended to stabilize the sludge by significantly reducing the organic material within the sludge. The stabilized sludge is then hauled in liquid form to privately owned land application sites. The City uses a private company, Synagro, to provide the hauling of their sludge. The following table list the site number, owner's name and address for the land application sites currently in use. The locations of these sites are shown on Figure 8-1.

Cabin Creek WWTP			Potato Creek WWTP		
Site No.	**Owner**	**Address**	**Site No.**	**Owner**	**Address**
1	Larry Beasley	1630 Swint Rd. Orchard Hill, GA 30266	6	Warren Abrams	392 Phillip Weldon Rd. Milner, GA 30257
2	Billy Beeland	349 Musgrove Rd. Griffin, GA 30223	7	Wandell Coats	342 Phillip Weldon Rd. Milner, GA 30257
3	H. J. Hopkins	93 Musgrove Rd. Griffin, GA 30223	8	Julian Jones	P. O. Box 370 Orchard Hill, GA 30266
4	William King	157 Buck Snort Rd. Griffin, GA 30223	9	Larry McKneely	40 Liberty Hill Rd. Griffin, GA 30223
5	Boyd Mitchell	3914 High Falls Rd. Griffin, GA 30224	10	Joe Smith	1484 Wesley Dr. Griffin, GA 30223
			11	Don Fulkerson	980 Morgan Dairy Rd. Milner, GA 30257

There are two concerns with the current sludge disposal method; 1) the property owners may stop allowing the City to dispose of the sludge on their property at any time and 2) the sludge must be stabilized to meet Class B requirements as defined in Part 503 of 40 CFR. These issues create

potential risks for the City in that if the property owners stop allowing the land application or the sludge does not meet the 503 requirements, the City does not have an option for disposal of the sludge. Because of this it is critical for the City to identify and develop alternatives for managing the sludge produced at their wastewater treatment plants. This section will discuss the options available for sludge management.

8.2 Sludge Production

Currently sludge that must be managed on a daily basis is generated only at the Cabin Creek and Potato Creek WWTPs. However, sludge will also be generated on a daily basis at the Shoal Creek WWTP if the recommendation to construct a SBR system is implemented. Therefore, sludge production for all three treatment plants was evaluated to obtain an estimate of the quantities that must be managed on a daily basis.

The actual sludge production for the Cabin Creek and Potato Creek WWTPs for the twelve month period from June 2004 through May 2005 is shown in Table 8-1. Since there is no sludge production data for the SBR system proposed at the Shoal Creek WWTP it is assumed the sludge production rate (lbs per million gallons treated) will be similar to that of the Potato Creek WWTP. Therefore, with a 1.0 MGD SBR system, it is expected that the average monthly sludge production will be approximately 18,500 lbs. of dry solids or 72,500 gallons of liquid sludge. Using the average sludge production for each facility, the following table summarizes the quantity of sludge that can be expected in the in the short-term from each treatment facility. The liquid sludge volume is based on a 3 percent solids concentration.

Treatment Facility	Dry Solids (lbs/month)	Liquid Sludge (gal./month)
Cabin Creek WWTP	19,000	74,500
Potato Creek WWTP	29,900	117,300
Shoal Creek WWTP	18,500	72,500
Total	67,400	264,300

It should be noted that these values are based on the pounds of sludge hauled from the site. In order to plan the sludge management facilities at each treatment plant, it is necessary to have an estimate of the actual amount of sludge produced prior to digestion. Digestion of wastewater sludge results in a reduction in the volume of solids in the sludge. It is generally accepted that aerobic digestion meeting Class B requirements provides a minimum of 40 percent solids reduction and anaerobic

digestion meeting Class be requirements provides 60 percent solids reduction. Using these reduction rates, estimates of the quantities of sludge produced in the treatment process can be made from the quantities of hauled sludge. Table 8-1 provides the results of these calculations for the Cabin Creek and Potato Creek WWTPs. The Shoal Creek quantity is calculated by multiplying the dry solids for the hauled sludge by 1.4 (140 percent). The liquid sludge volume is based on a 1 percent solids concentration.

Treatment Facility	Dry Solids (lbs/month)	Liquid Sludge (gal./month)
Cabin Creek WWTP	27,100	321,800
Potato Creek WWTP	43,800	520,000
Shoal Creek WWTP	25,900	307,700
Total	96,800	1,149,500

Using these calculated values of sludge production it is possible to evaluate the existing sludge facilities at the treatment plants to determine if they are adequately sized for the projected sludge production. However, since these values are based on current wastewater flows, the quantity of sludge to manage through the 20 year planning period is expected to increase as the wastewater flows increase. Using the sludge production rates currently experienced, it is estimated that the quantity of sludge to be processed in 2025 in the digesters will be approximately 147,300 lbs per month or 1,749,200 gallons per month. The 2025 quantity of sludge to be disposed of after digestion is estimated to be approximately 101,200 lbs per month or 396,500 gallons per month.

8.3 Existing Sludge Facilities

In developing a sludge management plan, it is necessary to have an understanding of what facilities currently exist to manage the sludge produced. The City's existing sludge management facilities are located at the Cabin Creek and Potato Creek WWTPs. Currently, there are no sludge management facilities at the Shoal Creek WWTP. The existing facilities are discussed below for both the Cabin Creek and Potato Creek WWTPs.

8.3.1 Cabin Creek Sludge Management Facilities

The sludge facilities at the Cabin Creek WWTP consist of one aerobic digester (two basins with a volume of 73,600 gallons each) and two anaerobic digesters (one 410,000 gallons and an older smaller one which has not been in use for several years). The anaerobic digester receives sludge from the primary clarifiers. Operating practices indicate that approximately 5,000 gpd of primary

sludge is sent to the anaerobic digester. Based on the 5,000 gpd, the detention time in the anaerobic digester is 82 days. To meet the Class B sludge requirements, the sludge must have a detention time of 15 days at a temperature between 35° C and 55° C or 60 days with a temperature of 20° C. The anaerobic digester has an average temperature of approximately 29° C. Based on this, the anaerobic digester is capable of producing a sludge that meets the Class B sludge requirement for pathogen reduction.

Based on the existing facilities and the 2025 projected sludge volumes, the existing anaerobic digester is capable of receiving approximately 6,850 gpd of sludge and still meet the Class B requirement for pathogen reduction. The projected primary sludge quantity for 2025 is approximately 6,200 gpd. Therefore, the anaerobic digester is adequate for processing the primary clarifier sludge.

The waste sludge from the biological treatment pulled from the bottom of the secondary clarifiers is stabilized in the aerobic digester. The aerobic digester consists of two basins with a volume of 73,600 gallons each for a total volume of 147,200 gallons. It is estimated that approximately 4,000 gpd of sludge is wasted to the aerobic digester. Based on this, there is a detention time of approximately 37 days. This is somewhat low for the Class B requirement of 40 days. The projected future sludge wasting rate of 5,000 gpd may make it more difficult to meet the Class B sludge requirements for land application. It may be necessary to make some improvements to the aerobic digesters if land application remains the sludge disposal method.

The digested sludge is periodically removed each month from the aerobic and anaerobic digesters by Synagro and land applied on the sites identified above for the Cabin Creek WWTP. Annual reports are completed for the sludge application to each site. Based on these reports, there are no issues with pathogens, vector attraction, or high metals concentrations.

8.3.2 Potato Creek Sludge Management Facilities

The Potato Creek WWTP sludge facilities consist of two anaerobic digesters each with a volume of 274,000 gallons, an aerobic digester with a volume of 110,000 gallons and a sludge thickener. The anaerobic digesters receive sludge from the primary clarifiers at a rate of approximately 6,000 gpd. This results in a detention time of 91 days. With an average temperature of 29° C, the sludge from the digester meets the Class B requirement for pathogen reduction.

The future projected sludge flow in 2025 to the anaerobic digester is approximately 10,700 gpd. With the existing digester volume, there will be a detention time of 51 days. This is below the 60 days necessary to meet the Class B sludge requirements, however, with the temperature being above the required 20° C it is likely the pathogen reduction and vector attraction reduction requirements will be met. It will be important to ensure the temperature within the digester remains above the recommended 20° C.

Similar to the Cabin Creek WWTP, the waste sludge from the biological treatment process (trickling filters and oxidation ditches) is sent to the aerobic digester for stabilization. Flow meters measure the sludge flow to the aerobic digester. Plant operators report that approximately 5,000 gpd of waste activated sludge are sent to the aerobic digester. However, based on the sludge hauling data, it is estimated that between 9,700 gpd and 11,300 gpd are sent to the aerobic digester. At a flow of 5,000 gpd, there is a detention time of 22 days in the aerobic digester. This is well below the recommended detention time of 40 days for aerobic digestion. It is recommended that testing be continued on the sludge to ensure it is meeting the Class B sludge requirements for land application.

The sludge thickener is simply used to thicken the aerobic digester sludge prior to hauling to the land application sites. This does not provide any stabilization or treatment of the sludge. It only reduces the amount of water hauled, which helps in reducing the cost of hauling.

8.4 Sludge Management Alternatives

As previously stated, the main concern with the sludge handling is there is no redundancy within the system. Specifically, if land becomes unavailable for land application or the sludge fails to meet the Class B requirements, the City has no permanent option for disposing of the sludge. Temporarily, the existing, but unused, sludge drying beds can be used to dewater the sludge so that it can be hauled to and disposed of at a landfill. However, with the drying time required on sand sludge drying beds, it is likely there will not be sufficient capacity to meet the disposal needs of the facilities. Because of this, it is necessary to develop both short-term and long-term plans for managing the sludge produced at each treatment facility.

8.4.1 Short-Term Alternatives

The short-term alternatives are intended to provide the City with options for handling the waste sludge at each facility for the next several years in the event the land used for land application is not available or the Class B sludge requirements are not met. These alternatives are not intended as permanent solutions for the sludge management. They are primarily low capital cost remedies until permanent long term solutions can be implemented.

One of the primary concerns is the owners of the existing land application sites are not required to give notice to the City when they want to stop allowing sludge to be disposed of on their property. Because of this, the City may not receive any warning that new sites need to be located and permitted. The permitting process alone may require over six months, not including identifying additional land owners willing to accept the sludge. Due to this, it is recommended to add notice clauses to the agreements with property owners that require the owner to provide the City with six (6) months warning prior to discontinuing their acceptance of sludge. This will allow the City to either locate and permit other sites or develop alternative sludge disposal options.

The concern with adding the notice clause is the existing property owners may become upset with a requirement to provide notice and immediately stop allowing sludge disposal on their property. If this occurred, the City would have immediate problems with disposing of sludge.

If it is decided not to pursue the option to include a notice clause in the agreements with the property owners, then it is necessary to have a viable alternative for disposing of the sludge if the property suddenly becomes unavailable. The easiest option is to dispose of the sludge at the landfill. However, sludge can only be accepted at a landfill if it can pass the paint filter test. To pass the paint filter test, the sludge would have to be dewatered, typically to around 8 to 10 percent solids by weight. Currently, the City has sand sludge drying beds at both the Cabin and Potato Creek sites. However, these have not been used in several years and may no longer function as intended due to vegetative growth, clogged piping, poor sand or various other reasons. To have the drying beds ready for use in the event of a lack of land application sites, the existing beds should be rehabilitated so that they can dewater sludge when needed without significant set-up and repairs at the time when needed.

Another alternative for dewatering sludge on a short-term basis is to use Geotube dewatering bags or roll-off containers. Either of these accept liquid sludge mixed with a polymer and allow the water to drain from the solids through a fine screen or the fiber of the bags while the solids are retained inside. Once the bag or container is full, the sludge is simply disposed of at the landfill. If a property owner withdraws from the program and additional disposal is required beyond what the remaining sites can accept, the City can order the filter bags or containers for use as needed to maintain suitable sludge disposal without impacting the sludge facilities at the treatment plants.

Based on the two options presented for dewatering the sludge if required, it is recommended to utilize a plan to dewater the sludge via the Geotube dewatering bags with final sludge disposal to the landfill. This option provides the City with a reasonable means of sludge disposal at the lowest immediate cost. If the drying bed option were selected, it would be necessary to rehabilitate the drying beds for potential use. With the Geotube option, the expense is only incurred if the bags have to be used. If the Geotubes are needed, it will be necessary to set up a small polymer feed and mixing system so that the polymer can be blended with the sludge. A package polymer feed system can be obtained if and when it is needed.

8.4.2 Long-Term Alternatives

The long-term alternatives are intended to provide the City with redundant means of sludge handling and disposal. There are several alternatives that should be considered for a long-term sludge management method. In reviewing these alternatives it must be remembered that the Shoal Creek WWTP will likely produce sludge similar to those at the Cabin Creek and Potato Creek WWTPs. The alternatives to be considered include:

- Provide dewatering of sludge at each treatment plant and land apply or haul to landfill.
- Acquire suitable land for land application of sludge either liquid or dewatered.
- Utilize existing Shoal Creek Property for land application of sludge. Pump liquid sludge from Shoal Creek WWTP to the site and haul dewatered sludge from Potato and Cabin Creek WWTP sites.
- Continue using private property owners for land application sites. Add a notice clause to agreements and use existing drying beds for redundancy, if needed.

All of these alternatives assume land application of sludge, whether liquid or dewatered, will continue, and disposal at a landfill will be a back-up option, as required. As previously stated, the City currently utilizes 11 approved sites for disposal of sludge from the Cabin and Potato Creek WWTPs. If dewatering of the sludge is the preferred alternative, it may be necessary to procure and permit additional sites, because some owners of the existing sites may not wish to accept dewatered sludge given that one of the benefits of the liquid sludge to farmers is the water content.

8.4.2.1 Alternative 1 – Install Dewatering Equipment at Each Plant

This alternative provides increased reliability and reduced operating costs compared to the current method. Land application of sludge would continue, however, if privately owned sites become unavailable, the sludge could be hauled to the landfill for disposal. The availability of the landfill meets the redundancy need previously identified. The hauling of dewatered sludge reduces the number of trips to the application sites due to the significant decrease in the volume of sludge, which lowers the operating costs. By installing the dewatering equipment at each site, it is possible to optimize the polymer feed equipment for the specific sludge as compared to dewatering sludge from all three plants at a central facility.

The general scheme for dewatering is presented in Figure 8-2. The dewatering system would consist of a pumping system to transfer sludge from the digesters or thickener to the dewatering facility. A polymer feed system would inject polymer into the sludge feed line prior to a static mixer for sludge conditioning. The conditioned sludge would then be fed to the dewatering unit and then conveyed to a dumpster or truck.

The main disadvantage of this alternative is the high capital cost. New dewatering equipment in new buildings would be installed at each plant. Additionally, new spreader trucks would be required for hauling and spreading the sludge on the land application sites if the City does not outsource the hauling component. For continuous operation it would likely be necessary to have extra trailers to remain at the plants while trucks were hauling the sludge to the sites. The estimated cost associated with this alternative is presented in Table 8-2.

Dewatering of sludge has another distinct disadvantage to hauling liquid sludge in that dewatering returns water removed and wash water used to clean the dewatering equipment to the plant to be

treated. This returned water increases the organic loading to the plant and adds some of the removed phosphorus and suspended solids back into the system.

8.4.2.2 Alternative 2 – Acquire New Griffin Owned Land Application Site

This alternative provides good reliability and flexibility but has the highest operating costs. The City would purchase suitable land for a new land application site dedicated to the disposal of sludge. If possible, the site would be located relatively centrally to all three WWTPs. If sufficient suitable land is found, no dewatering facilities would be required because there would be no risk of private land becoming unavailable. Additionally, the City could continue to utilize the private land for as long as the owners would allow. This would also give the City the option to haul liquid or dewatered sludge for disposal to the site without risk of losing a site due to owner preferences.

The main disadvantage of this alternative is the high capital cost due to the cost of land. The costs associated with this option are presented in Table 8-3. If it is desired to haul dewatered sludge to the site, the cost for the dewatering system shown in Table 8-2 for Alternative 1 would be added to this cost.

8.4.2.3 Alternative 3 – Utilize Existing Shoal Creek WWTP Property for Land Application

This alternative takes advantage of the existing property at the Shoal Creek WWTP. The Shoal Creek site has approximately 150 acres of land that was previously used as a land application system for effluent disposal. This site was removed from service when the Blanton's Mill site was developed. Recent soils testing indicate that it is only marginally suitable for land application of effluent due to its low permeability. However, the site may be well suited for land application of sludge since the volume is only a fraction of the effluent. A portion of the site, approximately 20 acres, will be used for the expansion of the Shoal Creek WWTP. This leaves well over 100 acres that can be used for land application of sludge.

If it is decided to utilize the Shoal Creek site for land application of sludge, the sludge from the Shoal Creek plant can be applied in liquid form through an irrigation system. The sludge from the Cabin Creek and Potato Creek WWTPs can be applied in either liquid or dewatered form.

The primary advantages of this alternative are the City owns the property, which eliminates the risk of property owners making their property unavailable for sludge disposal and the low capital cost.

With the City owning the site, the need for a redundant disposal method is minimized. Also, the existing private application sites can continue to be used for as long as the owners will allow since the haul distance to the existing sites form the Cabin Creek and Potato Creek WWTPs is shorter. Then as the privates sites become unavailable, portions of the Shoal Creek site can be prepared for the application of sludge. This allows the City to delay the initial capital cost of developing the site for as long as possible. The costs for this alternative are shown in Table 8-4.

The disadvantage of this alternative is the longer haul distance and the loss of the Shoal Creek site as a potential location for effluent disposal. However, the recommendation for the expansion of the Shoal Creek site is to utilize a direct discharge to Shoal Creek for all flows over 2.25 MGD, which eliminates the need for the site for effluent disposal. As for the haul distance, the operating cost of the longer hauls can be offset if the sludge is dewatered prior to disposal. Dewatering the sludge creates an additional capital cost for installing dewatering facilities at the Cabin Creek and Potato Creek locations. However, these facilities can be planned for installation at a later date when funds are available for the construction of the dewatering facilities.

8.4.2.4 Alternative 4 – Continue Current Method of Disposal

This alternative continues the current practice of hauling liquid sludge to the privately owned application sites. In order to meet the redundancy needs, the existing drying beds at the Cabin Creek and Potato Creek WWTPs would be used to dewater the sludge if it is ever necessary to dispose of it at the landfill. If this alternative is selected, it would be beneficial to the City to add a notice clause to the current and future land application agreements to provide sufficient time to identify and permit new sites should an owner decide to discontinue the sludge applications. The main advantage of this alternative is its low capital cost.

The disadvantages of this alternative are it provides the least flexibility and the least reliability of the alternatives presented. Liquid sludge will not be accepted by the landfill. If property owners chose not to accept sludge, the City would need to implement a program for dewatering using the existing drying beds, roll-off containers, or Geotubes discussed above. These methods of dewatering can be labor intensive. If the need to dewater the sludge became permanent, it would be necessary to install dewatering facilities as described under Alternative 1.

8.5 Evaluation of Alternatives

There are two different types of evaluations that must be performed on the alternatives considered: economic and performance. Economic evaluations consider only the costs of the alternatives while performance evaluations analyze the reliability and flexibility of the alternatives.

8.5.1 Economic Evaluation

The table below summarizes the estimated capital and operation and maintenance costs of each alternative. These costs were developed from the data included in Appendix C.

Description of Cost	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Capital Cost of Dewatering System	$2,412,000	$ -	$ -	$200,000
Capital Cost of Land Application System	$ -	$2,215,000	$800,000	$300,000
Total Capital Cost	$2,412,000	$2,215,000	$800,000	$500,000
Annual O&M Cost	$100,231	$177,946	$153,763	$153,763
Present Worth of O&M Cost	$1,149,642	$2,041,027	$1,763,649	$1,763,649
Total Present Worth	$3,561,642	$4,256,027	$2,563,649	$2,263,649
Salvage Values	$ -	$800,000	$ -	$ -
Net Present Worth	**$3,561,642**	**$3,456,027**	**$2,563,649**	**$2,263,649**

Discount rate = 6%, 20 years

The results of the economic evaluation show that Alternative 4, continuing the current method of disposal is the most cost effective plan on a 20-year present worth basis. This alternative is based on hauling liquid sludge from the Shoal Creek and Potato Creek WWTPs to the private land application sites and spray irrigation of the Shoal Creek WWTP sludge at the Shoal Creek site. If it is decided to dewater the sludge at the Cabin Creek and Potato Creek WWTPs and haul dewatered sludge, the net present worth becomes approximately $2,940,000.

8.5.2 Performance Evaluation

Each alternative meets the minimum objectives for alternatives analysis. Therefore, the key non-economic considerations for evaluating the alternatives are reliability and flexibility.

When evaluating the reliability of an alternative, land application on City owned land should be considered the most reliable option. Privately owned land acceptance of sludge is affected by many factors outside the City's control and therefore is less reliable. Using the landfill for disposal should

also be considered reliable, however, there are additional costs (typically between $30 and $40 per ton). Alternative 4 provides the least reliability because of its dependence on private property and re-activating the use of the existing drying beds.

When evaluating the flexibility of an alternative, the alternative that provides the most options for sludge disposal should be considered the most flexible. In the case of Alternative 1, the dewatered sludge has the most flexibility in how it can be disposed. However, in Alternatives 2 and 3, since the City owns the land being used for disposal, there is reasonable flexibility in how sludge is managed. However, if regulations change, it may be necessary to dewater the sludge prior to land application. This is unlikely, but as previously stated, Alternative 3 would still be a reliable, flexible option at one of the lowest costs.

8.6 Recommendation

Based on the alternatives presented and the needs of the City, it is recommended to continue the current operations as is in the short-term and plan on utilizing Geotubes for dewatering should disposal capacity be reduced due to property owners discontinuing the sludge disposal on their site. The dewatered sludge would be taken to a landfill for disposal.

In the long-term, it is recommended to utilize the Shoal Creek property for development of a sludge land application site. This would give the City control over the property and eliminate the risk of private owners making their sites unavailable. Plans for the development of the Shoal Creek site can be made after the plans for the Shoal Creek WWTP expansion are completed so that there will be no interference between the two site uses. This alternative would provide the City with the most flexibility and reliability along with the option to dewater sludge in the future with risk of losing land application sites.

SECTION NINE

FINANCIAL PLANNING

9.1 Introduction

A key component of a wastewater system management plan is developing a plan for financing the needed capital improvements. Without a sound financial plan, capital improvements to a wastewater system may not be possible to implement, which could lead to system problems and moratoriums on new development.

Previous sections of this plan have identified the recommended expenditures over the next 20 years. This section focuses on options for financing the improvements. Table 9-1 identifies the recommended improvements for each basin over the 20 year planning period. The costs shown in this table are all presented in 2005 dollars. Improvements that are projected to be completed beyond 2010 have their costs shown in the year at the beginning of each five year period. For example, the Wasp Creek interceptor project may not be required until 2017, but the costs for the project are shown in the 2015 time period so that funding can be in place when needed.

One item that must be considered when planning for these improvements and how to fund them is that many of the interceptor sewers may be installed by the developers of the properties served by the sewers. Alternatively, the City may construct the interceptor sewers using a combination of City funds and developer-contributed capital. In these cases, the cost to the City may be significantly reduced from the estimates shown

9.2 Financing Options

There are two primary means for the City to finance the recommended system improvements, in addition to utilizing retained earnings from system revenues and capital recovery fees. These are through issuing revenue bonds or obtaining loans. The City is familiar with the use of both. Revenue bonds have been recently used in 1993, 1996, 1997, and 2002 for water and sewer projects including the new water supply reservoir, water treatment plant and transmission mains, as well as, various sewer projects.

Loans can be obtained from numerous institutions, but one of the most common for wastewater projects is through the State Revolving Fund managed by the Georgia Environmental Facilities Authority (GEFA). GEFA issues low interest loans for public facilities primarily related to water and wastewater systems. Obtaining a GEFA loan is a function of the available funding provided to GEFA and the number of projects applying for funding each year. Other loan and grant programs are available from the state and federal government, but these typically have low income participation requirements. These types of programs would be better suited for the infiltration and inflow work in specific areas of the city where there are concentrated areas of low income households.

Whether bonds or loans are used to finance the improvements, the City must have sufficient income to cover the debt service for the financing, as well as, the other operating costs of the system. The remainder of this section will discuss the income requirements for funding the recommended capital improvements in terms of capital recovery fees

9.3 Capacity Recovery Fee

A capacity recovery fee (CRF) is used by utilities to pay for the cost of system expansion due to the use of capacity within the collection and treatment system. These fees can be used for the extension of sewers, installation of pump stations and force mains and expansion of treatment plants. Primarily, CRFs are intended to cover the cost of capital improvements and not the cost of operation and maintenance of a system. Because of this, operation and maintenance cost will be discussed later in a system rate section.

Many water and sewer systems in Georgia charge fees that are intended to recover the cost of the incremental portion of the wastewater treatment plant and trunk sewer lines used by new customers. These fees are paid for new connections to the system. In most cases, the other utilities refer to these fees as Tap-on Fees (TF). For most new developments, the TF is included in the cost of the lot or new residential or commercial unit. It is recommended that the City consider changing the name of its Capacity Recovery Fee to Tap-on Fee or Connection Fee. For the remainder of this document the term Tap-on Fee (TF) will be used when referring to a fee to recover capacity utilized in wastewater treatment plants and trunk sewer lines by new developments

A TF is usually based on a common factor that can be used to measure the capacity utilized by a new customer of the wastewater system. In the past, the City of Griffin has set the TF based on the projected average wastewater flow of a residential unit. To determine the fee that is required from non-residential units (schools, stores, offices, restaurants, etc) a conversion factor was created based on equivalent residential units (ERU). Based on typical design values, one residential unit contributes a wastewater flow of 260 gpd. Using this factor, it is possible to determine the number of ERUs for non-residential developments. The ERU is calculated by dividing the total anticipated wastewater flow from the development by 260 gpd. Once the number of ERUs is known, the total TF can be calculated by multiplying the number of ERUs by the rate for one residential unit.

The TF should be reflective of the cost to provide wastewater collection and treatment service to the customers served by the facilities. Because of this, the TF should be developed based on the cost to provide service in each drainage basin. Therefore, each of the three treatment basins within the City's service area will be analyzed separately.

9.3.1 Cabin Creek Basin

The Cabin Creek basin does not require capital improvements related to capacity and growth issues. This is primarily due to the basin being nearly built out with little additional land available for development. There are capital projects that are recommended to meet the needs of the system and help in reducing operation and maintenance costs. However, these typically would not be funded through a Tap-on Fee.

As described earlier in this report, improvements to the Cabin Creek WWTP are expected to be required in the future to meet increasingly stringent effluent pollutant limits. Additional treatment processes will likely be required, for which funds must be available to pay for the improvements. The population and development projections indicate that over the next 20 years, there will be between 670 and 970 new customers (ERUs) added to the Cabin Creek service area. It is projected that the wastewater flow increase form this development will be approximately 252,000 gpd. The cost for expanding treatment capacity at an existing wastewater treatment plant is estimated at approximately $7 per gallon of capacity. Based on this, the cost to expand the capacity by 252,000 gpd would be $1.75 million. Costs should also be included for the potential process upgrades to meet future effluent limits. Since the level of treatment that will be required and the type of process needed are not currently known, it is necessary to plan a budget that would be adequate for likely

requirements. In this case, it is recommended to use a budget of $1.9 million. Adding this to the cost for capacity expansion, results in a total cost for capital improvements in the Cabin Creek basin of $3,650,000. Based on this, the TF for the Cabin Creek service area should be between $3,800 and $5,400.

9.3.2 Potato Creek Basin

Over the next 20 years, it is projected that the Potato Creek basin will require approximately $24 million of capital improvements. Significant growth is expected in this service area, which will require two expansions of the Potato Creek WWTP and new interceptor sewers to be installed. It is possible that the developers of the land in the service area will install portions of the interceptor sewers and the City will not have to fund this portion of the improvements. If 50 percent of the cost of the interceptor sewer work is funded by developer-contributed capital and therefore deducted from the cost projections, the cost that the City will need to fund is reduced to $20 million.

During this same time period, it is anticipated that the customer base will increase by between 2,150 and 5,200 new customers (ERUs). Using a capital cost of $20 million and the projected customer increase, the TF for the Potato Creek service area would need to be between $3,800 and $9,300.

9.3.3 Shoal Creek Basin

The Shoal Creek basin is the largest of the three service areas. It also contains the highest percentage of undeveloped land. Because of this, it is projected to receive the most growth and require the most capital improvement projects. The estimated total for the capital improvement projects is approximately $31 million. However, similar to the improvements in the Potato Creek basin, it is possible that the developers will install portions of the interceptor sewers, which will reduce the required funding for the City. If 50 percent of the cost of the interceptor work is removed from the cost projections, the cost that the City will have to fund is reduced to $21.6 million.

The number of customers (ERUs) is expected to increase by between 2,740 and 7,050 over the 20 year planning period. With a total capital cost of $21.6 million, the required TF for new customers would need to be between $3,100 and $7,900.

9.4 System Rates

A critical component of the success of a utility is having the rates for service set so that they adequately cover administrative, operation and maintenance costs, the cost for renewal and replacement of system components, and the debt service for the system. Recently, the City has implemented two rate increases to cover these costs. Based on current operating expenses, the rates appear to be adequate for meeting these costs and providing a reserve for emergency situations.

It can be expected that operation and maintenance cost will continue to increase each year due to several reasons including, inflation, growth, environmental regulations, and the age of the system. The average inflation rate has historically been between 1.5 and 3 percent. Because of this, many utilities automatically increase their rates each year relative to cost-of-living or inflation indices to avoid making large increases at less frequent intervals.

Environmental regulations can have a significant impact on operation and maintenance costs. Generally, environmental regulations become more stringent over time and as technology improves, which result in increased costs to utilities. For a collection system, the environmental regulations can change due to system problems or simply with the adoption of new policies by regulatory agencies. An example is the upcoming requirements for development and implementation of a Capacity, Management, Operation and Maintenance (CMOM) program.

The age of a wastewater system has a significant impact on operation and maintenance costs. In general, as equipment becomes older, the cost to maintain it increases due to the need for more frequent repairs and the loss of efficiency. Similarly, piping systems may begin to fail and leak as they age, especially with certain older types of pipe. When this occurs, it is necessary to repair or replace the pipe. If maintenance and rehabilitation of the piping system is not performed, water from ground and surface sources may enter the collection system, increasing the cost of treatment due to the increased volume of water.

In summary, it is important for the management of a wastewater system to have a sound understanding of the expenses for operating the system and the level of revenue required from operations. In general, operating revenues should cover administrative, maintenance and operating costs and tap-on fees and other sources of capital funds should be used for capital improvements to the system.

9.5 Recommendations

As previously stated, it is recommended to change the name of the Capacity Recovery Fee to Tap-on Fee. Additionally, in order to provide service to the anticipated growth in the service area, it is recommended that the City adopt Tap-on Fees for each treatment basin based on projected costs and number of new connections. The City should evaluate the feasibility of adopting Tap-on Fees similar to those recommended in the table below.

Treatment Basin	Recommended Tap-on Fee
Cabin Creek	$3,800
Potato Creek	$4,500
Shoal Creek	$4,500

These fees are above the average of $2,300 for similar sized systems in the surrounding area. These fees are within the range calculated above and are expected to be adequate for producing the funding required for the major capital improvements that are needed within each basin. If implemented, it is recommended that these fees be evaluated periodically to ensure they are still adequate for covering the future cost of improvements. As construction costs increase in the future, it may be necessary to increase the Tap-on Fees.

SECTION TEN

INFILTRATION AND INFLOW PROGRAM

10.1 Introduction

Infiltration and Inflow (I/I) is the introduction of non-wastewater sources into a sewer system. Infiltration is water that leaks into a sewer system through cracks or broken joints in piping and manholes. Inflow is generally considered to be water entering the sewer system through an improper connection such as a storm drain or downspout. Both of these sources of excess water create problems for wastewater systems.

Due to the age of the City's wastewater collection system, especially in the original city limits, there are numerous locations of I/I. Much of the older system was constructed using clay pipe, which becomes brittle over time and cracks allowing groundwater to seep into the system. Pipe joints used in older piping systems also tend to fail over time and often become locations where tree roots and other debris can enter the pipe and create blockages. Similar problems exist with cracked manholes or manhole lids that become flooded during rain events.

The primary concern with I/I in sanitary sewer systems is the problems it creates with system capacity. If there is excessive I/I, the sewer lines may become full and no longer have sufficient capacity to transport sewage to the treatment plants. This may result in spills that violate environmental regulations and have to be reported to EPD. The water that reaches the treatment plant creates additional cost for treating the wastewater.

As can be seen, I/I creates several issues for wastewater utilities that are potentially harmful to the environment and public and create additional cost for system operation. Because of this, Griffin has initiated an I/I program to identify and repair sources of I/I within the sewer system. The program has been on-going for several years and has eliminated several sources of I/I within the collection system. This section will summarize the work that has been performed, the impacts it has had on the system and areas remaining to be investigated.

10.2 Previous Infiltration and Inflow Work

In 1993, the City of Griffin received a Consent Order from EPD for sewer overflows. To correct the system problems causing the overflows, the City began performing I/I work on the sewer system. The work began with the clearing of approximately 41,000 feet of sewer line easements for access to manholes. Following this, in July 1994, Phase I work began in the Potato Creek basin to rehabilitate broken and clogged sewer lines. Simultaneous with this work, the City cleared another 73,000 feet of sewer easement and began the investigation work for Phase II. These investigations resulted in the cleaning and de-rooting of approximately 65,000 feet of sewer lines primarily located in the Cabin and Shoal Creek basins. Phase III work, which was recently completed, included rehabilitation and replacement of sewer lines in all three basins. The fourth phase is currently under way and includes work similar to that performed in the previous phases. In addition to this work, the City has included a line item in their wastewater system annual budget of $250,000 per year earmarked for manhole rehabilitation.

Inspection work has included visually looking at the condition of manholes and televising sewer lines, locating clogs, pipe failures and leaks. Testing includes smoke testing, dye testing and flow monitoring. Flow monitoring is performed with portable flow meters inserted into selected manholes for extended periods of time to record base flows and storm flows. The data collected from the inspection work is used to develop the plans for rehabilitation and replacement of failed system components.

The program is intended to identify sources of I/I within the system, prioritize them and develop plans for repair of the system. The original work was coordinated through the creation of mini-system maps, which utilized a numbering system for the manholes in each mini-system. With the development of the City's GIS system, the City is currently in the process of converting the mini-system map data used for the I/I investigations to their current GIS system. Once this is accomplished, it is expected to be possible to query the history of a pipe or manhole for repair work performed on each. This will also allow linking of the field reports to the specific feature for quick access to the types of problems experienced. The use of the GIS system to track the problems in the system and repair work will make easier to identify repeat problem areas so permanent solutions can be implemented.

Work has been performed in each of the three drainage basins. The following is a brief summary of the work and the results seen from the repairs made.

10.2.1 Cabin Creek Basin

The Cabin Creek basin serves much of the original city limits and includes some of the oldest sewers in the system. Several areas within the basin have been investigated and repairs were performed on portions of the system under the first three phases of the program. In total, over 5,000 linear feet (LF) of sewer has been repaired or replaced in addition to the cleaning and de-rooting.

Often times it is difficult to see the results of an I/I program in the early stages because as pipes are cleaned and repaired, the flow that may have been overflowing manholes now reaches the treatment plant. It may appear initially that repairs do not accomplish the intended flow reduction during storm events. However, as additional repairs are made, flow reductions into the treatment plant are attained. A reasonable measure of the effectiveness of an I/I program is to look at the impact it has on the peak flows (or peaking factors) to a treatment plant. Figure 10-1 is a graph of the peaking factors for the Cabin Creek WWTP compared to the average rainfall measured at the three treatment plants. As can be seen, even though the past several years have experienced significant rainfall, the peaking factor has remained relatively constant. This is one indication that the I/I work in the basin has reduced the increase in flow due to storm events.

10.2.2 Potato Creek Basin

The Potato Creek basin serves the southern portion of the city and portions of the County to the south and east of the City. This basin has probably had the most work performed in it as far as cleaning, rehabilitation, and replacement of sewer lines is concerned. The Ison Branch Interceptor sewer has been replaced and over 6,000 LF of sewer were repaired or replaced in the previous phases of the sewer rehabilitation projects.

When the Ison Branch sewer was replaced, the flows to the Potato Creek WWTP increased due to the reduction in overflows along the sewer. The new sewer allowed all of the wastewater and storm water entering the sewer to flow to the plant unobstructed. However, as shown in Figure 10-3, the I/I work in the Potato Creek basin has been successful. The peaking factor has been on a steady decline for the past several years, which is an indication that the amount of storm water entering the system has been reduced.

10.2.3 Shoal Creek Basin

The Shoal Creek basin serves the eastern side of the City and portions of the County to the north and south of the City. This is the largest drainage basin of the three basins, but only a small portion of the basin serves the older downtown portion of the City. Because of this, most of the sewers in this basin are in better condition than the other two basins. The I/I work completed in the previous phases resulted in the repair or replacement of approximately 1,000 LF respectively. Much of the work in this basin has focused on manhole restoration and protecting sewers from failure due to eroding stream banks.

Even though the work in the Shoal Creek basin has not been as extensive as the work in the other basins, the flow records indicate that there has been a reduction in the I/I within the collection system. Figure 10-3 shows the trend for the peaking factor for the Shoal Creek WWTP, as well as, the average rainfall in the collection system. As can be seen, the peaking factor has remained constant even though the rainfall trend has increased during the same period of time.

10.3 Future I/I Work

The nature of I/I work is essentially an ongoing process in a wastewater system because new sources of I/I may develop as old sources are repaired. This is one of the reasons for the upcoming regulations requiring systems to develop Capacity, Management, Operations and Maintenance (CMOM) programs. These CMOM programs are intended to reduce Sanitary Sewer Overflows and to help utilities focus on the needs of the system through ongoing programs. A well-prepared CMOM program helps to predict where problems may occur in the future so that solutions can be developed prior to any negative impacts. The goal of the City should be to have the I/I program develop into a comprehensive CMOM program.

In the short-term, the I/I program should continue and the Phase IV rehabilitation project should move forward along with investigations for the Phase V work. The manhole rehabilitation work that the City is funding on an annual basis should also continue. As more and more of the sources of I/I are found and eliminated, the benefits will become more apparent at the treatment plants through reduced peak flows during storm events, recovery of capacity and lower operating costs.

SECTION ELEVEN

INDUSTRIAL PRETREATMENT PROGRAM

11.1 Introduction

The Industrial Pretreatment Program (IPP) is a Federal mandate which requires municipalities and other providers of publicly-owned wastewater collection and treatment services to regulate industries that discharge to the public sewer system. This regulation of industrial discharges, codified in 40 CFR Part 403, is intended to serve three main purposes:

- To prevent the introduction of pollutants into publicly-owned treatment works (POTW) which will interfere with the operation of a POTW, including interference with its use or disposal of municipal sludge.
- To prevent the introduction of pollutants into POTWs which will pass through the treatment works or otherwise be incompatible with such works.
- To improve opportunities to recycle and reclaim municipal and industrial wastewaters and sludges.

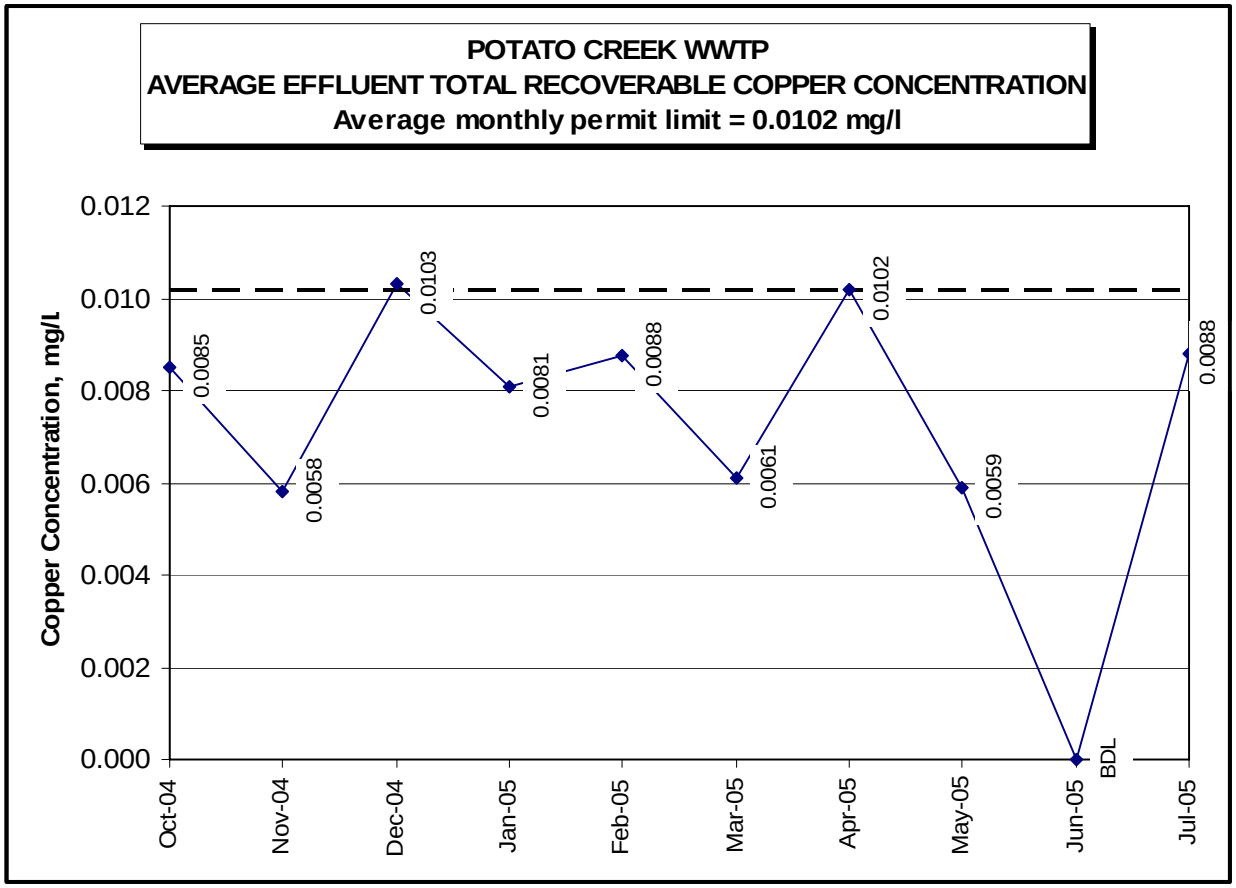
The Georgia EPD approved the City of Griffin's IPP on September 29, 2000, and subsequently revised the wastewater treatment plant permits to include the provisions of the IPP. Since then, Griffin has been managing the program, including reviewing reports submitted by industrial users, sampling and testing each permitted industrial user at least once every year, reviewing local limits annually or as needed, preparing and submitting an annual report to EPD, and enforcing the program through the Enforcement Response Plan and the Sewer Use Ordinance.

The program has been successful in limiting the pollutants discharged into the sewer system by the most significant industrial users. Several users have improved their pretreatment systems and, as in the case of one user, have constructed brand-new pretreatment facilities.

Recently, a concern has been expressed by City personnel regarding effluent copper concentrations at the Potato Creek WWTP. The Georgia EPD imposed a limit on Total Recoverable Copper at the

Potato Creek WWTP on re-issuance of the NPDES permit that became effective October 8, 2004. Prior to this, the Potato Creek WWTP permit had never included a limit on copper.

The chart below shows the plant's effluent copper concentration compared to the limit of 0.0102 milligrams per liter (mg/l). As can be seen, the copper limit was exceeded one month, December 2004, when the effluent concentration was 0.0103 mg/l, just slightly over the permit limit. In April 2005, the plant effluent's copper concentration was at the permit limit.



Review of self-monitoring reports submitted by the permitted industrial users reveals that all users are usually in compliance with the copper limits in their permits, with exception of the Weyerhaeuser Corporation, which exceeded the copper limit several times in 2004.

It is recommended to sample all permitted industrial users and test for copper to verify the information submitted in their self-monitoring reports. In addition, it may be necessary to track the

sources of copper in the collection system to determine if non-industrial sources may be discharging significant amounts of the metal.

11.2 Recommended Procedure to Track Sources of Copper

If monitoring of industrial users fails to reveal significant concentrations of copper, samples should be taken from key manholes in the collection system as well as from the Potato Creek WWTP influent (before any return streams) to determine if the source of copper originates from industrial or non-industrial areas. Once a general area is identified, sampling in the collection system should proceed upstream until the main sources of copper are found. This effort will be complicated by the fact that high copper concentrations occur in the Potato Creek WWTP effluent sporadically.

The following guidelines should be followed during this sampling effort:

- Composite samples should be collected by taking grab samples hourly or every two hours during an 8-hour period.
- The samples should be tested for lead, zinc and copper since the sample collection effort will be much greater than the cost of testing for all three metals.
- Sampling should be repeated several times to obtain representative data (for example, once a week for four weeks or similar).
- Samples should be analyzed to the following detection limits:

Copper	5 microgram/liter
Lead	1 microgram/liter
Zinc	10 microgram/liter

- The laboratory should be consulted for any special sampling requirements such as use of talc-free gloves, special bottles, etc. to meet these detection limits.

SECTION TWELVE

REGULATORY ISSUES

12.1 Introduction

The State of Georgia, through the Department of Natural Resources, Environmental Protection Division (EPD) regulates public and private wastewater systems. The regulatory process is intended to protect the public health and the environment from harm due to the release of pollutants. EPD develops standards, regulations, and procedures for wastewater utilities to follow in the planning and operation of their systems. Areas of EPD's regulatory control as related to wastewater systems include the following:

- NPDES and LAS permitting and compliance monitoring.
- Plan review for treatment plants, gravity sewers and pump stations.
- Sanitary Sewer Overflow (SSO) monitoring and control.
- Review and approval of Industrial Pretreatment Programs.
- Sludge management and disposal.

Each of these areas of regulatory review impacts the implementation of this wastewater management plan. This section will briefly describe the issues related with each regulatory area. For additional information, Appendix D contains copies of relevant EPD documents or regulations can be reviewed on EPD's website at www.dnr.state.ga.us/dnr/environ/.

12.2 NPDES and LAS Permitting and Compliance Monitoring

All public wastewater treatment systems require a permit from EPD for either a discharge to a receiving water body or for land application of treated effluent. These permits are intended to give the State the ability to enforce the Water Quality Standards for the water of the state. The City of Griffin has permits for both direct discharge and land application. The Cabin Creek and Potato Creek WWTPs have NPDES permits for effluent discharge into Cabin and Potato Creek, respectively. The Shoal Creek WWTP has LAS permits for the Shoal Creek and Blanton's Mill sites. These permits are renewed every five years. During the permit coverage period, the City is required to submit monthly operating reports for determination of compliance with the permit

requirements. Additionally, EPD attempts to perform annual audits/inspections of permitted facilities to ensure the facilities are being maintained in accordance with permit requirements. If there are repeated permit violations or the facility is in a state of disrepair, EPD can issue Consent Orders and fines to require the City to bring the facilities back into compliance with their permits.

The permit limits are generally based on the required water quality standards set by EPA and EPD. Limits are determined by calculating the Total Maximum Daily Load (TMDL) of specific pollutants that a water body can receive without becoming degraded. EPD sets the TMDL based on both the point source and non-point source loads to a water body. This means that if the non-point source load to a water body that a city wants to discharge treated wastewater to is too high, EPD may not allow the discharge or will set the discharge limits very low. Because of this, it is necessary for local governments to adopt policies that help reduce non-point source loads. The primary source of non-point source loads is storm water runoff. Runoff from agricultural land and pasture land is typically high in nutrients and BOD. Similarly, runoff from streets can contain petroleum products and other material that cause streams to be impaired. To enforce these requirements, EPD requires entities seeking a discharge permit to have a watershed protection plan in place that identifies potential sources of non-point source loads and how they will be controlled.

12.3 Plan Review for Treatment Plants, Gravity Sewers and Pump Stations

Related to the permitting issues of EPD, their Engineering and Technical Support Branch performs plan reviews for wastewater facilities. These reviews are intended to verify compliance with minimum standards and environmental regulations.

With the implementation of this wastewater management plan and the development of the future infrastructure, several plan reviews will be required. Specifically, EPD will review and approve construction plans for treatment plant expansions and upgrades, gravity sewers and pump stations and force mains. With each of these, different levels of documentation are required such as Environmental Information Documents, Design Development Reports, sizing calculations, and construction plans and specifications.

EPD's required reviews impact utility plans in that it is necessary to allow sufficient time in the project schedule for review and approval of construction plans by EPD. Usually review times range from 30 to 60 days. Occasionally, minor revisions have to be made to plans prior to final approval

by EPD. If a construction begins prior to receiving EPD's final plan approval, EPD can issue a stop work order and a fine until the plans are approved.

12.4 Sanitary Sewer Overflow (SSO) Monitoring and Control

Related to wastewater collection systems, EPD enforces EPA regulations related to overflows of sanitary sewers. A wastewater utility is required to report any spill of wastewater that is over 10,000 gallons. If there are numerous spills reported in a relatively short period of time, EPD can issue a consent order for the utility to repair their collection system to prevent future spills.

SSO are usually caused by several collection system problems such as clogged sewers from excess oil and grease, broken sewer mains, excessive I/I, and undersized sewers. The main issue of concern to the City is the I/I problems. To help minimize SSO issues, the City has undertaken an aggressive I/I program to identify and repair locations where groundwater and storm water can enter the sewer system.

12.5 Review and Approval of Industrial Pretreatment Programs

For systems that receive wastewater flow from industrial processes, EPD recommends the utility develop an Industrial Pretreatment Program (IPP). Griffin has an IPP in place, which was previously discussed in Section Eleven. The IPP is intended to identify sources of potential hazardous pollutants and limit the loadings placed on public treatment systems from high concentration waste flows. EPD reviews and approves IPPs to ensure minimum requirements of the program are met. When changes are made to existing IPPs, it is necessary to submit the revised plan to EPD for approval.

12.6 Sludge Management and Disposal

The level of EPD's regulatory review of sludge management practices depends on the method of disposal of sludge. If sludge is disposed of at a landfill, EPD has little regulatory control over the sludge management process. However, if the sludge is disposed of through land application or sold as fertilizer, EPD's review becomes significantly more involved. The primary reason for the greater involvement is for land application of sludge it is necessary to meet Class A or B requirements as defined in Part 503 of 40 CFR. These requirements require minimum levels of stabilization be met to be considered Class A or B sludge. Because of this, EPD reviews the process by which the sludge will be stabilized to verify if it is capable of producing the required sludge class.

Additionally, for Class B sludge land application it is necessary to obtain a permit for the site where the sludge will be applied. The permit is generally used to track the quantity of pollutants applied to the site each year. Utilities that land apply sludge are required to submit an annual report to EPD identifying the volume of sludge applied and the mass of specific pollutants applied to the site. This report also has to identify the life-time accumulation of these pollutants on the site, which will determine when the site can no longer accept additional sludge. Since Griffin utilizes land application of liquid sludge they are required to comply with these requirements.

TABLE 3-1: 2006 WASTEWATER FLOW PROJECTIONS					
Sub-Basin	Development Name	# of Acres	Total # of Units	% Contributing Flow in 2006	Total Flow Based on # of Units (gpd)
HDC-2	The Highlands	101.19	99	50%	11,385
CRV-1	Serene Lake	7.03	20	100%	4,600
HDC-2	Vineyard Place	85.51	82	40%	7,544
HDC-2	Lexington Place	25.53	58	20%	2,668
POT-1	Hunt's Mill Estates	21.88	32	40%	2,944
CAC-CL	Aderhold		260	50%	29,900
CAC-CL	Carolyn Ridge		13	50%	1,495
CAC-CL	Johnson Pool		110	50%	12,650
CAC-CL	Moore Bass		50	30%	3,450
CAC-CL	Pinetree Hill		140	50%	16,100
POT-1	Autumn		105	50%	12,075
HBC-1	Cedardale		23	50%	2,645
POT-1	Coldwater Creek		266	25%	15,295
POT-1	Crescent		100	50%	11,500
HBC-1	Dairy		15	50%	1,725
HBC-1	Knowels		65	50%	7,475
POT-1	Macon Rd.		96	50%	11,040
ORH-1	Orchard Hills		20	50%	2,300
POT-1	S. 6th Street		70	40%	6,440
BUC-1	Senior Center		33	100%	7,590
POT-1	David Dillion		70	10%	1,610
ORH-1	Orchard Hills Farms		60	20%	2,760
POT-1	Training/Hotel		21	100%	4,830
SHC-1	Savannah		80	10%	1,840
SHC-1	Brandmill		92	40%	8,464
SHC-1	Cody's Plantation		29	40%	2,668
SHC-1	Dague Pike		128	40%	11,776
SHC-1	Fairways		13	50%	1,495
SHC-1	Laprade Village		60	30%	4,140
SHC-1	Lowes		10	100%	2,300
SHC-1	Magnolia Estates		120	30%	8,280
SHC-1	Piedmont Rd.		6	50%	690
SHC-1	Powers Court		50	50%	5,750
SHC-1	Sherbrooke		63	20%	2,898
SHC-1	Stonebriar		53	20%	2,438
SHC-1	Village of Carrington		75	30%	5,175
SHC-1	Vineyard Ridge		67	40%	6,164
SHC-1	W. Poplar		15	100%	3,450
SHC-1	Walmart		25	100%	5,750
SHC-1	Stol & Company		27	50%	3,105
SHC-1	Crownover Carver		116	20%	5,336
					0
CAC-CL	2005 Other New Developments	40	20	50%	2,300
POT-1	2005 Other New Developments	109	70	50%	8,050
SHC-1	2005 Other New Developments	94	100	50%	11,500
CAC-CL	2006 Other New Developments		50	0%	0
POT-1	2006 Other New Developments		500	0%	0
SHC-1	2006 Other New Developments		500	0%	0
	Totals:	484.14	4,077		283,590
	Cabin Creek Total	40.00	593		65,895
	Potato Creek Total	130.88	1,046		98,279
	Shoal Creek Total	313.26	1,388		119,416

Flow contribution per unit = 230 gpd.

TABLE 3-2: 2007 WASTEWATER FLOW PROJECTIONS

Sub-Basin	Development Name	# of Acres	Total # of Units	% Contributing Flow in 2007	Total Flow Based on # of Units (gpd)
HDC-2	The Highlands	101.19	99	25%	5,693
HDC-2	Vineyard Place	85.51	82	50%	9,430
HDC-2	Lexington Place	25.53	58	50%	6,670
POT-1	Hunt's Mill Estates	21.88	32	60%	4,416
CAC-CL	Aderhold		260	50%	29,900
CAC-CL	Johnson Pool		110	30%	7,590
CAC-CL	Moore Bass		50	70%	8,050
CAC-CL	Pinetree Hill		140	30%	9,660
POT-1	Autumn		105	30%	7,245
POT-1	Cedardale		23	50%	2,645
POT-1	Coldwater Creek		266	45%	27,531
POT-1	Crescent		100	30%	6,900
HBC-1	Knowels		65	30%	4,485
POT-1	Macon Rd.		96	30%	6,624
POT-1	S. 6th Street		70	40%	6,440
POT-1	David Dillion		70	40%	6,440
ORH-1	Orchard Hills Farms		60	50%	6,900
SHC-1	Savannah		80	40%	7,360
SHC-1	Brandmill		92	40%	8,464
SHC-1	Cody's Plantation		29	50%	3,335
SHC-1	Dague Pike		128	50%	14,720
SHC-1	Laprade Village		60	50%	6,900
SHC-1	Magnolia Estates		120	50%	13,800
SHC-1	Powers Court		50	30%	3,450
SHC-1	Sherbrooke		63	40%	5,796
SHC-1	Stonebriar		53	50%	6,095
SHC-1	Village of Carrington		75	60%	10,350
SHC-1	Vineyard Ridge		67	50%	7,705
SHC-1	Woodland Industries		0		0
SHC-1	Stol & Company		27	50%	3,105
SHC-1	Crownover Carver		116	40%	10,672
					0
CAC-CL	2005 Other New Developments	40	20	50%	2,300
POT-1	2005 Other New Developments	109	70	50%	8,050
SHC-1	2005 Other New Developments	94	100	50%	11,500
CAC-CL	2006 Other New Developments		50	30%	3,450
POT-1	2006 Other New Developments		500	30%	34,500
SHC-1	2006 Other New Developments		500	30%	34,500
CAC-CL	2007 Other New Developments		35	0%	0
POT-1	2007 Other New Developments		400	0%	0
SHC-1	2007 Other New Developments		400	0%	0
	Totals:	477.11	4,721		352,671
	Cabin Creek Total	40.00	580		60,950
	Potato Creek Total	130.88	957		122,176
	Shoal Creek Total	306.23	1,299		169,545

Flow contribution per unit = 230 gpd.

TABLE 3-3: 2008 WASTEWATER FLOW PROJECTIONS

Sub-Basin	Development Name	# of Acres	Total # of Units	% Contributing Flow in 2008	Total Flow Based on # of Units (gpd)
HDC-2	Lexington Place	25.53	58	30%	4,002
POT-1	Coldwater Creek		266	30%	18,354
POT-1	S. 6th Street		70	10%	1,610
POT-1	David Dillion		70	50%	8,050
ORH-1	Orchard Hills Farms		60	30%	4,140
SHC-1	Savannah		80	50%	9,200
SHC-1	Laprade Village		60	10%	1,380
SHC-1	Magnolia Estates		120	20%	5,520
SHC-1	Sherbrooke		63	40%	5,796
SHC-1	Stonebriar		53	30%	3,657
SHC-1	Woodland Industries		0		0
SHC-1	Crownover Carver		116	40%	10,672
					0
CAC-CL	2006 Other New Developments		50	50%	5,750
POT-1	2006 Other New Developments		500	50%	57,500
SHC-1	2006 Other New Developments		500	50%	57,500
CAC-CL	2007 Other New Developments		35	30%	2,415
POT-1	2007 Other New Developments		400	30%	27,600
SHC-1	2007 Other New Developments		400	30%	27,600
CAC-CL	2008 Other New Developments		25	0%	0
POT-1	2008 Other New Developments		400	0%	0
SHC-1	2008 Other New Developments		400	0%	0
	Totals:	25.53	3,726		250,746
	Cabin Creek Total	0.00	50		8,165
	Potato Creek Total	0.00	966		117,254
	Shoal Creek Total	25.53	1,050		125,327

Flow contribution per unit = 230 gpd.

TABLE 3-4: 2009 WASTEWATER FLOW PROJECTIONS					
Sub-Basin	**Development Name**	**# of Acres**	**Total # of Units**	**% Contributing Flow in 2009**	**Total Flow Based on # of Units (gpd)**
CAC-CL	2006 Other New Developments		40	20%	1,840
POT-1	2006 Other New Developments		500	20%	23,000
SHC-1	2006 Other New Developments		500	20%	23,000
CAC-CL	2007 Other New Developments		20	50%	2,300
POT-1	2007 Other New Developments		400	50%	46,000
SHC-1	2007 Other New Developments		400	50%	46,000
CAC-CL	2008 Other New Developments		20	30%	1,380
POT-1	2008 Other New Developments		400	30%	27,600
SHC-1	2008 Other New Developments		400	30%	27,600
CAC-CL	2009 Other New Developments		20	0%	0
POT-1	2009 Other New Developments		300	0%	0
SHC-1	2009 Other New Developments		400	0%	0
	Totals:	0.00	3,400		198,720
	Cabin Creek Total	0.00	40		5,520
	Potato Creek Total	0.00	500		96,600
	Shoal Creek Total	0.00	500		96,600

Flow contribution per unit = 230 gpd.

TABLE 3-5: SHORT-TERM FLOW PROJECTIONS						
	Projected Wastewater Flows (MGD)					
	Cabin Creek Basin		Potato Creek Basin		Shoal Creek Basin	
	Monthly ADF	Max. Month MM	Monthly ADF	Max. Month MM	Monthly ADF	Max. Month MM
2005 End of Year	0.947	1.269	1.561	1.998	1.803	2.236
2006 End of Year	1.013	1.357	1.659	2.124	1.923	2.384
2007 End of Year	1.074	1.439	1.781	2.280	2.092	2.595
2008 End of Year	1.082	1.450	1.899	2.430	2.218	2.750
2009 End of Year	1.088	1.457	1.995	2.554	2.314	2.870

ADF = Aveage Daily Flow (average over a 365 day period)

MM = Maximum Month Flow

Peaking Factors (MM/ADF) based on Historical averages

Cabin Creek WWTP = 1.34

Potato Creek WWTP = 1.28

Shoal Creek WWTP = 1.24

TABLE 3-6: 2000 POPULATION BREAKDOWN BY DRAINAGE BASIN

Sub-Basin Code	Census Tract Number 1601	1602	1603	1604	1605	1606	1607	1608	1609	1610	1611	1612	Total Acres	Avg. 2000 Pop. Density (person per acre)	2000 Pop. In Basin
Persons per Acre	0.34	0.20	0.77	2.24	0.66	0.13	0.74	2.67	1.09	0.24	1.20	0.89			
	Acres in Each Census Tract														
BUC-1	0	0	0	0	0	0	0	0	224	3,568	22	0	3,814	0.30	1,144
CAC-CL	0	0	539	1,171	0	0	0	306	219	0	0	0	2,235	1.83	4,099
CRV-1	0	0	0	454	1,462	0	0	0	0	0	0	0	1,916	1.04	1,989
HDC-2	198	0	0	0	1,372	604	0	0	0	0	0	0	2,174	0.48	1,054
HBC-1	0	0	0	0	0	0	6	0	0	0	39	2,620	2,665	0.90	2,391
ORH-1	0	0	0	0	0	0	0	0	0	1,123	0	0	1,123	0.24	275
POT-1	0	0	0	0	0	0	18	7	449	874	2,798	1,793	5,939	0.96	5,683
SHC-1	0	0	0	213	4,457	1,276	5,924	489	0	0	0	54	12,413	0.75	9,320
WAC-1	0	0	0	0	0	0	0	0	0	0	0	2,739	2,739	0.89	2,446
Summary	**198**	**0**	**539**	**1,838**	**7,291**	**1,880**	**5,948**	**802**	**892**	**5,565**	**2,859**	**7,206**	**35,018**	**0.82**	**28,401**

TABLE 3-7: 2005 POPULATION ESTIMATES BY DRAINAGE BASIN

Sub-Basin Code	Census Tract Number 1601	1602	1603	1604	1605	1606	1607	1608	1609	1610	1611	1612	Total Acres	Avg. 2005 Pop. Density (person per acre)	Est. 2005 Pop. In Basin
Persons per Acre	0.31	0.18	0.86	2.58	1.00	0.11	0.83	2.73	1.23	0.25	1.60	1.13			
	Acres in Each Census Tract														
BUC-1	0	0	0	0	0	0	0	0	224	3,568	22	0	3,814	0.32	1,208
CAC-CL	0	0	539	1,171	0	0	0	306	219	0	0	0	2,235	2.05	4,589
CRV-1	0	0	0	454	1,462	0	0	0	0	0	0	0	1,916	1.37	2,625
HDC-2	198	0	0	0	1,372	604	0	0	0	0	0	0	2,174	0.69	1,496
HBC-1	0	0	0	0	0	0	6	0	0	0	39	2,620	2,665	1.14	3,027
ORH-1	0	0	0	0	0	0	0	0	0	1,123	0	0	1,123	0.25	283
POT-1	0	0	0	0	0	0	18	7	449	874	2,798	1,793	5,939	1.23	7,298
SHC-1	0	0	0	213	4,457	1,276	5,924	489	0	0	0	54	12,413	0.92	11,467
WAC-1	0	0	0	0	0	0	0	0	0	0	0	2,739	2,739	1.13	3,094
Summary	**198**	**0**	**539**	**1,838**	**7,291**	**1,880**	**5,948**	**802**	**892**	**5,565**	**2,859**	**7,206**	**35,018**	**1.01**	**35,087**

TABLE 3-8: 2025 PROJECTION OF FLOW INCREASE IN SUB-BASINS

Column 1	*Column 2*	*Column 3*	*Column 4*	*Column 5*	*Column 6*	*Column 7*	*Column 8*	*Column 9*	*Column 10*	*Column 11*
SUB-BASIN CODE	EST. 2005 POPULATION	PERCENT OF EXIST. POPULATION ADDED TO SEWER	FLOW INCREASE FROM EXIST. POPULATION (GPD)	POPULATION GROWTH	2025 PROJECTED POPULATION IN BASIN	PERCENT OF POPULATION GROWTH SEWERED	PROJECTED FLOW FROM POPULATION GROWTH (GPD)	PROJECTED FLOW FROM COMMERCIAL GROWTH (GPD)	PROJECTED FLOW FROM INDUSTRIAL GROWTH (GPD)	PROJECTED FLOW INCREASE 2005-2025 (GPD)
BUC-1	1,208	20%	24,151	374	1,582	90%	33,691	8,423	2,106	68,370
CAC-CL	4,589	5%	22,945	1,423	6,012	90%	128,032	32,008	8,002	190,987
CRV-1	2,625	20%	52,505	814	3,439	90%	73,244	18,311	4,578	148,638
HDC-2	1,496	10%	14,961	464	1,960	90%	41,740	10,435	2,609	69,744
HBC-1	3,200	50%	160,000	992	4,192	90%	89,280	22,320	5,580	277,180
ORH-1	505	50%	25,250	157	662	90%	14,090	3,522	881	43,742
POT-1	7,298	10%	72,978	2,262	9,560	90%	203,610	50,902	12,726	340,216
SHC-1	11,467	10%	114,669	3,555	15,022	90%	319,927	79,982	19,995	534,573
WAC-1	3,094	50%	154,719	959	4,054	90%	86,333	21,583	5,396	268,031
TOTAL	35,482		642,177	10,999	46,481		989,946	247,486	61,872	1,941,481

Notes:

1. HBC-1 and ORH-1 Est. 2005 Population was adjusted based on more reasonable data.
2. Commercial flow projection is based on 25% of Residential flow.
3. Industrial flow projection is based on 5% of Residential and Commercial flow.
4. See Section 3.6.1.1 for detailed description of table calculations.

TABLE 3-9: TOTAL PROJECTED FLOW IN TREATMENT BASINS (POPULATION BASIS)

	Average Daily Projected Flow (gpd)											
	Cabin Creek Treatment Basin				Potato Creek Treatment Basin				Shoal Creek Treatment Basin			
SUB-BASIN CODE	2010	2015	2020	2025	2010	2015	2020	2025	2010	2015	2020	2025
Exist. Flow	934,000	934,000	934,000	934,000	1,528,000	1,528,000	1,528,000	1,528,000	1,755,000	1,755,000	1,755,000	1,755,000
BUC-1					22,060	44,977	56,388	68,370				
CAC-CL	37,945	102,087	145,453	190,987								
CRV-1									47,960	97,780	122,589	148,638
HDC-2									19,851	40,762	54,899	69,744
HBC-1					106,460	215,188	245,428	277,180				
ORH-1					16,801	33,959	38,732	43,742				
POT-1					96,833	198,839	267,803	340,216				
SHC-1									152,152	312,430	420,793	534,573
WAC-1									102,946	208,085	237,327	268,031
TOTAL	971,945	1,036,087	1,079,453	1,124,987	1,770,154	2,020,963	2,136,351	2,257,508	2,077,908	2,414,057	2,590,608	2,775,985

TABLE 3-10: SUMMARY OF LAND USE AREAS PER DRAINAGE BASIN

Land Use Category	WW Flow Contribution (gpd/Ac.)	Drainage Basin Acreage								
		BUC-1	CAC-CL	CRV-1	HDC-2	HBC-1	ORH-1	POT-1	SHC-1	WAC-1
City Land Uses										
Low Density Res.	460	0	280	36	10	174	0	1,654	733	0
Medium Density Res.	920	0	362	88	0	3	0	77	628	1
High Density Res.	2,000	0	94	43	0	0	0	95	183	0
Office - Transitional	1,100	0	0	0	0	0	0	6	41	0
Office - Professional	1,100	0	36	11	0	0	0	84	41	0
Neighborhood Bus.	200	0	53	10	0	22	0	191	41	0
Commercial	1,500	0	0	125	0	0	0	0	361	9
Mixed Use	1,400	0	0	0	0	34	0	5	13	23
Downtown Hub	1,100	0	50	0	0	0	0	51	17	0
Industrial	1,000	14	59	0	0	179	0	24	43	40
Public/Institutional	200	4	80	6	0	41	0	275	475	7
Parks/Rec./Cons.	50	0	27	0	0	15	0	193	221	0
Trans./Utilities	10	0	14	0	0	6	0	151	11	0
Vacant/Undeveloped	0	0	1	0	0	1	0	5	10	1
County Land Uses										
Estate Density Res.	70	2,805	626	346	1,125	2,031	955	2,187	7,855	1,415
Low Density Res.	230	228	71	1,014	912	65	83	227	1,025	148
Medium Density Res.	920	0	0	0	0	0	30	0	0	0
High Density Res.	1,600	0	63	10	0	0	0	30	3	15
Commercial	1,500	0	1	124	40	48	40	55	62	339
Industrial	1,000	591	172	0	29	32	0	151	157	486
Public/Institutional	200	3	8	0	2	0	15	9	1	0
Trans./Utilities	10	70	153	73	16	0	0	175	106	60
Mixed Use	1,400	0	0	0	0	0	0	0	0	86
Forestry	0	0	0	0	0	0	0	0	0	0
Open Space	0	100	85	28	40	13	0	293	387	110
Parks & Rec.	50	0	0	0	0	0	0	0	0	0
Total		3,814	2,235	1,916	2,174	2,665	1,123	5,939	12,413	2,739

TABLE 3-11: TOTAL PROJECTED FLOW IN TREATMENT BASINS (LAND USE BASIS)

	Average Daily Projected Flow (gpd)											
	Cabin Creek Treatment Basin				Potato Creek Treatment Basin				Shoal Creek Treatment Basin			
SUB-BASIN CODE	2010	2015	2020	2025	2010	2015	2020	2025	2010	2015	2020	2025
BUC-1					306,357	368,923	444,715	536,769				
CAC-CL	1,097,888	1,126,200	1,155,587	1,186,103								
CRV-1									469,079	528,833	596,618	673,566
HDC-2									127,366	139,976	153,840	169,085
HBC-1					300,689	333,113	372,375	420,383				
ORH-1					70,415	91,540	119,002	154,702				
POT-1					1,370,651	1,480,264	1,610,697	1,767,715				
SHC-1									1,344,725	1,487,413	1,659,872	1,870,380
WAC-1									407,696	524,012	675,883	874,304
TOTAL	1,097,888	1,126,200	1,155,587	1,186,103	2,048,112	2,273,840	2,546,789	2,879,569	2,348,865	2,680,234	3,086,213	3,587,335

TABLE 4-1: PROJECTED SEPTAGE FLOWS AND POLLUTANT LOADINGS												
					Septage Characteristics							
Year	Number of Septic Tanks	Tanks pumped per Year	Tanks pumped per Day	Volume per Day (gal.)	BOD Conc. (mg//L)	BOD Load (lbs/day)	TSS Conc. (mg/L)	TSS Load (lbs/day)	NH_4 Conc. (mg/L)	NH_4 Load (lbs/day)	Phos. Conc. (mg/L)	Phos. Load (lbs/day)
2005	11,346	2,269	9	13,092	6,000	655	15,000	1,638	400	44	250	27
2006	11,463	2,293	9	13,226	6,000	662	15,000	1,655	400	44	250	28
2007	11,581	2,316	9	13,363	6,000	669	15,000	1,672	400	45	250	28
2008	11,700	2,340	9	13,500	6,000	676	15,000	1,689	400	45	250	28
2009	11,821	2,364	9	13,639	6,000	683	15,000	1,706	400	46	250	28
2010	12,447	2,489	10	14,362	6,000	719	15,000	1,797	400	48	250	30
2015	13,107	2,621	10	15,123	6,000	757	15,000	1,892	400	50	250	32
2020	13,500	2,700	10	15,577	6,000	779	15,000	1,949	400	52	250	32
2025	13,500	2,700	10	15,577	6,000	779	15,000	1,949	400	52	250	32

Assumptions:

1. The majority of septic tanks are located outside of the city limits.
2. Based on Spalding Co. 2024 Comprehensive Plan, there were 12,478 occupied housing units in the county in 2000.
3. Based on sewer system customer records, there are approximately 850 wastewater customers in the county.
4. Of the 12,478 units, 1,698 are multi-family. Assume 50% of these are on some type of sewer.
5. County housing growth averaged approx. 1.03% from 1990 to 2000 based on Comp. Plan.
6. Assume regulations will be implemented requiring septic tanks to be pumped every five years.
7. Average septic tank volume is 1,500 gallons.
8. Assume tank pumping will take place five days per week, or 260 days per year.
9. It is assumed that starting in 2015 the number of new septic tanks installed in county will be negligible.
10. Septage characteristics are based on typical design values from Metcalf & Eddy, "Wastewater Engineering", 3rd Edition.

TABLE 4-2: SEPTAGE IMPACTS ON POTATO CREEK WWTP

Potato Creek WWTP Data

Year	Flow (MGD)	BOD Conc. (mg/L)	BOD Load (lbs/day)	TSS Conc. (mg/L)	TSS Load (lbs/day)	NH_4 Conc. (mg/L)	NH_4 Load (lbs/day)	Phos. Conc. (mg/L)	Phos. Load (lbs/day)
2005	1.82	185	2,807	179	2,710	17.5	265	4	61
2006	1.66	185	2,561	179	2,472	17.5	242	4	55
2007	1.78	185	2,750	179	2,655	17.5	260	4	59
2008	1.90	185	2,931	179	2,829	17.5	277	4	63
2009	2.00	185	3,080	179	2,973	17.5	291	4	67
2010	2.05	185	3,162	179	3,052	17.5	299	4	68
2015	2.27	185	3,510	179	3,389	17.5	332	4	76
2020	2.55	185	3,931	179	3,795	17.5	371	4	85
2025	2.88	185	4,445	179	4,291	17.5	420	4	96

Septage Data

Year	Flow (MGD)	BOD Conc. (mg//L)	BOD Load (lbs/day)	TSS Conc. (mg/L)	TSS Load (lbs/day)	NH_4 Conc. (mg/L)	NH_4 Load (lbs/day)	Phos. Conc. (mg/L)	Phos. Load (lbs/day)
2005	0.013	6,000	655	15,000	1,638	400	44	250	27
2006	0.013	6,000	662	15,000	1,655	400	44	250	28
2007	0.013	6,000	669	15,000	1,672	400	45	250	28
2008	0.014	6,000	676	15,000	1,689	400	45	250	28
2009	0.014	6,000	683	15,000	1,706	400	46	250	28
2010	0.014	6,000	719	15,000	1,797	400	48	250	30
2015	0.015	6,000	757	15,000	1,892	400	50	250	32
2020	0.016	6,000	779	15,000	1,949	400	52	250	32
2025	0.016	6,000	779	15,000	1,949	400	52	250	32

Blended Data

Year	Flow (MGD)	BOD Conc. (mg//L)	BOD Load (lbs/day)	TSS Conc. (mg/L)	TSS Load (lbs/day)	NH_4 Conc. (mg/L)	NH_4 Load (lbs/day)	Phos. Conc. (mg/L)	Phos. Load (lbs/day)
2005	1.832	227	3,462	285	4,348	20	309	6	88
2006	1.672	231	3,223	296	4,127	21	286	6	83
2007	1.795	228	3,418	289	4,326	20	304	6	87
2008	1.912	226	3,606	283	4,518	20	322	6	91
2009	2.009	225	3,762	279	4,680	20	336	6	95
2010	2.062	226	3,880	282	4,849	20	347	6	98
2015	2.289	224	4,267	277	5,280	20	382	6	107
2020	2.562	220	4,711	269	5,744	20	423	5	117
2025	2.895	216	5,225	258	6,240	20	472	5	129

Notes:

1. Potato Creek WWTP Data is based on average values from monthly operating reports.
2. Potato Creek WWTP Data phosphorus concentration is based on average concentration at the Cabin Creek WWTP since measurements are not taken at Potato Creek.

TABLE 4-3: SEPTAGE IMPACTS ON SHOAL CREEK WWTP

Shoal Creek WWTP Data

Year	Flow (MGD)	BOD Conc. (mg/L)	BOD Load (lbs/day)	TSS Conc. (mg/L)	TSS Load (lbs/day)	NH_4 Conc. (mg/L)	NH_4 Load (lbs/day)	Phos. Conc. (mg/L)	Phos. Load (lbs/day)
2005	1.87	243	3,801	164	2,569	19	292	4	63
2006	1.92	243	3,898	164	2,636	19	300	4	64
2007	2.09	243	4,242	164	2,868	19	326	4	70
2008	2.22	243	4,496	164	3,040	19	346	4	74
2009	2.31	243	4,692	164	3,172	19	361	4	77
2010	2.35	243	4,762	164	3,219	19	366	4	78
2015	2.68	243	5,434	164	3,674	19	418	4	89
2020	3.09	243	6,257	164	4,230	19	481	4	103
2025	3.59	243	7,273	164	4,917	19	559	4	120

Septage Data

Year	Flow (MGD)	BOD Conc. (mg//L)	BOD Load (lbs/day)	TSS Conc. (mg/L)	TSS Load (lbs/day)	NH_4 Conc. (mg/L)	NH_4 Load (lbs/day)	Phos. Conc. (mg/L)	Phos. Load (lbs/day)
2005	0.013	6,000	655	15,000	1,638	400	44	250	27
2006	0.013	6,000	662	15,000	1,655	400	44	250	28
2007	0.013	6,000	669	15,000	1,672	400	45	250	28
2008	0.014	6,000	676	15,000	1,689	400	45	250	28
2009	0.014	6,000	683	15,000	1,706	400	46	250	28
2010	0.014	6,000	719	15,000	1,797	400	48	250	30
2015	0.015	6,000	757	15,000	1,892	400	50	250	32
2020	0.016	6,000	779	15,000	1,949	400	52	250	32
2025	0.016	6,000	779	15,000	1,949	400	52	250	32

Blended Data

Year	Flow (MGD)	BOD Conc. (mg//L)	BOD Load (lbs/day)	TSS Conc. (mg/L)	TSS Load (lbs/day)	NH_4 Conc. (mg/L)	NH_4 Load (lbs/day)	Phos. Conc. (mg/L)	Phos. Load (lbs/day)
2005	1.888	283	4,456	267	4,207	21	336	6	90
2006	1.936	282	4,560	266	4,290	21	344	6	92
2007	2.106	280	4,911	258	4,540	21	371	6	98
2008	2.231	278	5,172	254	4,729	21	391	5	102
2009	2.328	277	5,375	251	4,878	21	406	5	106
2010	2.363	278	5,481	255	5,016	21	414	5	108
2015	2.695	275	6,191	248	5,565	21	468	5	121
2020	3.102	272	7,037	239	6,179	21	533	5	135
2025	3.603	268	8,052	228	6,866	20	611	5	152

Notes:

1. Shoal Creek WWTP Data is based on average values from monthly operating reports.
2. Shoal Creek WWTP Data for NH_4 and phosphorus are based on average concentrations at the Cabin Creek WWTP since measurements are not taken at the Shoal Creek WWTP.

TABLE 5-1: SHOAL CREEK TREATMENT AND DISPOSAL ALTERNATIVES EVALUATION						
	Evaluation Category					
Treatment & Disposal System Alternative	**Permitability**	**Flexibility**	**Reliability**	**Operation & Maintenance**	**Capital Cost**	**Total**
Wetlands w/ Land Application	2	5	4	2	5	18
Wetlands w/ Seasonal Discharge	4	5	4	2	3	18
Oxidation Ditch w/ Seasonal Discharge	3	3	2	3	4	15
SBR w/ Seasonal Discharge	3	2	1	2	4	12
MBR w/ Seasonal Discharge	3	2	1	3	5	14
Oxidation Ditch w/ Direct Discharge	1	3	2	1	2	9
SBR w/ Direct Discharge	1	1	1	1	2	6
MBR w/ Direct Discharge	1	1	1	3	3	9
SBR w/ Reuse Water System	1	1	2	2	4	10
MBR w/ Reuse Water System	1	1	1	3	4	10

Note: 1 = Best, 5 = Worst

TABLE 5-2: SHOAL CREEK WWTP EXPANSION COST ESTIMATE					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
1	Headworks modifications including screening and grit removal	1	LS	$614,000	$614,000
2	Influent pump station	1	LS	$382,000	$382,000
3	Splitter box	1	LS	$70,000	$70,000
4	Septage receiving station	1	LS	$318,000	$318,000
5	SBR system including two basins, equipment, blowers, pumps, chemical feed, and controls	1	LS	$3,153,065	$3,153,065
6	Disinfection system including structure, UV lights, and controls	1	LS	$485,000	$485,000
7	Effluent metering and post aeration	1	LS	$128,000	$128,000
8	Sludge digestion, storage and loading facilities including tank, aeration equipment and blowers.	1	LS	$848,000	$848,000
9	Yard piping and site work	1	LS	$420,000	$420,000
10	Electrical including stand-by generator	1	LS	$225,000	$225,000
11	Sludge land application system	1	LS	$637,500	$637,500
Construction Total					$7,280,565
Contingency, engineering, admin., & legal (25%)					$1,820,141
Estimated Total (rounded to nearest thousand)					**$9,101,000**

TABLE 5-3: SHOAL CREEK BASIN SEWER IMPROVEMENTS - COST ESTIMATE

FROM MALOY RD. TO SHOAL CREEK					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
1	18 inch trunk sewer	6,600	LF	$74	$488,400
2	21 inch trunk sewer	6,900	LF	$79	$545,100
3	24 inch trunk sewer	8,800	LF	$84	$739,200
4	Easements	12	ACRE	$4,000	$48,000
5	Cased bore for sewer	90	LF	$250	$22,500
6	Stream crossings	225	LF	$125	$28,125
Construction Total					$1,871,325
Contingency, engineering, admin., & legal (25%)					$467,831
Estimated Total (rounded to nearest thousand)					**$2,339,000**

FROM OAK GROVE RD. TO SHOAL CREEK					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
1	12 inch trunk sewer	7,900	LF	$62	$489,800
2	15 inch trunk sewer	7,800	LF	$66	$514,800
3	Easements	10	ACRE	$4,000	$40,000
4	Cased bore for sewer	30	LF	$250	$7,500
5	Stream crossings	75	LF	$125	$9,375
Construction Total					$1,061,475
Contingency, engineering, admin., & legal (25%)					$265,369
Estimated Total (rounded to nearest thousand)					**$1,327,000**

PARALLEL EXISTING SHOAL CREEK INTERCEPTOR					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
1	12 inch trunk sewer	6,200	LF	$62	$384,400
2	15 inch trunk sewer	6,900	LF	$66	$455,400
3	18 inch trunk sewer	6,500	LF	$74	$481,000
4	21 inch trunk sewer	5,100	LF	$79	$402,900
5	24 inch trunk sewer	7,400	LF	$84	$621,600
6	27 inch trunk sewer	3,700	LF	$89	$329,300
7	Easements	16	ACRE	$4,000	$64,000
8	Cased bore for sewer	210	LF	$250	$52,500
9	Stream crossings	250	LF	$125	$31,250
Construction Total					$2,822,350
Contingency, engineering, admin., & legal (25%)					$705,588
Estimated Total (rounded to nearest thousand)					**$3,528,000**

TABLE 5-3: SHOAL CREEK BASIN SEWER IMPROVEMENTS - COST ESTIMATE

HDC-2 SUB-BASIN PUMPED TO SHOAL CREEK					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
1	12 inch trunk sewer	6,700	LF	$62	$415,400
2	15 inch trunk sewer	3,300	LF	$66	$217,800
3	18 inch trunk sewer	4,600	LF	$74	$340,400
4	24 inch trunk sewer	5,800	LF	$84	$487,200
5	Easements	12	ACRE	$4,000	$48,000
6	Cased bore for sewer	150	LF	$250	$37,500
7	Stream crossings	375	LF	$125	$46,875
8	Pump Station with Generator	1	LS	$545,000	$545,000
9	16 inch force main	13,800	LF	$48	$662,400
10	Cased bore for force main	120	LF	$180	$21,600
11	Pump Station Property	1	ACRE	$15,000	$15,000
Construction Total					$2,837,175
Contingency, engineering, admin., & legal (25%)					$709,294
Estimated Total (rounded to nearest thousand)					**$3,546,000**

WAC-1 SUB-BASIN PUMPED TO SHOAL CREEK					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
1	12 inch trunk sewer	20,500	LF	$62	$1,271,000
2	15 inch trunk sewer	7,700	LF	$66	$508,200
3	18 inch trunk sewer	1,700	LF	$74	$125,800
4	Easements	18	ACRE	$4,000	$72,000
5	Cased bore for sewer	320	LF	$250	$80,000
6	Stream crossings	150	LF	$125	$18,750
7	Upgrade existing Pump Station	1	LS	$150,000	$150,000
Construction Total					$2,225,750
Contingency, engineering, admin., & legal (25%)					$556,438
Estimated Total (rounded to nearest thousand)					**$2,782,000**

Total cost of collection system for Shoal Creek Drainage Basin **$13,522,000**

TABLE 5-4: PIPE COSTS USED IN ESTIMATES	
Sewer Size (in.)	**Cost per Linear Foot**
12	$62
15	$66
18	$74
21	$79
24	$84
27	$89
Cased Bore	$250
Force Main Size (in.)	**Cost per Linear Foot**
6	$18
8	$22
10	$26
12	$32
14	$39
16	$48
18	$55
20	$60
24	$65
30	$70
Cased Bore	$180

TABLE 6-1: POTATO CREEK TREATMENT ALTERNATIVES EVALUATION							
	Evaluation Category						
Treatment & Disposal System Alternative	**Permitability**	**Flexibility**	**Reliability**	**Compatibility**	**Operation & Maintenance**	**Capital Cost**	**Total**
Trickling Filter	3	5	5	1	1	1	16
Oxidation Ditch	1	3	2	1	1	2	10
Combination of Trickling Filter and Oxidation Ditch	2	1	2	1	2	5	13
Sequencing Batch Reactor	1	1	1	4	1	2	10

Note: 1 = Best, 5 = Worst

TABLE 6-2: POTATO CREEK WWTP EXPANSION COST ESTIMATE					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
1	Headworks modifications including screening, grit removal and pump station	1	LS	$525,000	$525,000
2	Splitter box	1	LS	$50,000	$50,000
3	Oxidation Ditch system including two ditches, equipment, aeration system, pumps, and controls	1	LS	$3,000,000	$3,000,000
4	Secondary Clarifiers	1	LS	$812,500	$812,500
5	Disinfection system including structure, UV lights, and controls	1	LS	$562,500	$562,500
6	Sludge digestion system, storage and loading facilities including tank, aeration equipment and blowers.	1	LS	$687,500	$687,500
7	Yard piping	1	LS	$550,000	$550,000
8	Earthwork	1	LS	$100,000	$100,000
9	Electrical including stand-by generator	1	LS	$375,000	$375,000
Construction Total					$6,662,500
Contengency, engineering, admin., & legal (25%)					$1,665,625
Estimated Total (rounded to nearest thousand)					**$8,328,000**

TABLE 6-3: POTATO CREEK BASIN SEWER IMPROVEMENTS - COST ESTIMATE

HBC-1 SUB-BASIN PUMPED TO POTATO CREEK					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
1	12 inch trunk sewer	10,200	LF	$62	$632,400
2	15 inch trunk sewer	3,100	LF	$66	$204,600
3	18 inch trunk sewer	4,100	LF	$74	$303,400
4	21 inch trunk sewer	2,200	LF	$79	$173,800
5	Easements	12	ACRE	$4,000	$48,000
6	Cased bore for sewer	80	LF	$250	$20,000
7	Stream crossings	75	LF	$125	$9,375
8	Pump Station with Generator	1	LS	$300,000	$300,000
9	12 inch force main	9,500	LF	$32	$304,000
10	Cased bore for force main	40	LF	$180	$7,200
11	Pump Station Property	1	ACRE	$15,000	$15,000
Construction Total					$2,017,775
Contingency, engineering, admin., & legal (25%)					$504,444
Estimated Total (rounded to nearest thousand)					**$2,522,000**

BUC-1 SUB-BASIN PUMPED TO POTATO CREEK					
Item	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**
1	12 inch trunk sewer	15,300	LF	$62	$948,600
2	24 inch trunk sewer	1,000	LF	$84	$84,000
4	Easements	15	ACRE	$4,000	$60,000
5	Cased bore for sewer	120	LF	$250	$30,000
6	Stream crossings	75	LF	$125	$9,375
7	Upgrade existing Pump Station	1	LS	$350,000	$350,000
8	Convert existing force main to gravity sewer, add maholes	56	EA	$6,500	$364,000
9	16 inch force main	16,900	LF	$48	$811,200
10	Cased bore for force main	80	LF	$180	$14,400
Construction Total					$2,671,575
Contingency, engineering, admin., & legal (25%)					$667,894
Estimated Total (rounded to nearest thousand)					**$3,339,000**

Total cost of collection system for Potato Creek Drainage Basin **$5,861,000**

TABLE 8-1: SLUDGE PRODUCTION DATA

Cabin Creek WWTP

	Digested Sludge				Undigested Sludge			
Month	Aerobic Sludge (lbs)	Anaerobic Sludge (lbs)	Total Sludge (lbs)	Volume @ 3% Solids (gal.)	Waste Activated Sludge (lbs)	Primary Clarifier Sludge (lbs)	Total Sludge (lbs)	Volume @ 1% Solids (gal.)
Jun-04	19,125	1,992	21,117	82,746	26,775	3,187	29,962	355,702
Jul-04	19,800	4,016	23,816	93,321	27,720	6,426	34,146	405,366
Aug-04	9,064	2,016	11,080	43,416	12,690	3,226	15,915	188,940
Sep-04	14,450	2,312	16,762	65,681	20,230	3,699	23,929	284,080
Oct-04	9,900	2,156	12,056	47,241	13,860	3,450	17,310	205,494
Nov-04	10,476	2,392	12,868	50,422	14,666	3,827	18,494	219,550
Dec-04	11,476	2,436	13,912	54,513	16,066	3,898	19,964	237,006
Jan-05	17,086	4,232	21,318	83,533	23,920	6,771	30,692	364,361
Feb-05	12,492	2,226	14,718	57,672	17,489	3,562	21,050	249,904
Mar-05	17,350	2,226	19,576	76,707	24,290	3,562	27,852	330,646
Apr-05	43,362	2,232	45,594	178,657	60,707	3,571	64,278	763,089
May-05	12,692	2,428	15,120	59,247	17,769	3,885	21,654	257,065
Total	197,273	30,664	227,937	893,156	276,182	49,062	325,245	3,861,203
Avg.:	16,439	2,555	18,995	74,430	23,015	4,089	27,104	321,767

Potato Creek WWTP

	Digested Sludge				Undigested Sludge			
Month	Aerobic Sludge (lbs)	Anaerobic Sludge (lbs)	Total Sludge (lbs)	Volume @ 3% Solids (gal.)	Waste Activated Sludge (lbs)	Primary Clarifier Sludge (lbs)	Total Sludge (lbs)	Volume @ 1% Solids (gal.)
Jun-04	22,601	1,477	24,078	94,348	31,641	2,363	34,005	403,692
Jul-04	19,790	6,714	26,504	103,854	27,706	10,742	38,448	456,448
Aug-04	21,008	7,552	28,560	111,910	29,411	12,083	41,494	492,609
Sep-04	15,372	3,669	19,041	74,611	21,521	5,870	27,391	325,180
Oct-04	15,442	3,888	19,330	75,743	21,619	6,221	27,840	330,503
Nov-04	6,725	9,535	16,260	63,714	9,415	15,256	24,671	292,886
Dec-04	9,645	3,639	13,284	52,052	13,503	5,822	19,325	229,425
Jan-05	12,185	3,601	15,786	61,856	17,059	5,762	22,821	270,919
Feb-05	11,566	18,611	30,177	118,247	16,192	29,778	45,970	545,742
Mar-05	49,636	33,037	82,673	323,949	69,490	52,859	122,350	1,452,497
Apr-05	32,460	5,926	38,386	150,413	45,444	9,482	54,926	652,060
May-05	28,246	16,796	45,042	176,494	39,544	26,874	66,418	788,494
Total	244,676	114,445	359,121	1,407,192	342,546	183,112	525,658	6,240,454
Avg.:	20,390	9,537	29,927	117,266	28,546	15,259	43,805	520,038

Notes:

1. Pounds of digested aerobic and anaerobic sludge was obtained from monthly operating reports as the quantity of sludge hauled from the plant.
2. Volume of Sludge = Total Sludge/(8.34 x specific gravity x percent solids)
3. It is assumed there is a 40% solids reduction in the aerobic digester and 60% in the anaerobic digester.

TABLE 8-2: SLUDGE MANAGEMENT ALTERNATIVE 1 COST ESTIMATE				
Item	**Cabin Creek**	**Potato Creek**	**Shoal Creek**	**Total**
Capital Cost of Dewatering System	$ 1,002,000	$ 1,002,000	$ 1,002,000	$ 3,006,000
Capital Cost of Land Application System	$ -	$ -	$ -	$ -
Total Capital Cost	$ 1,002,000	$ 1,002,000	$ 1,002,000	$ 3,006,000
Annual O&M Cost	$ 35,459	$ 44,060	$ 27,031	$ 106,550
Present Worth of O&M Cost	$ 406,712	$ 505,365	$ 310,043	$ 1,222,120
Total Present Worth	$ 1,408,712	$ 1,507,365	$ 1,312,043	$ 4,228,120
Salvage Values	$ -	$ -	$ -	$ -
Net Present Worth	**$ 1,408,712**	**$ 1,507,365**	**$ 1,312,043**	**$ 4,228,120**

Notes:

1. Alternative 1 consists of installing sludge dewatering facilities at each treatment plant with disposal of dewatered sludge on privately owned sites.
2. Capital cost for each facility are based on a 1-meter press being installed, which provides redundant capacity for downtime due to maintenance.
3. O&M costs include dewatering costs and the City hauling dewatered sludge.
4. Present worth is based on a 20-year period with a 6% discount rate.

TABLE 8-3: SLUDGE MANAGEMENT ALTERNATIVE 2 COST ESTIMATE				
Item	**Cabin Creek**	**Potato Creek**	**Shoal Creek**	**Total**
Capital Cost of Dewatering System	$ -	$ -	$ -	$ -
Capital Cost of Land Application System	$ 738,300	$ 738,400	$ 738,300	$ 2,215,000
Total Capital Cost	$ 738,300	$ 738,400	$ 738,300	$ 2,215,000
Annual O&M Cost	$ 67,428	$ 83,734	$ 42,510	$ 193,672
Present Worth of O&M Cost	$ 773,394	$ 960,422	$ 487,586	$ 2,221,403
Total Present Worth	$ 1,511,694	$ 1,698,822	$ 1,225,886	$ 4,436,403
Salvage Values	$ 266,000	$ 267,000	$ 267,000	$ 800,000
Net Present Worth	**$ 1,245,694**	**$ 1,431,822**	**$ 958,886**	**$ 3,636,403**

Notes:

1. Alternative 2 consists of purchasing new land for sludge disposal and hauling liquid sludge to City owned site.
2. Capital cost for land is divided equally between each WWTP, but one site for all plants would be obtained.
3. O&M costs are based on the City hauling liquid sludge.
4. Present worth is based on a 20-year period with a 6% discount rate.

TABLE 8-4: SLUDGE MANAGEMENT ALTERNATIVE 3 COST ESTIMATE				
Item	**Cabin Creek**	**Potato Creek**	**Shoal Creek**	**Total**
Capital Cost of Dewatering System	$ -	$ -	$ -	$ -
Capital Cost of Land Application System	$ -	$ -	$ 800,000	$ 800,000
Total Capital Cost	$ -	$ -	$ 800,000	$ 800,000
Annual O&M Cost	$ 67,428	$ 83,734	$ 15,000	$ 166,162
Present Worth of O&M Cost	$ 773,394	$ 960,422	$ 172,049	$ 1,905,865
Total Present Worth	$ 773,394	$ 960,422	$ 972,049	$ 2,705,865
Salvage Values	$ -	$ -	$ -	$ -
Net Present Worth	**$ 773,394**	**$ 960,422**	**$ 972,049**	**$ 2,705,865**

Notes:

1. Alternative 3 consists of utilizing the existing property at the Shoal Creek WWTP for sludge disposal.
2. Capital cost includes preparation of site for receiving hauled sludge and installation of pump station and irrigation system for Shoal Creek WWTP sludge.
3. O&M costs are based on the City hauling liquid sludge from Cabin and Potato sites and spray irrigating Shoal Creek sludge.
4. Present worth is based on a 20-year period with a 6% discount rate.

TABLE 8-5: SLUDGE MANAGEMENT ALTERNATIVE 4 COST ESTIMATE				
Item	**Cabin Creek**	**Potato Creek**	**Shoal Creek**	**Total**
Capital Cost of Dewatering System	$ 100,000	$ 100,000	$ -	$ 200,000
Capital Cost of Land Application System	$ -	$ -	$ 300,000	$ 300,000
Total Capital Cost	$ 100,000	$ 100,000	$ 300,000	$ 500,000
Annual O&M Cost	$ 67,428	$ 83,734	$ 15,000	$ 166,162
Present Worth of O&M Cost	$ 773,394	$ 960,422	$ 172,049	$ 1,905,865
Total Present Worth	$ 873,394	$ 1,060,422	$ 472,049	$ 2,405,865
Salvage Values	$ -	$ -	$ -	$ -
Net Present Worth	**$ 873,394**	**$ 1,060,422**	**$ 472,049**	**$ 2,405,865**

Notes:

1. Alternative 4 consists of continuing the current method of disposal for the Cabin and Potato WWTPs and using an irrigation system for Shoal Creek WWTP sludge.
2. Capital cost includes rehabilitation of the drying beds at Cabin and Potato WWTPs and installation of a pump station and irrigation system for Shoal Creek WWTP sludge.
3. O&M costs are based on the City hauling liquid sludge from Cabin and Potato sites and spray irrigating Shoal Creek sludge.
4. Present worth is based on a 20-year period with a 6% discount rate.

TABLE 9-1: CAPITAL EXPENDITURES

Cabin Creek Basin								
	Year							
Item	**2006**	**2007**	**2008**	**2009**	**2010 - 2014**	**2015 - 2019**	**2020 - 2024**	**2025**
Stricter permit limit improvements				$1,900,000				
Capacity expansion								$1,750,000
Basin Total	**$0**	**$0**	**$0**	**$1,900,000**	**$0**	**$0**	**$0**	**$1,750,000**

Potato Creek Basin								
	Year							
Item	**2006**	**2007**	**2008**	**2009**	**2010 - 2014**	**2015 - 2019**	**2020 - 2024**	**2025**
Planning and engineering for plant expansion to 3.0 MGD	$52,000	$395,000	$196,000	$107,000				
Plant expansion to 3.0 MGD			$4,900,000	$2,678,000				
Honey Bee Creek interceptor and pump station					$3,145,000			
Buck Creek interceptor and pump station improvements						$4,168,000		
Plant expansion to 4.0 MGD							$8,203,000	
Basin Total	**$52,000**	**$395,000**	**$5,096,000**	**$2,785,000**	**$3,145,000**	**$4,168,000**	**$8,203,000**	**$0**

Shoal Creek Basin								
	Year							
Item	**2006**	**2007**	**2008**	**2009**	**2010 - 2014**	**2015 - 2019**	**2020 - 2024**	**2025**
Planning and engineering for plant expansion to 3.5 MGD	$410,000	$262,000	$88,000					
Plant expansion to 3.5 MGD		$6,276,000	$2,092,000					
Heads Creek interceptors and pump station					$4,420,000			
Parallel existing Shoal Creek interceptor					$4,402,000			
Interceptor sewer from Oak Grove Rd. to Shoal Creek							$1,656,000	
Interceptor sewer from Maloy Rd. to Shoal Creek							$2,915,000	
Upgrade Wasp Creek pump station					$375,000			
Wasp Creek interceptor						$3,240,000		
Plant expansion to 4.75 MGD						$6,646,000		
Basin Total	**$410,000**	**$6,538,000**	**$2,180,000**	**$0**	**$9,197,000**	**$9,886,000**	**$4,571,000**	**$0**
System Total	**$462,000**	**$6,933,000**	**$7,276,000**	**$4,685,000**	**$12,342,000**	**$14,054,000**	**$12,774,000**	**$1,750,000**

Note: All cost are shown in 2005 dollars

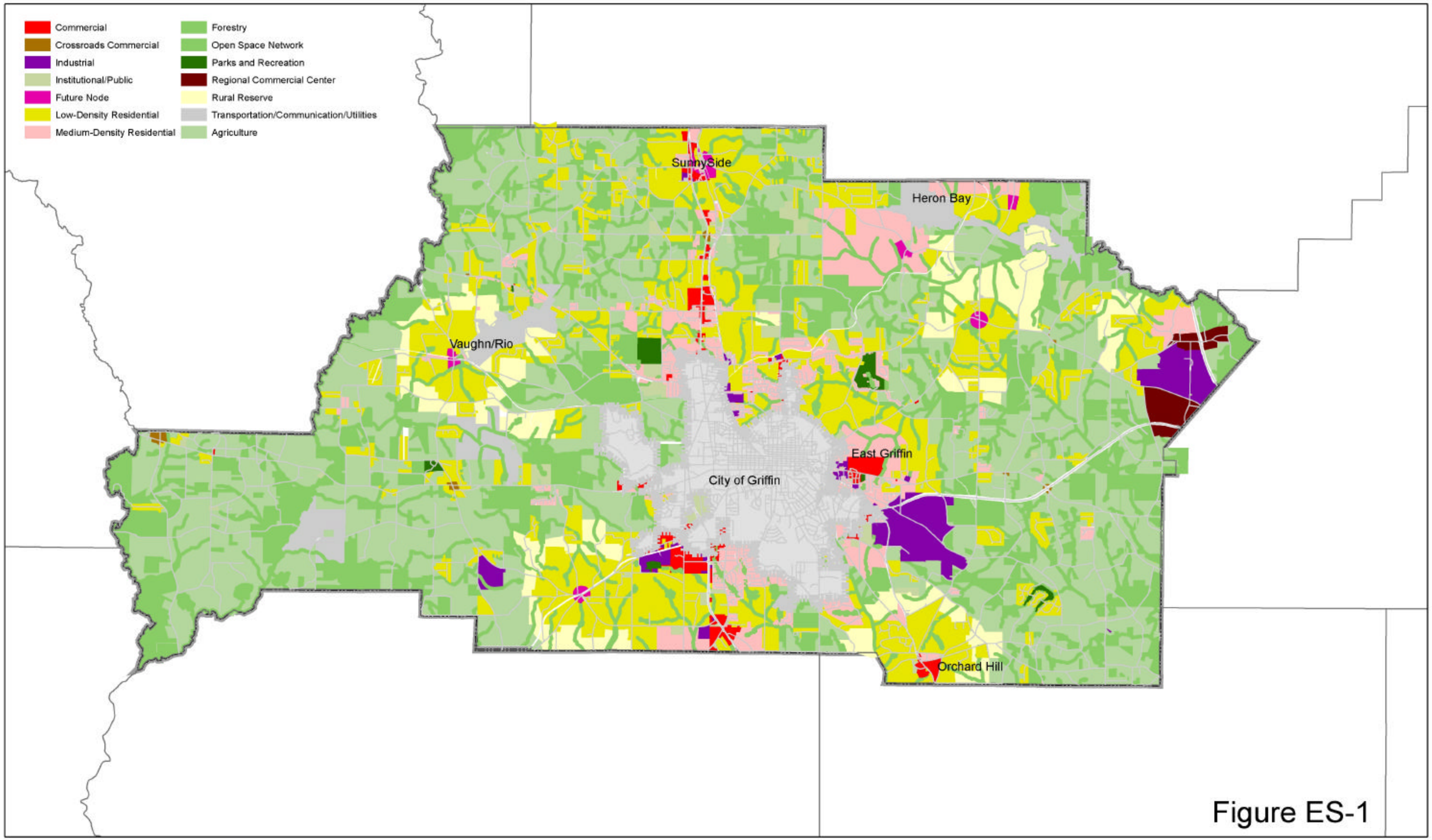


Figure ES-1

PARAGON consulting group
engineering • environmental • planning

FUTURE LAND USE PLAN

0 5,000 10,000 15,000 20,000 Feet
1 inch equals 10,000 feet

N W E S

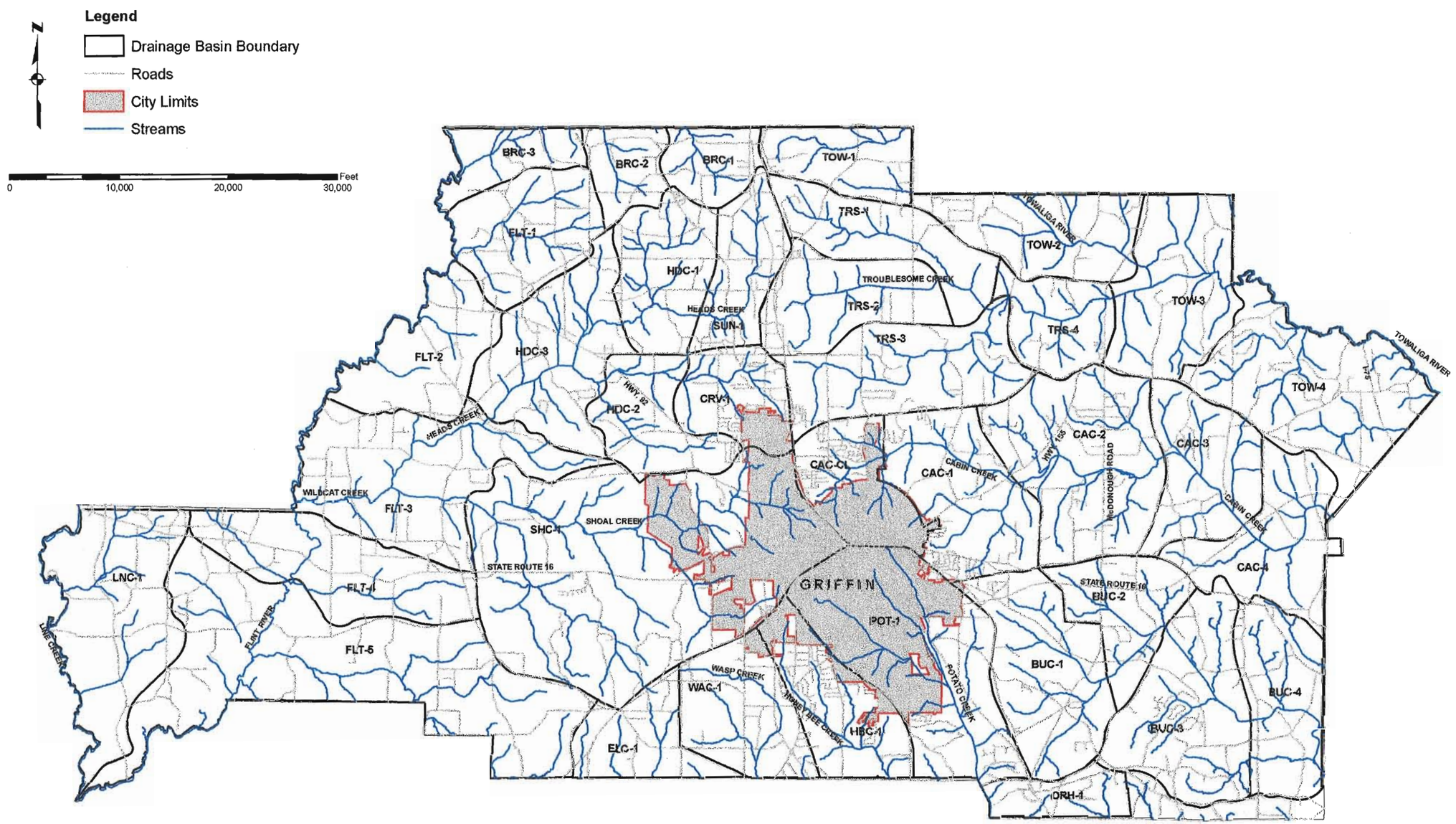


FIGURE 1-1:
DRAINAGE BASIN MAP

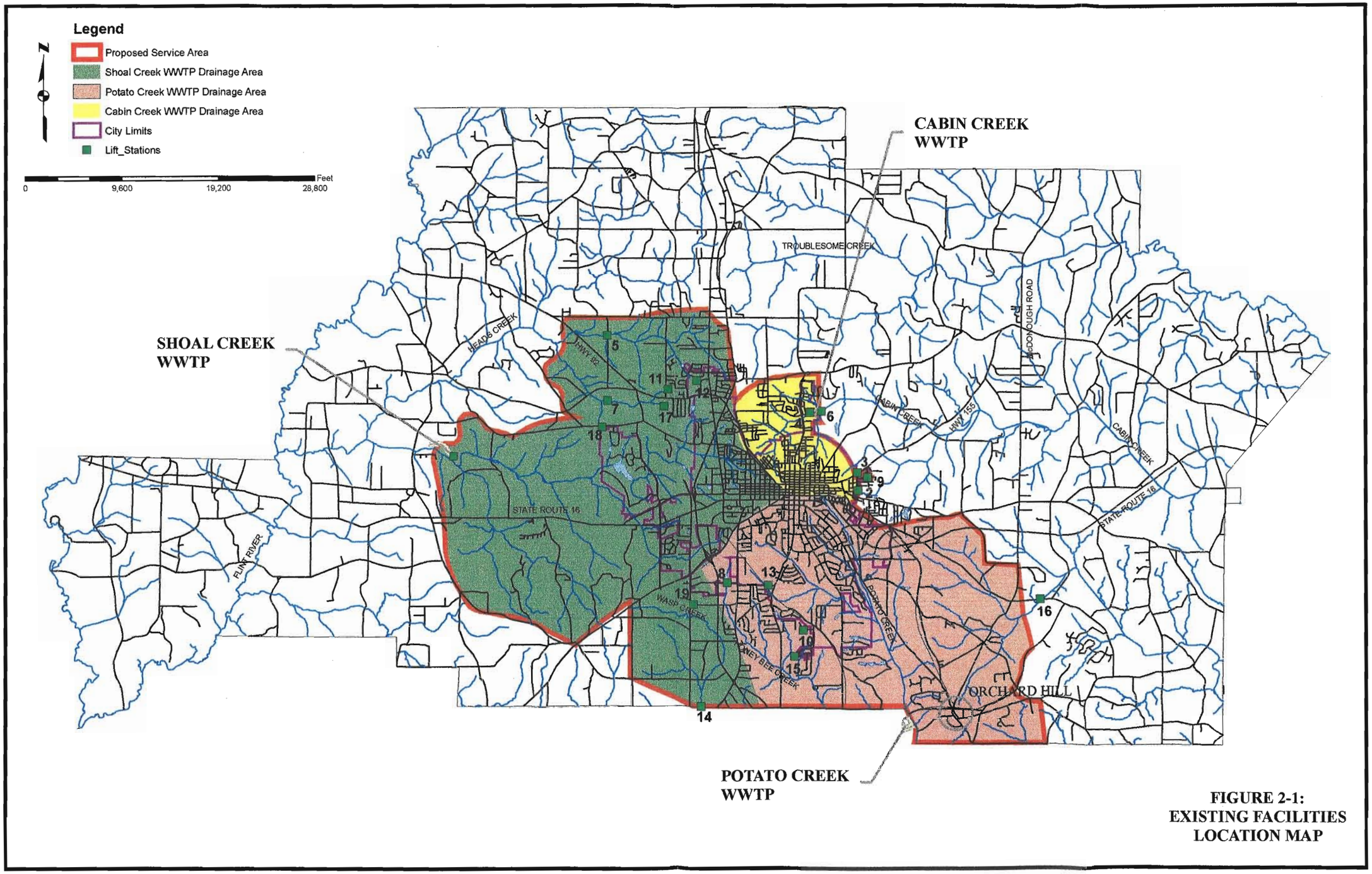


FIGURE 2-1: EXISTING FACILITIES LOCATION MAP

Figure 2-2: Shoal Creek WWTP Flow Schematic

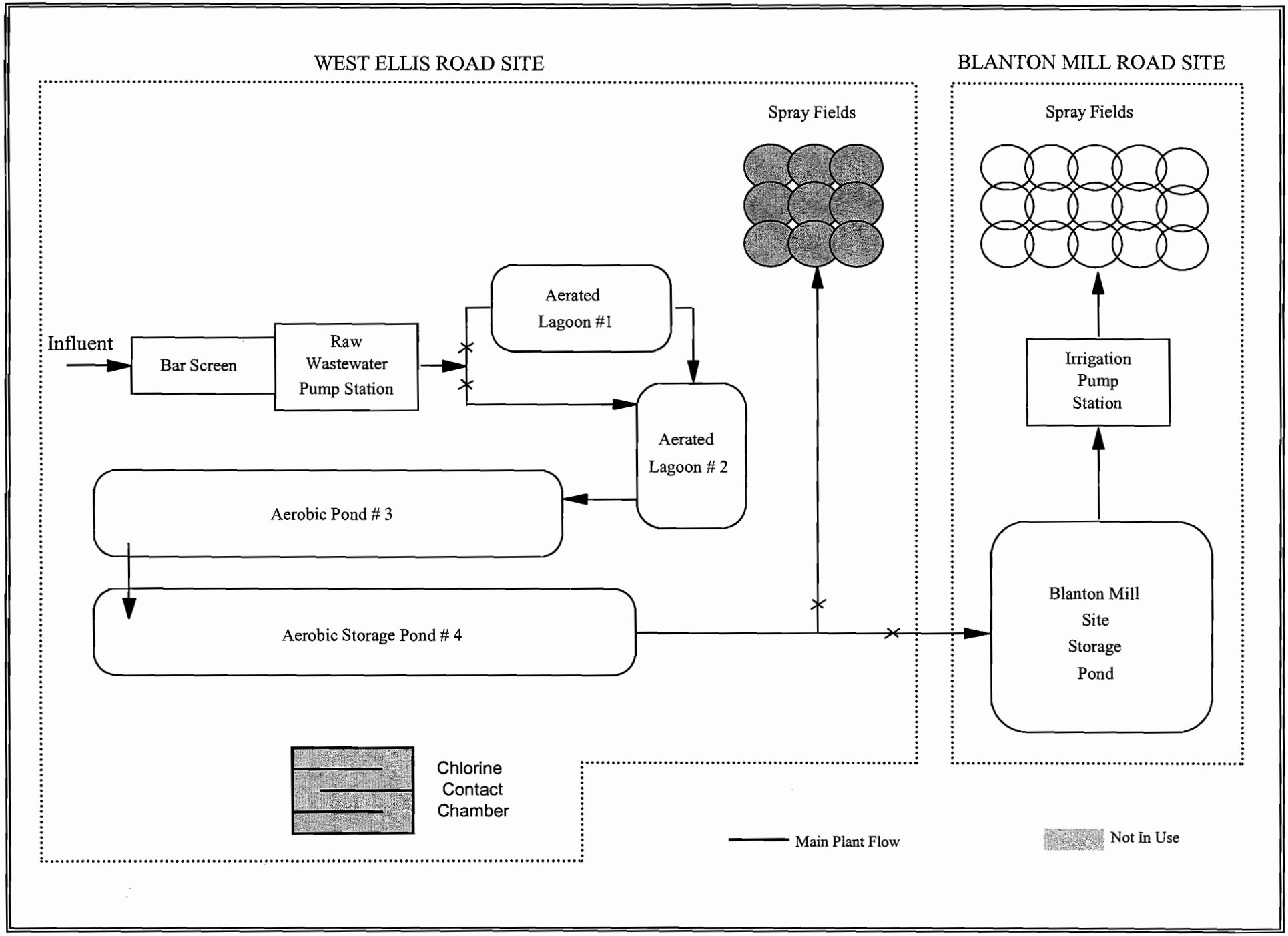


Figure 2-3
Shoal Creek WWTP
Monthly Average Daily Influent Flow

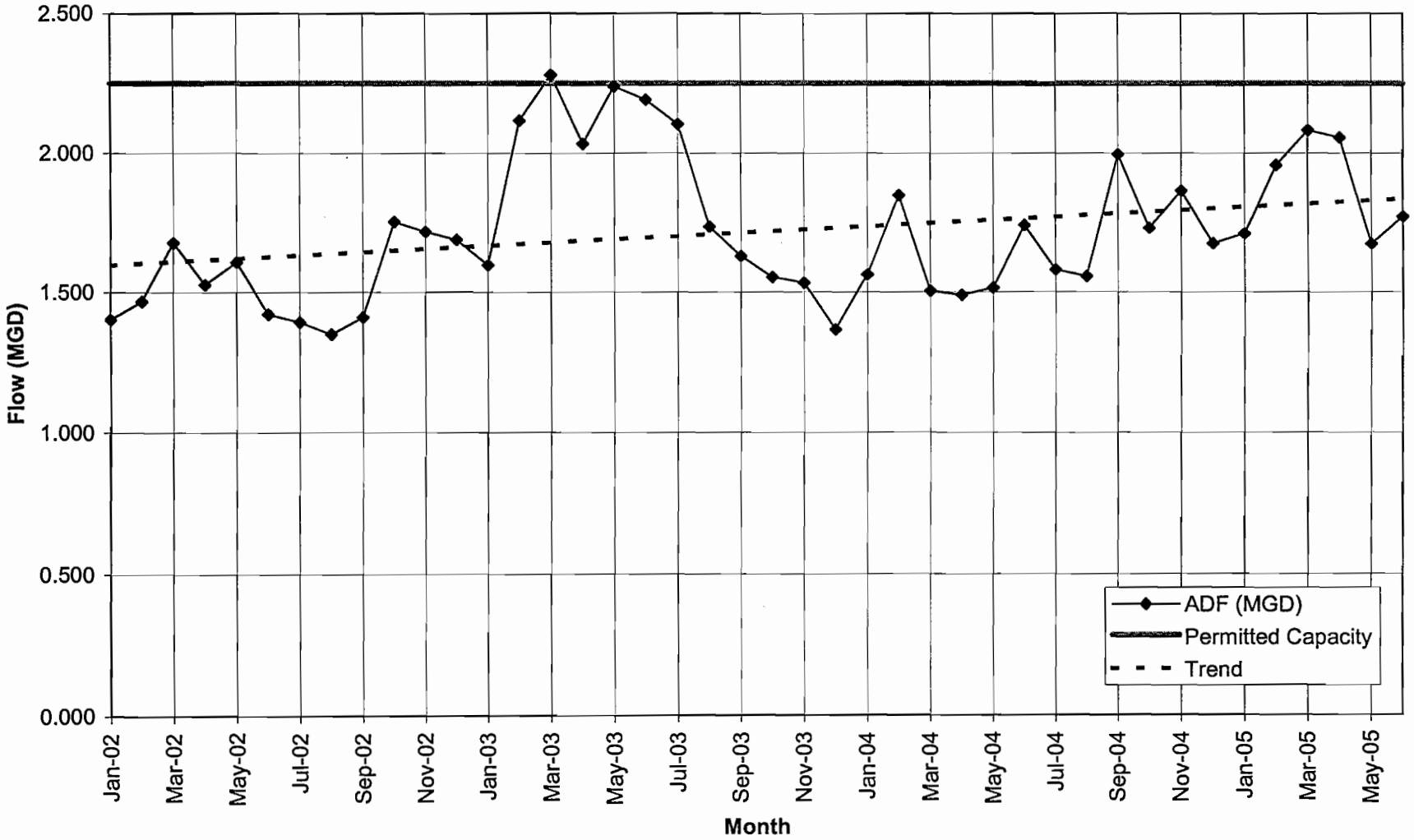


Figure 2-4
Shoal Creek WWTP
Average Effluent BOD Concentration

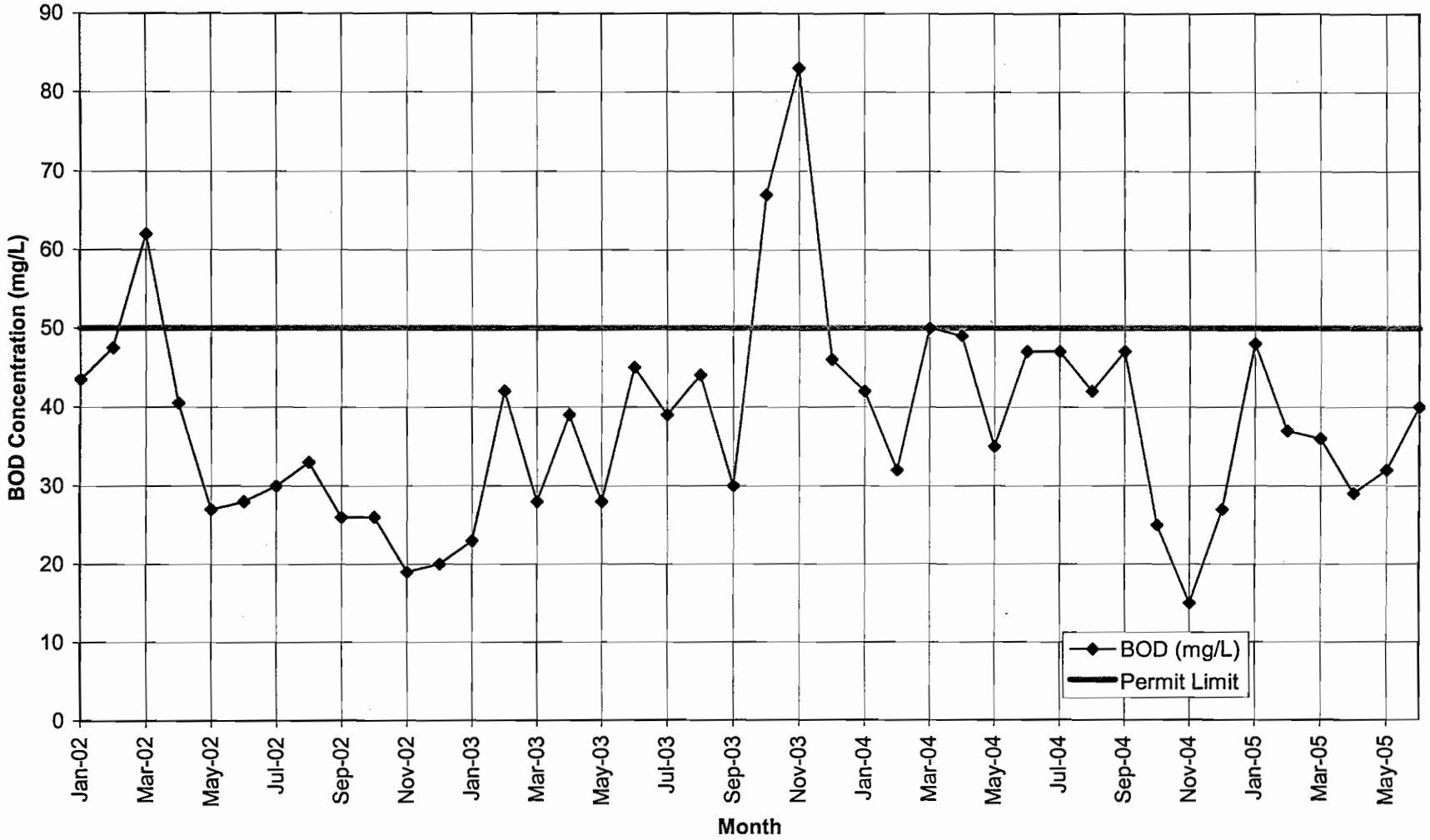


Figure 2-5
Shoal Creek WWTP
Average Effluent TSS Concentration

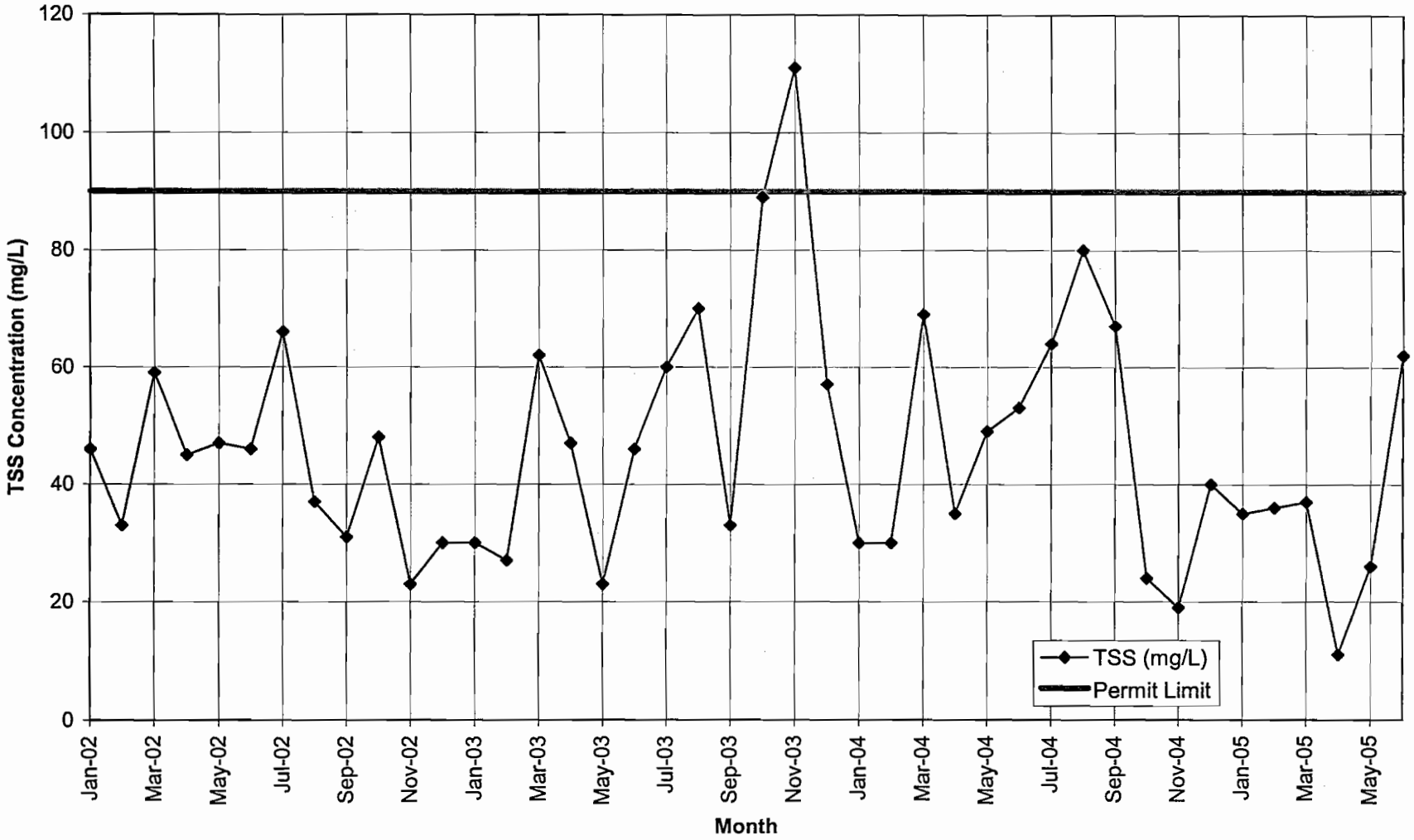


Figure 2-6
Shoal Creek WWTP
Average Influent BOD Concentration

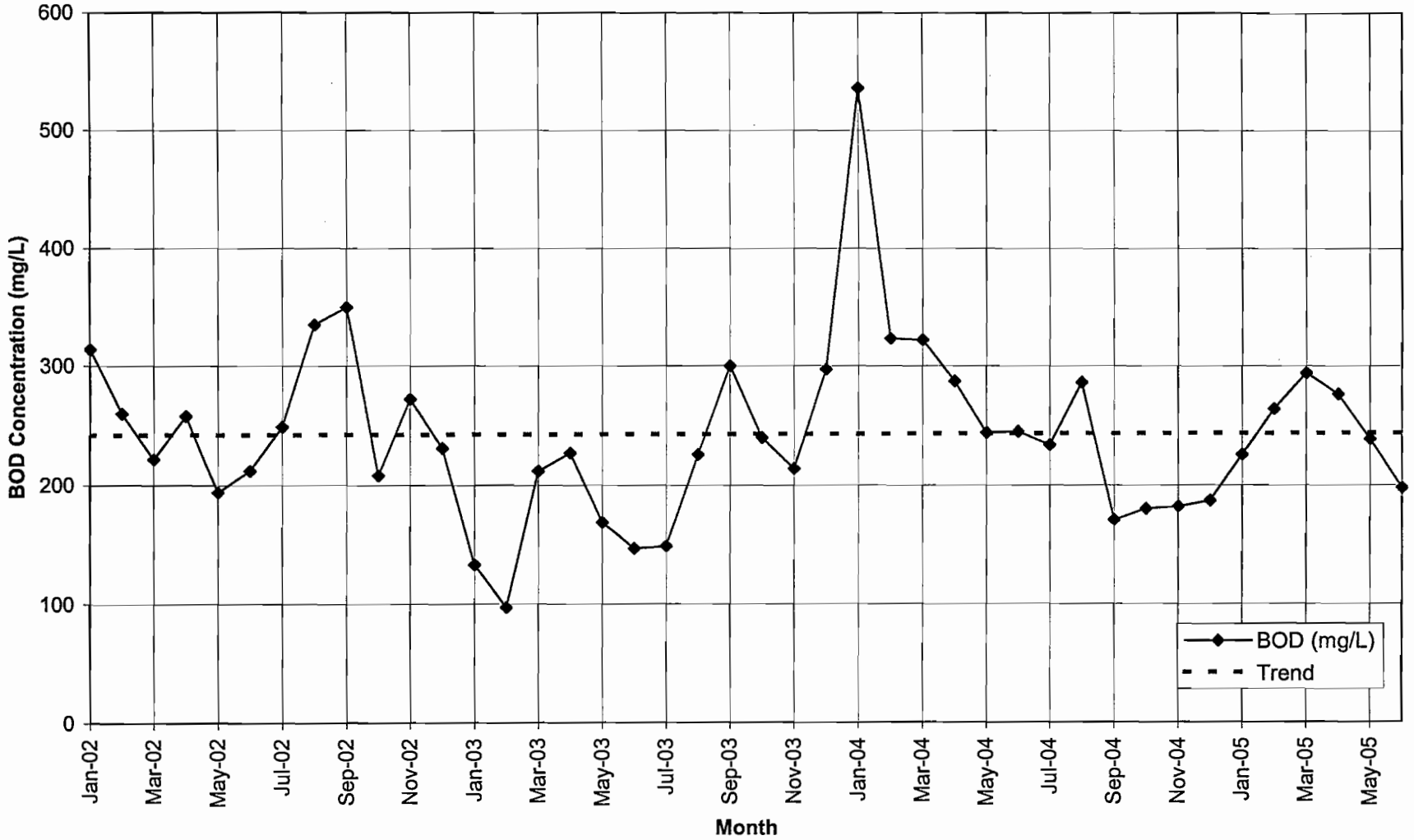


Figure 2-7
Shoal Creek WWTP
Average Influent BOD Load

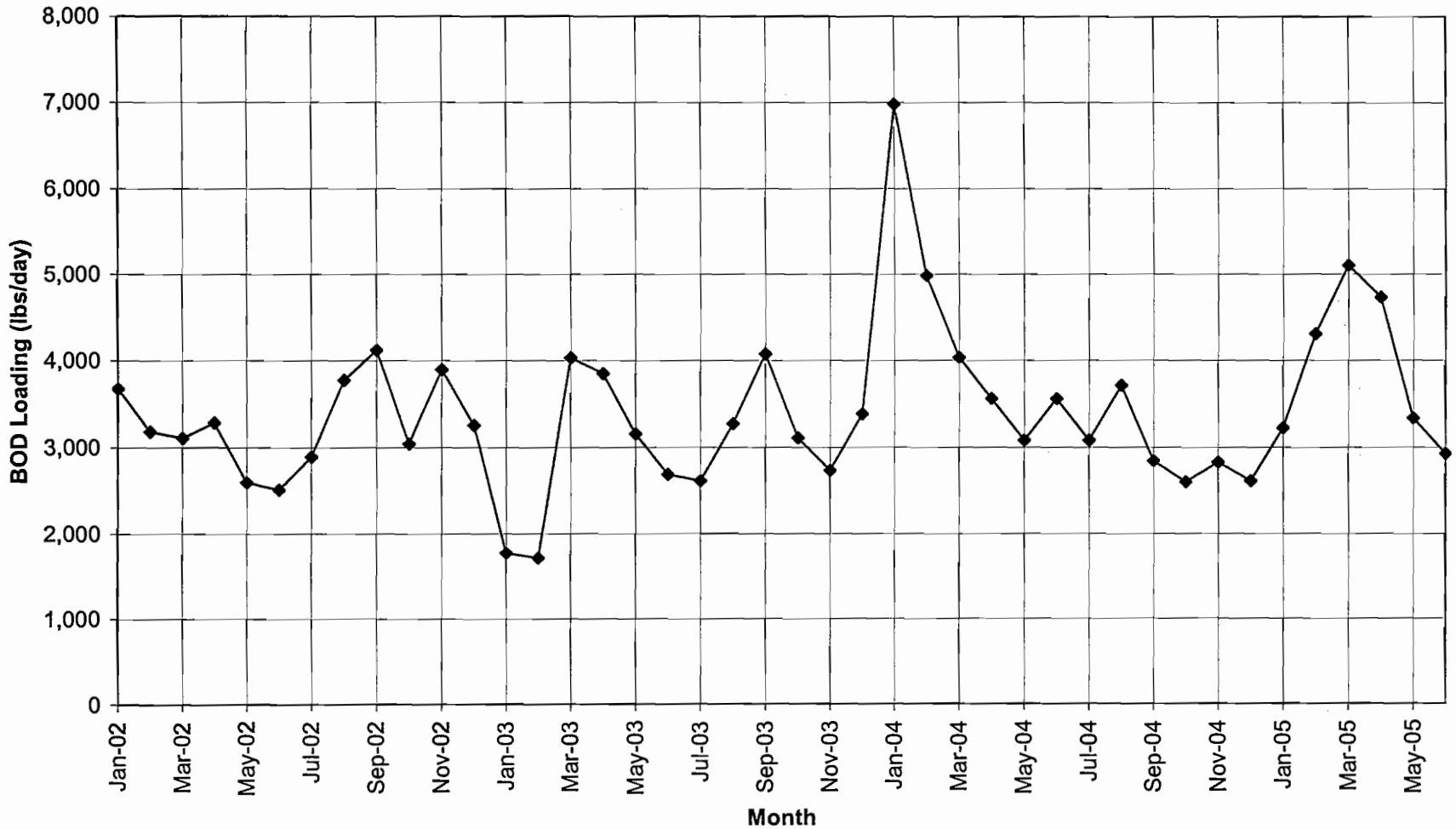


Figure 2-8: Potato Creek WWTP Flow Schematic

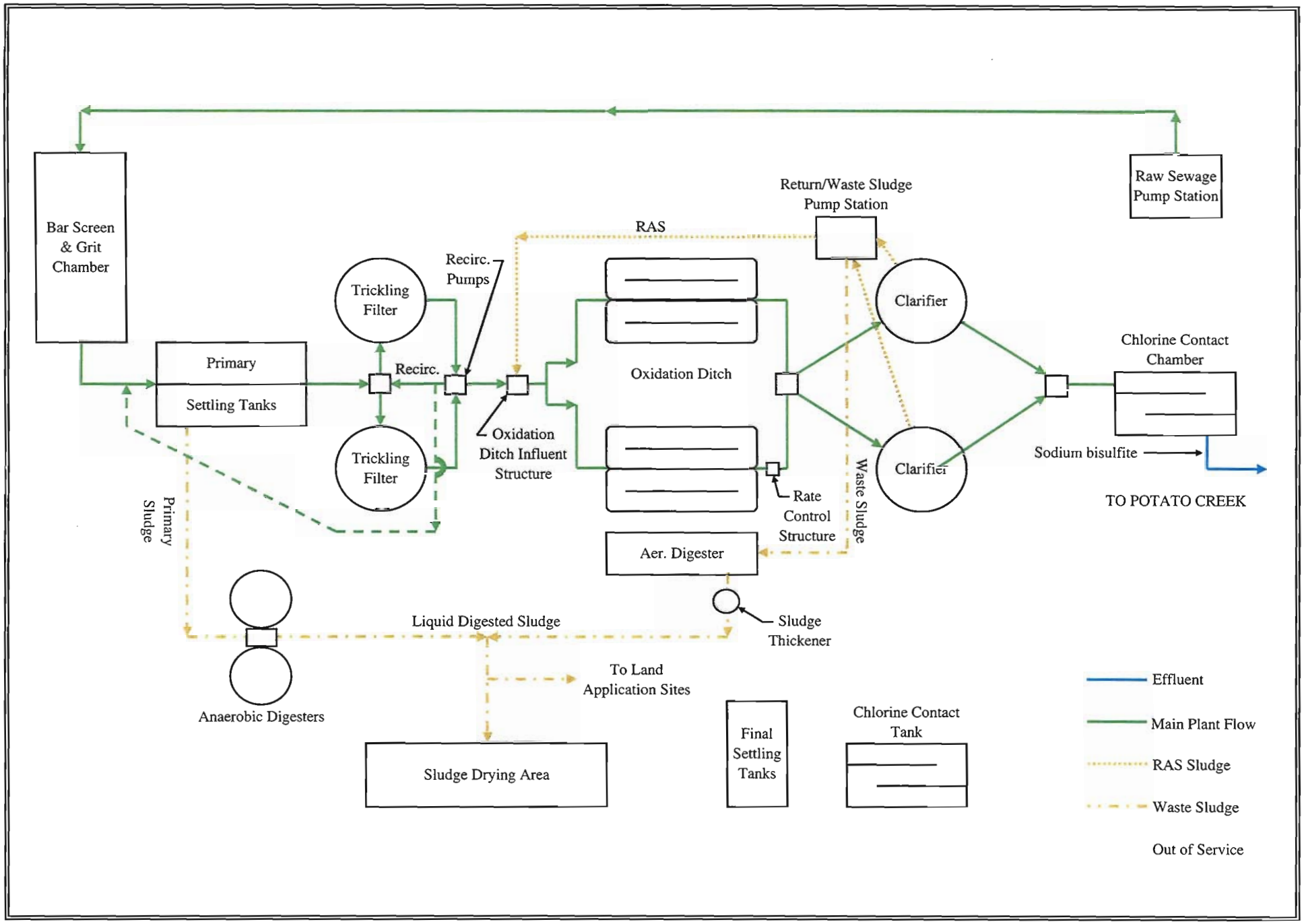


Figure 2-9
Potato Creek WWTP
Monthly Average Daily Influent Flow

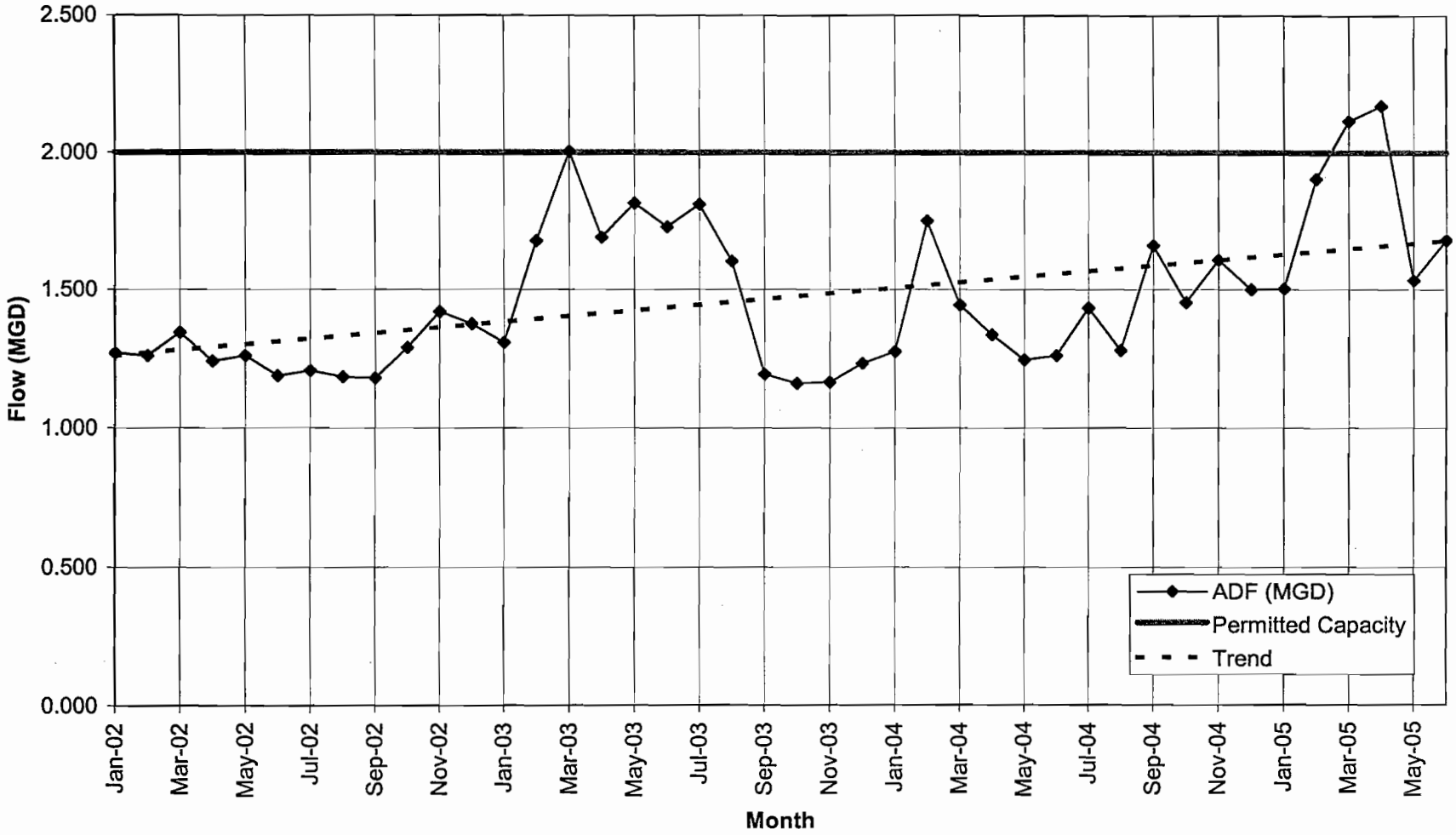


Figure 2-10
Potato Creek WWTP
Average Effluent BOD Concentration

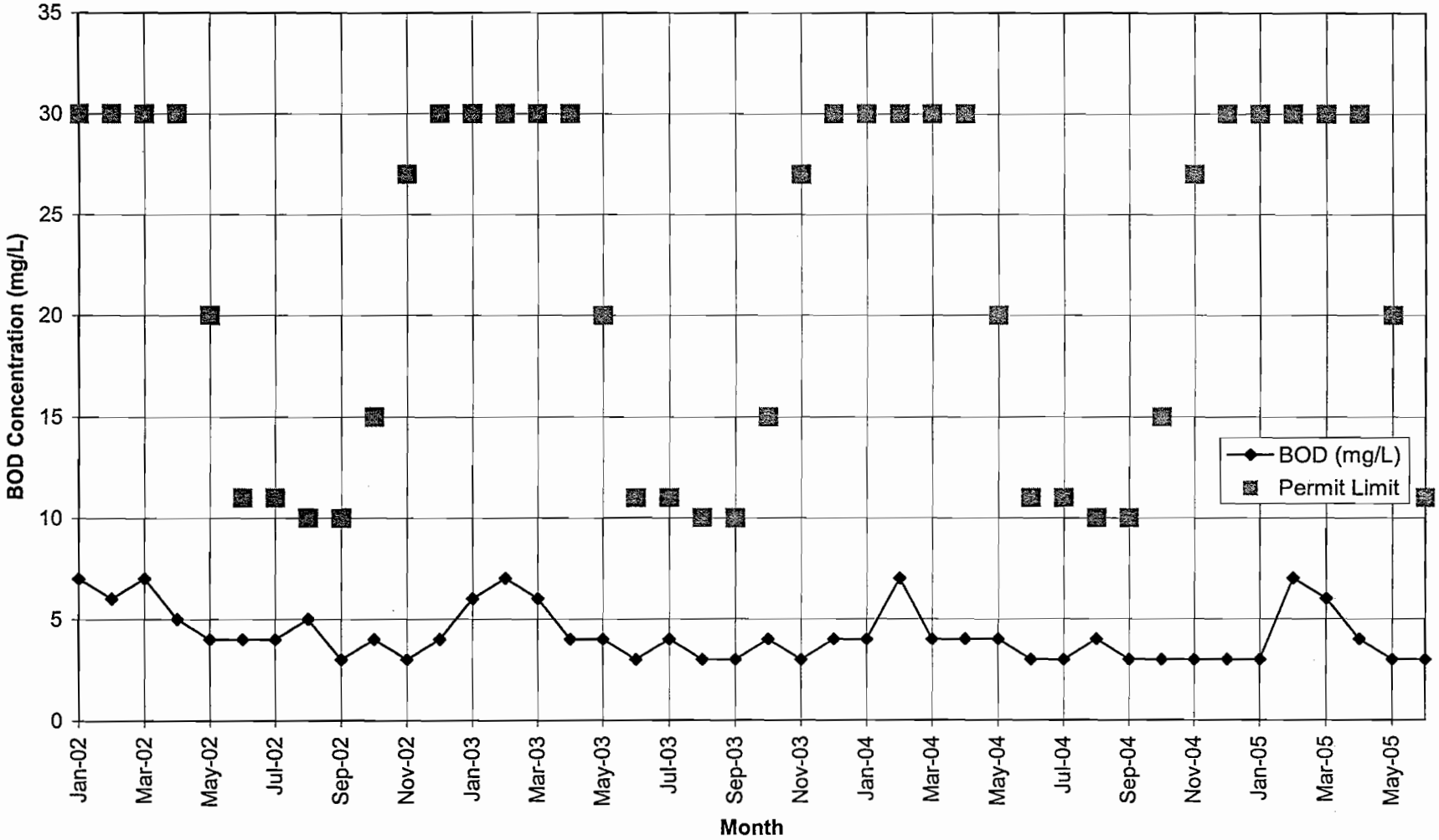


Figure 2-11
Potato Creek WWTP
Average Effluent TSS Concentration

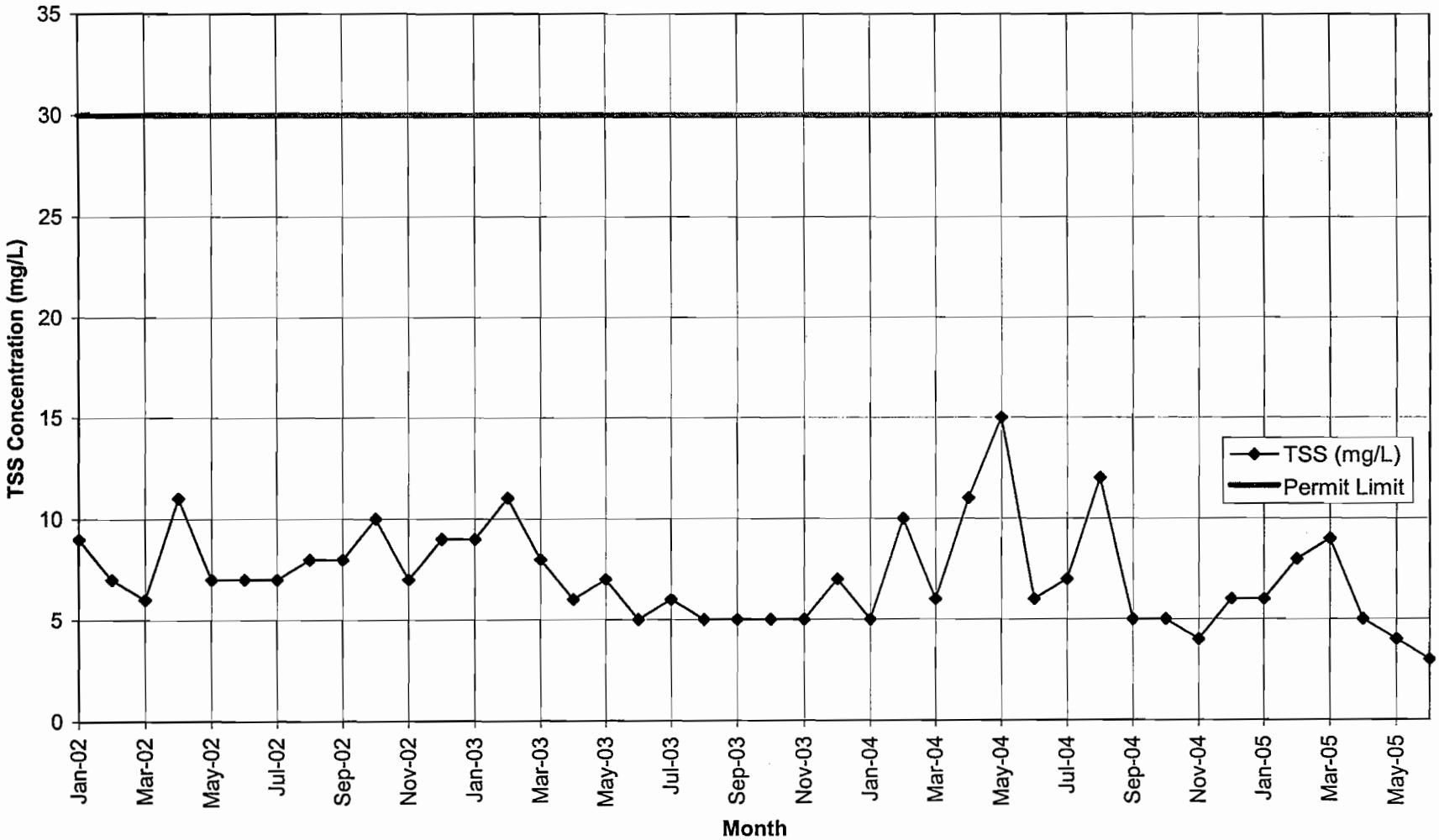


Figure 2-12
Potato Creek WWTP
Average Effluent NH_4-N Concentration

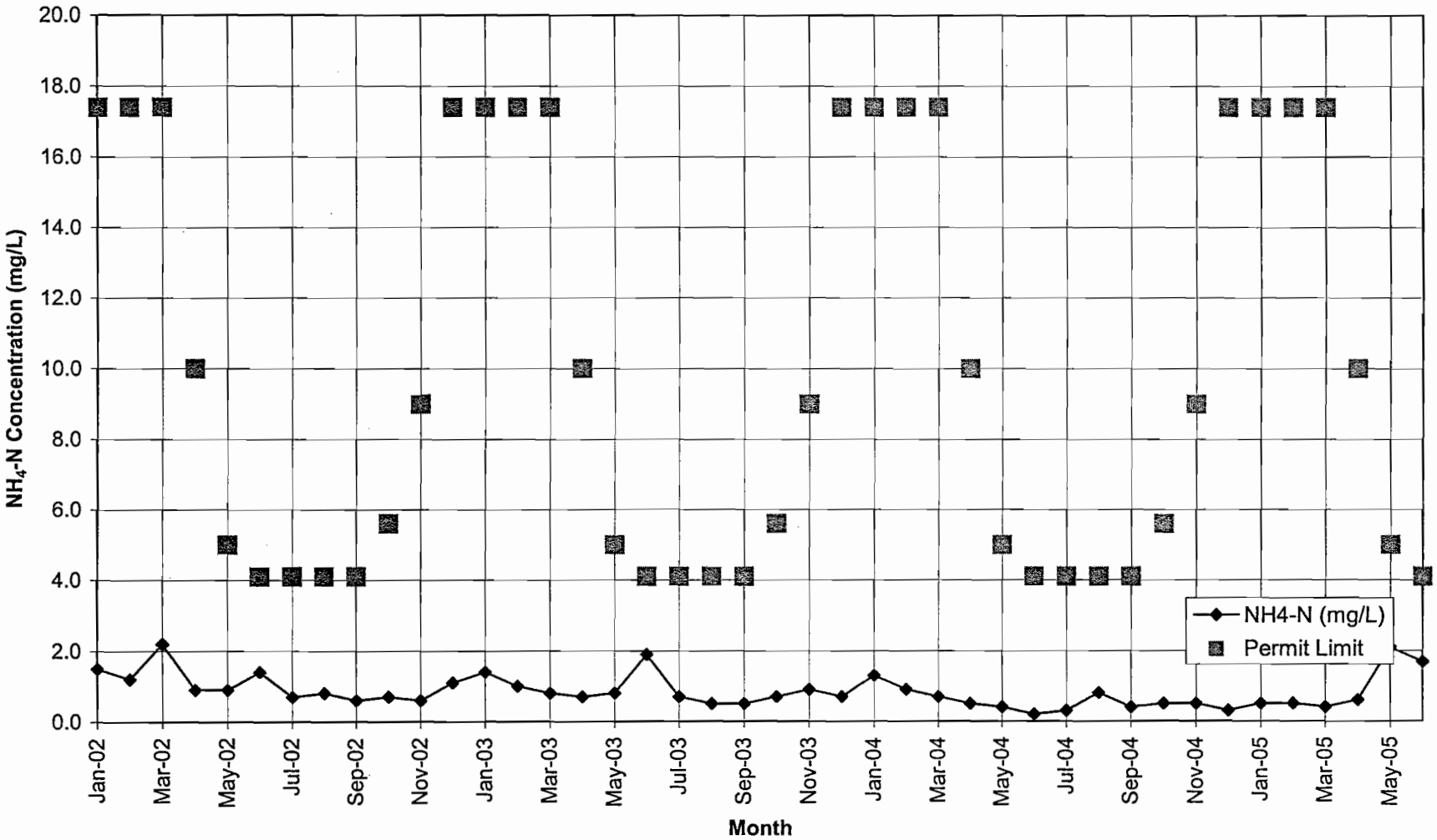


Figure 2-13
Potato Creek WWTP
Average Influent BOD Concentration

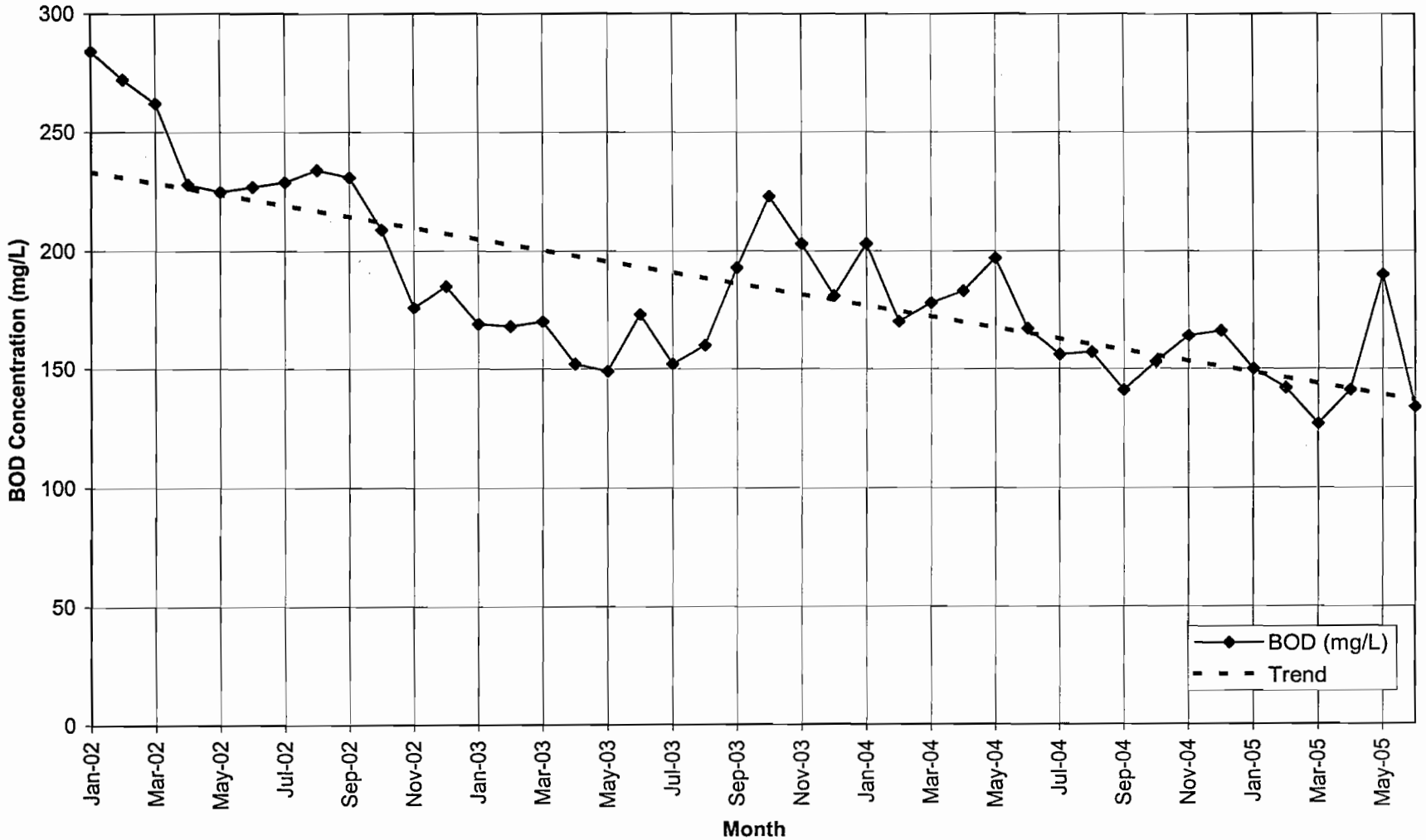


Figure 2-14
Potato Creek WWTP
Average Influent BOD Load

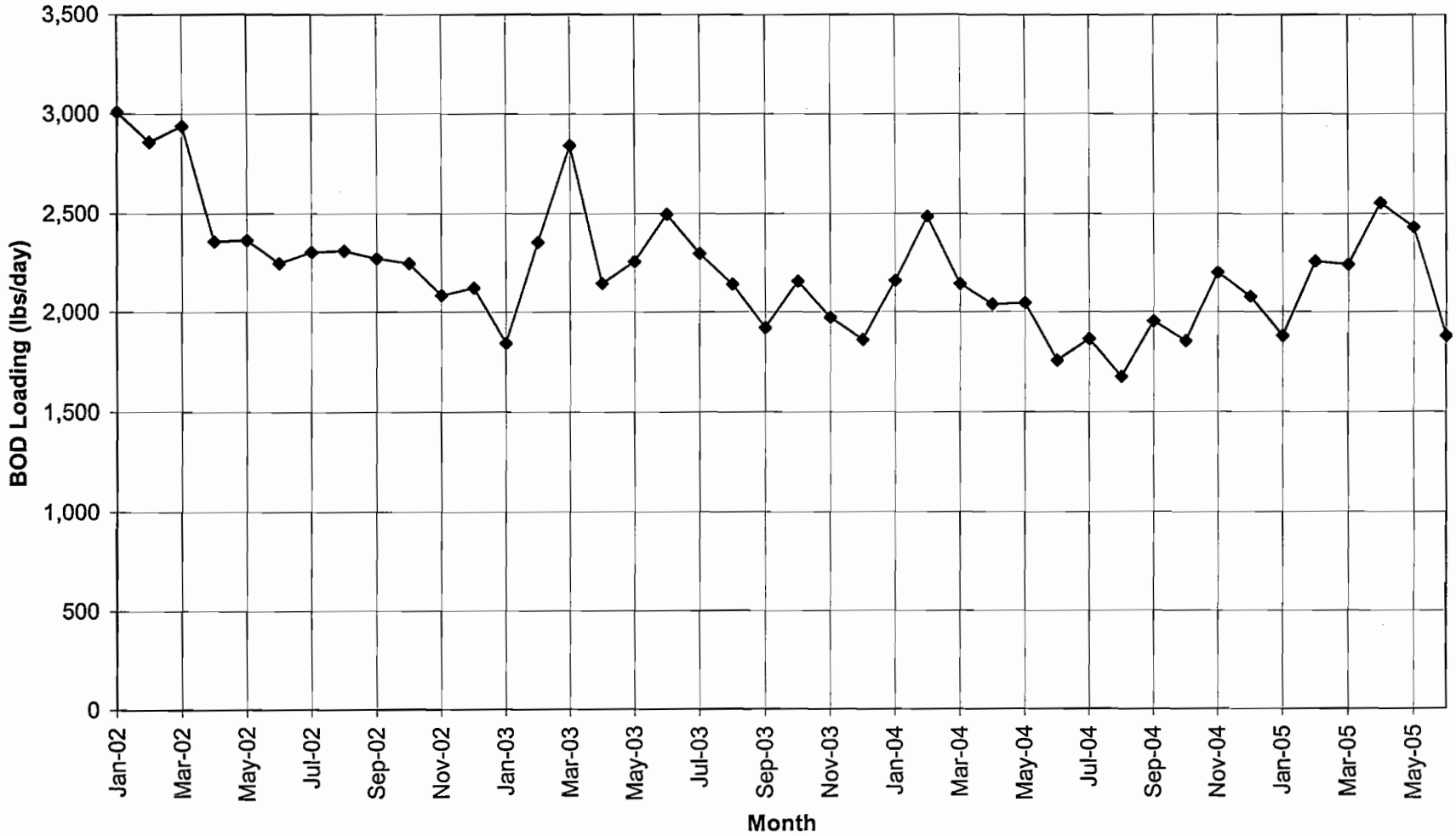


Figure 2-15: Cabin Creek WWTP Flow Schematic

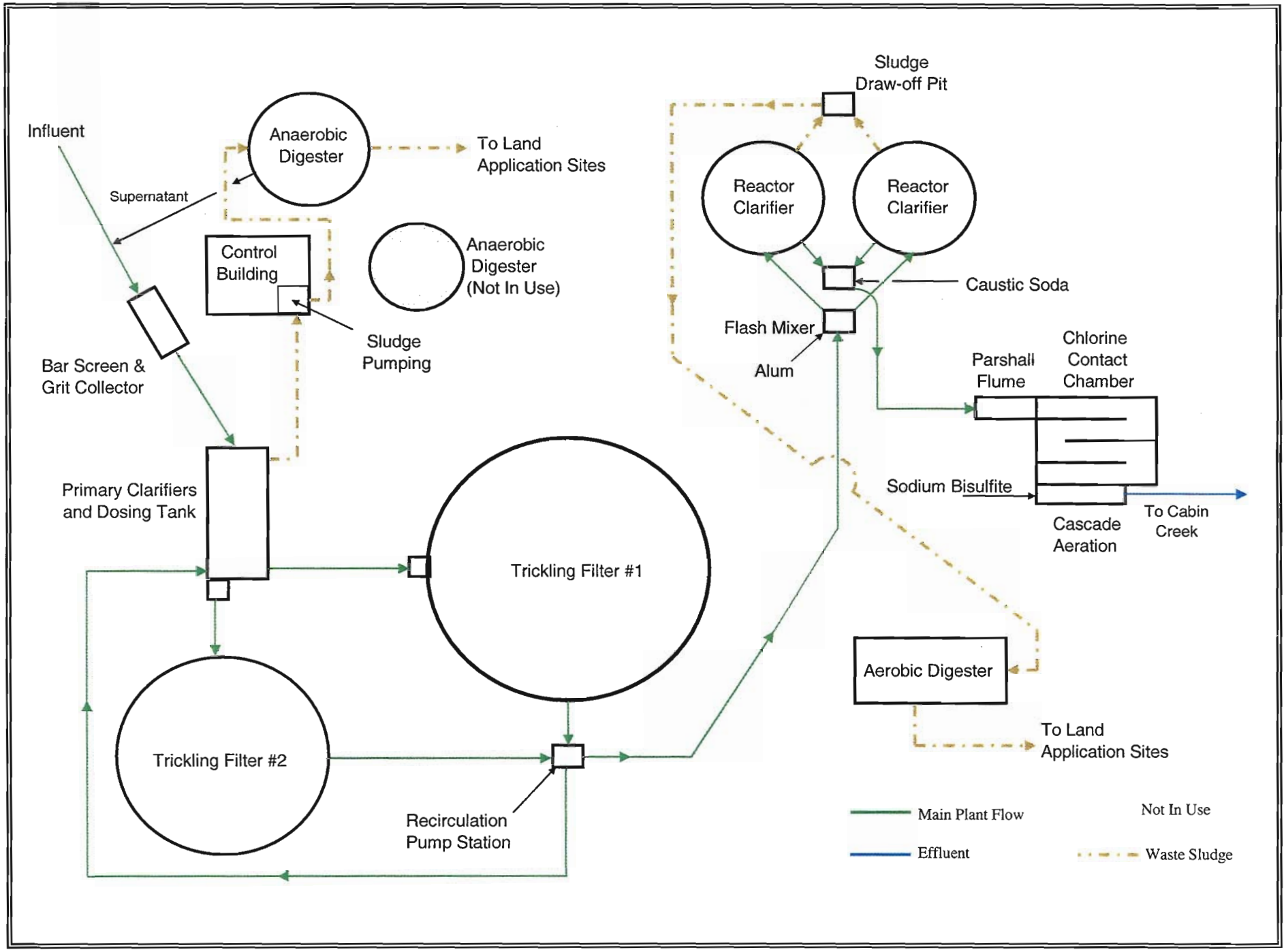


Figure 2-16
Cabin Creek WWTP
Monthly Average Daily Influent Flow

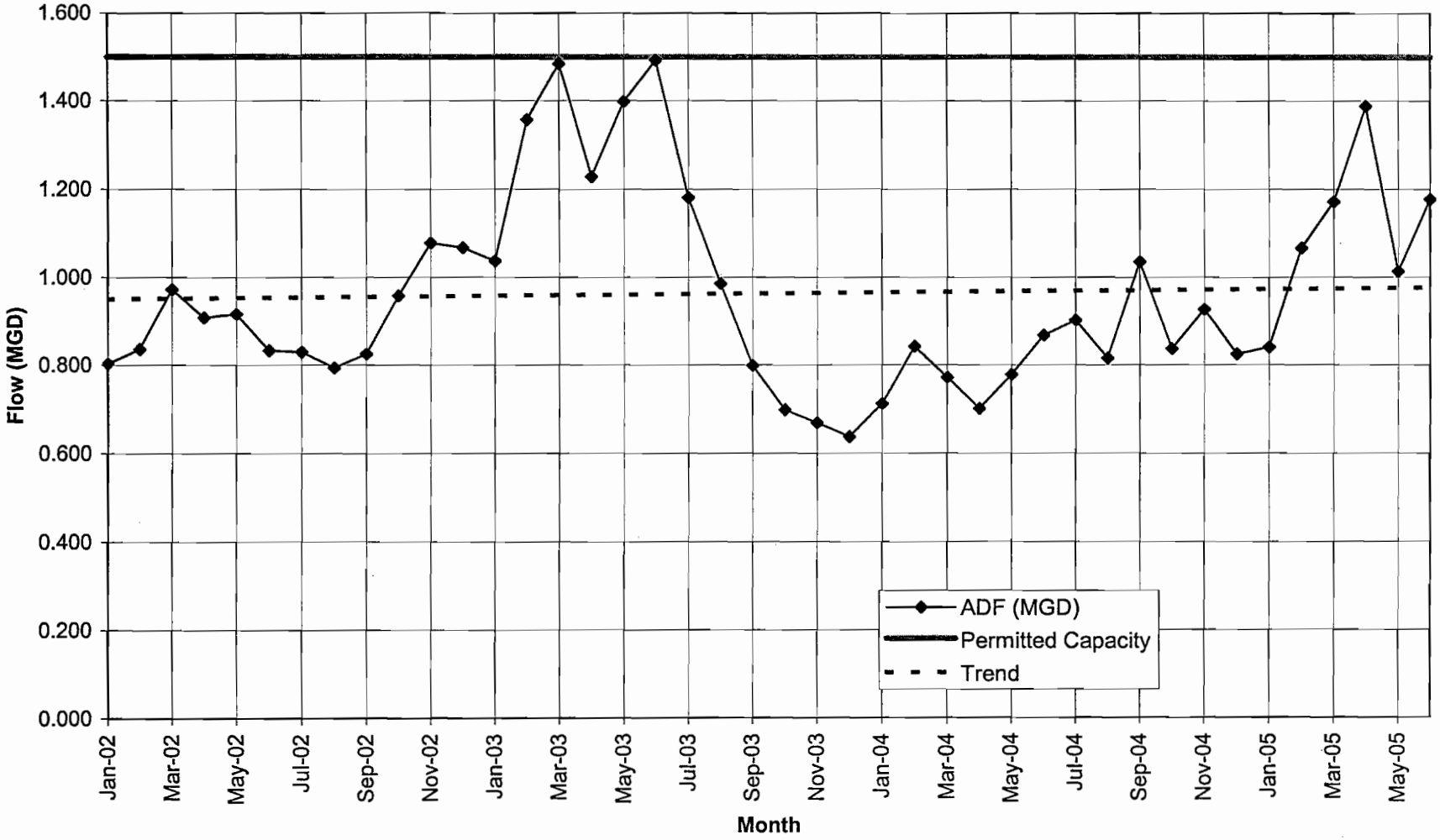


Figure 2-17
Cabin Creek WWTP
Average Effluent BOD Concentration

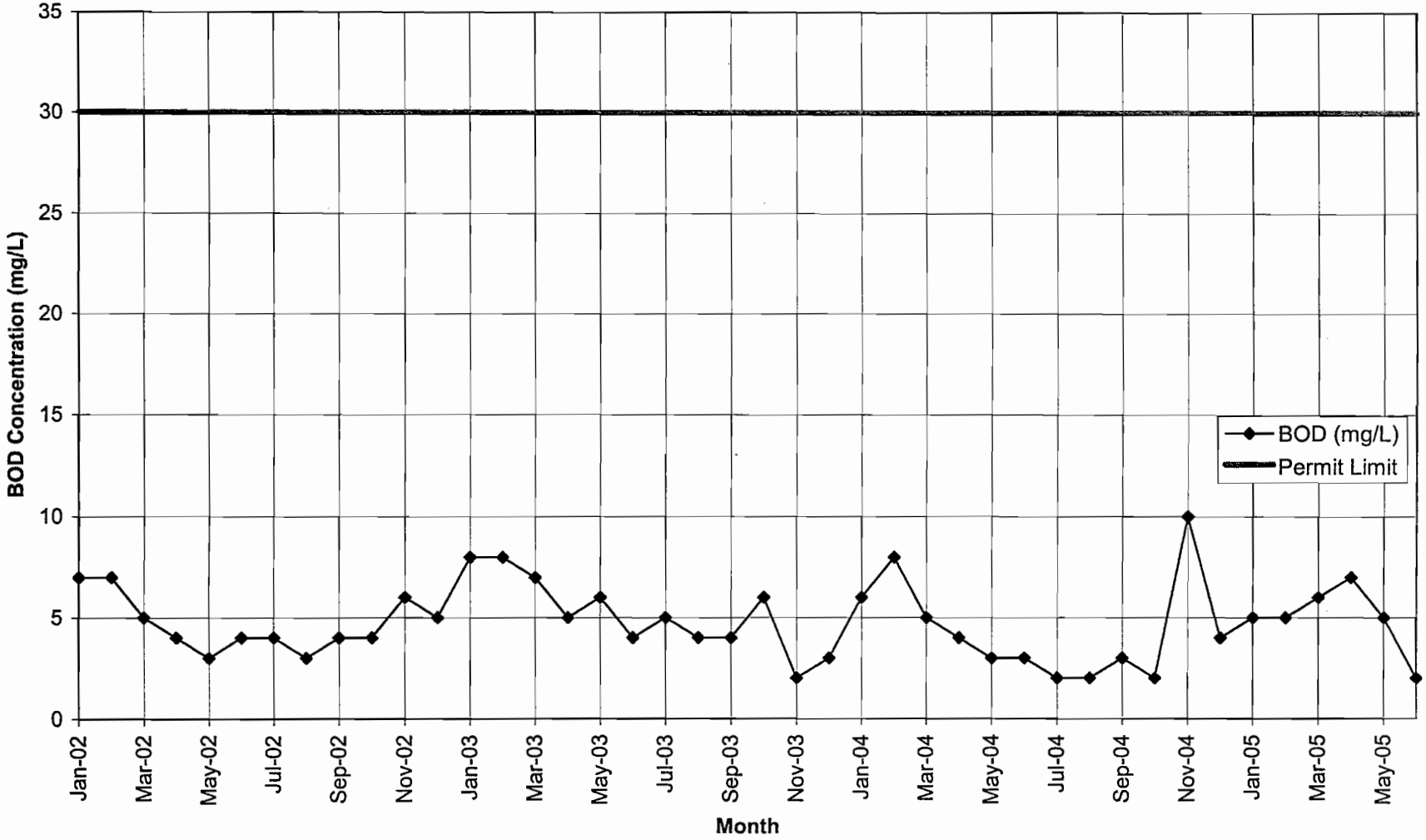


Figure 2-18
Cabin Creek WWTP
Average Effluent TSS Concentration

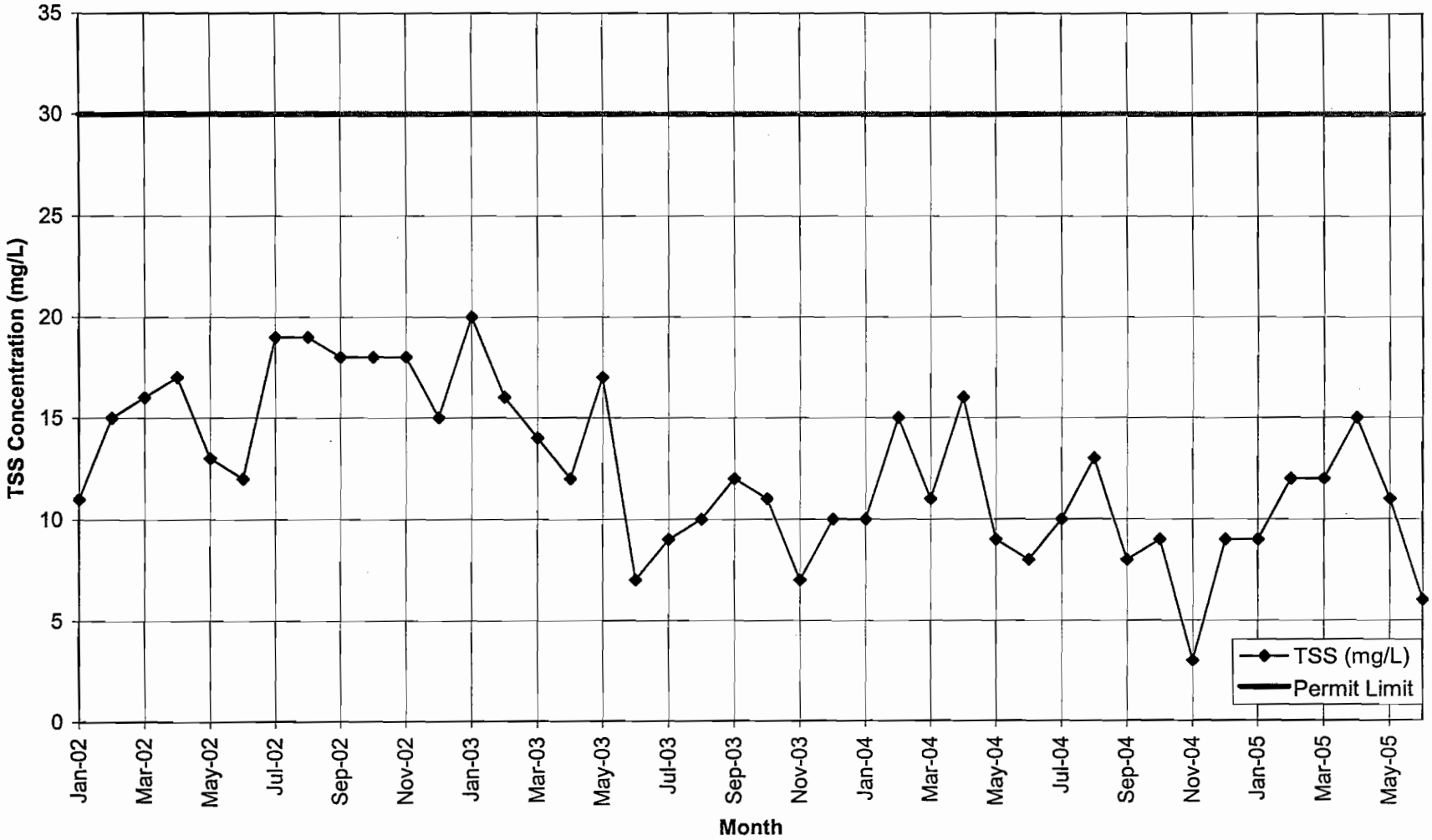


Figure 2-19
Cabin Creek WWTP
Average Effluent NH_4-N Concentration

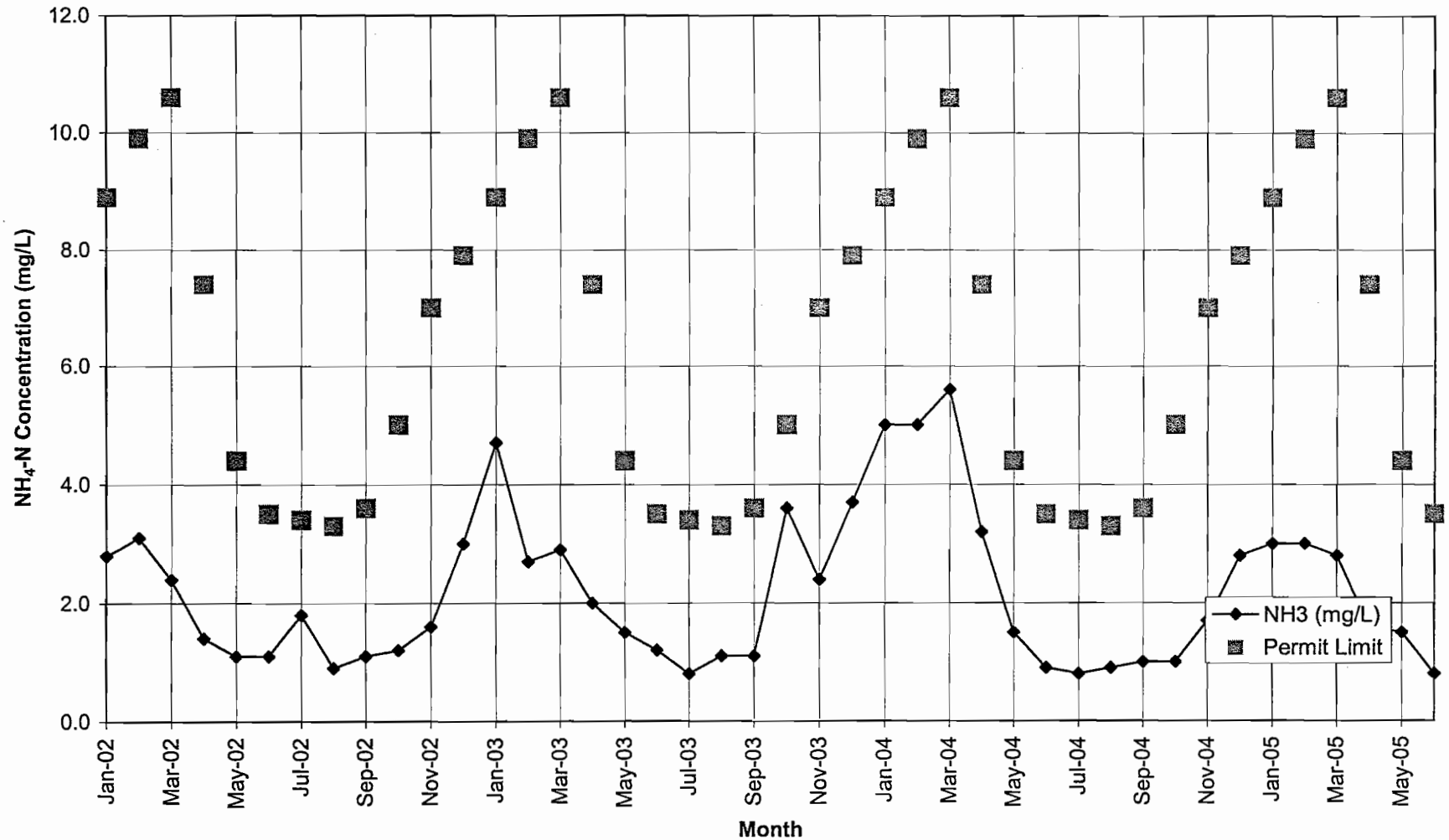


Figure 2-20
Cabin Creek WWTP
Average Effluent Phosphorus Concentration

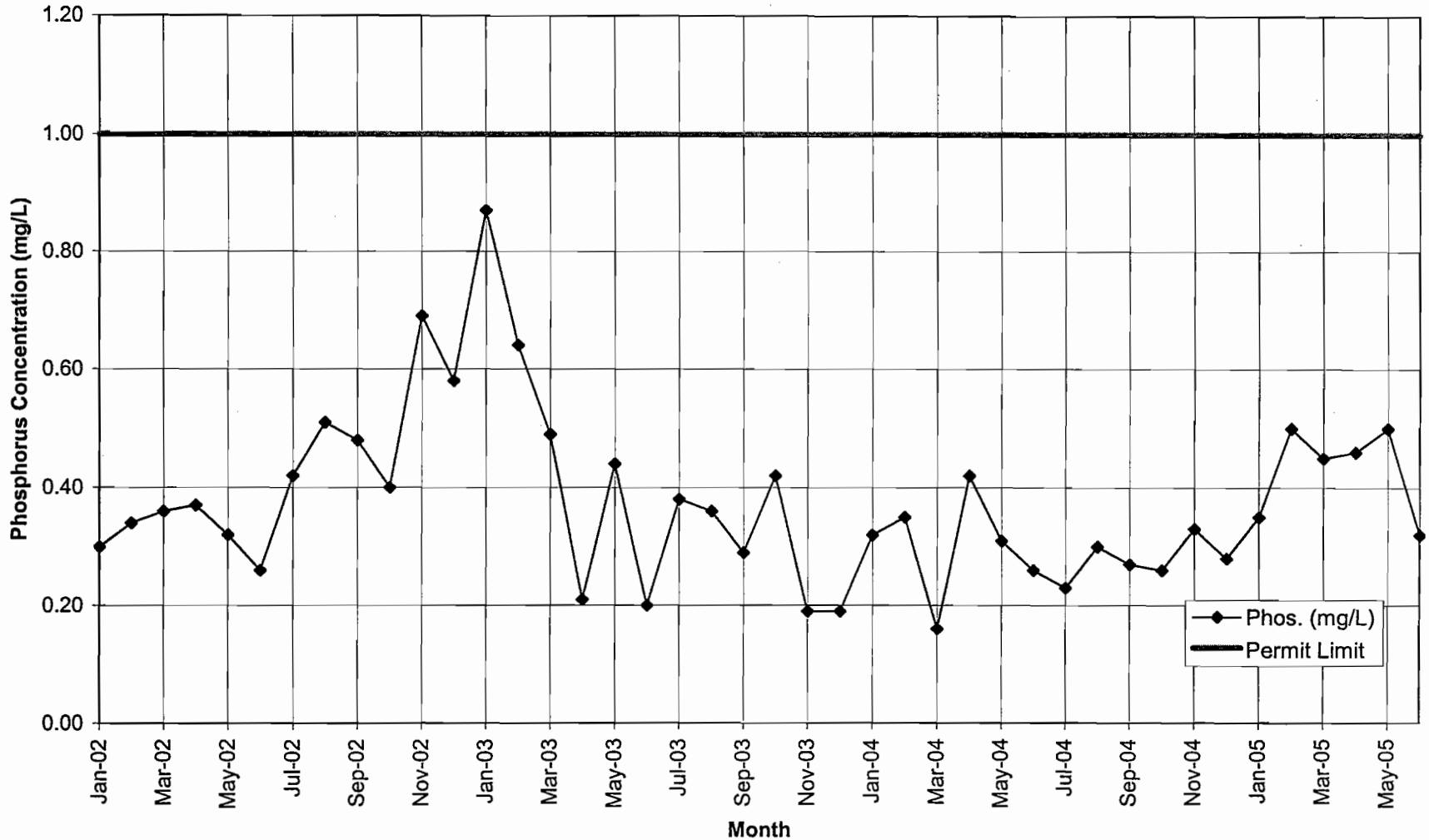


Figure 2-21
Cabin Creek WWTP
Average Influent BOD Concentration

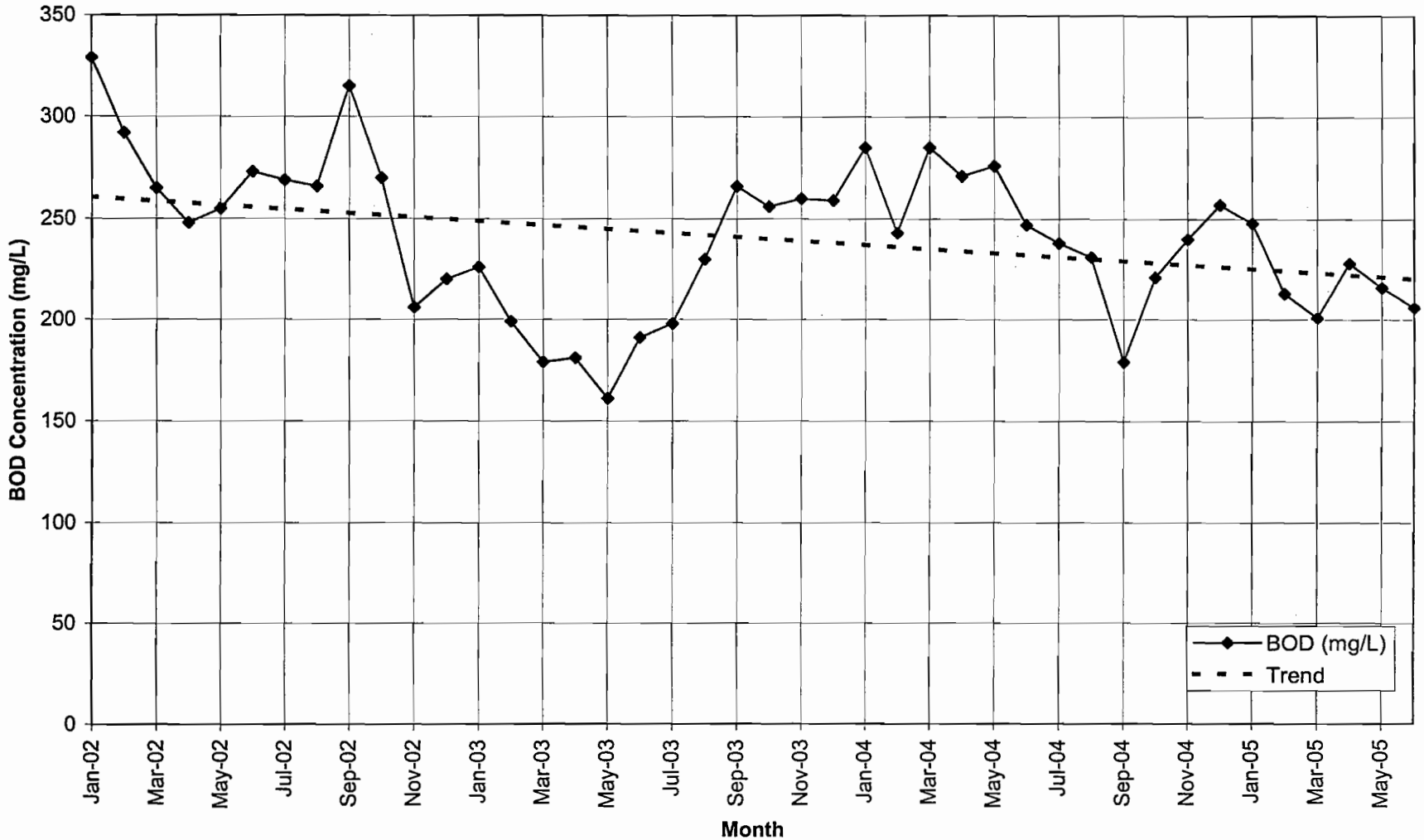
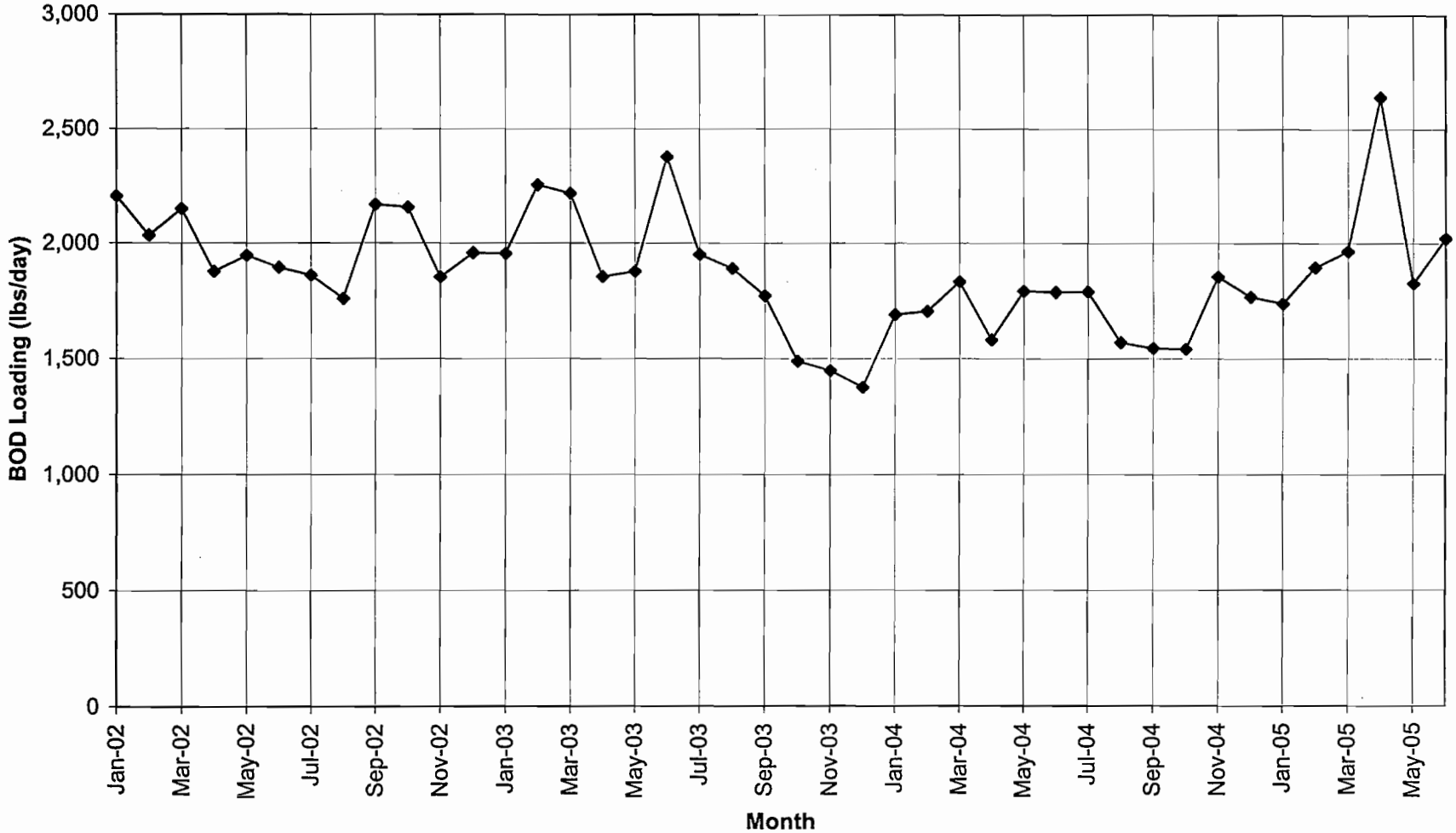


Figure 2-22
Cabin Creek WWTP
Average Influent BOD Load



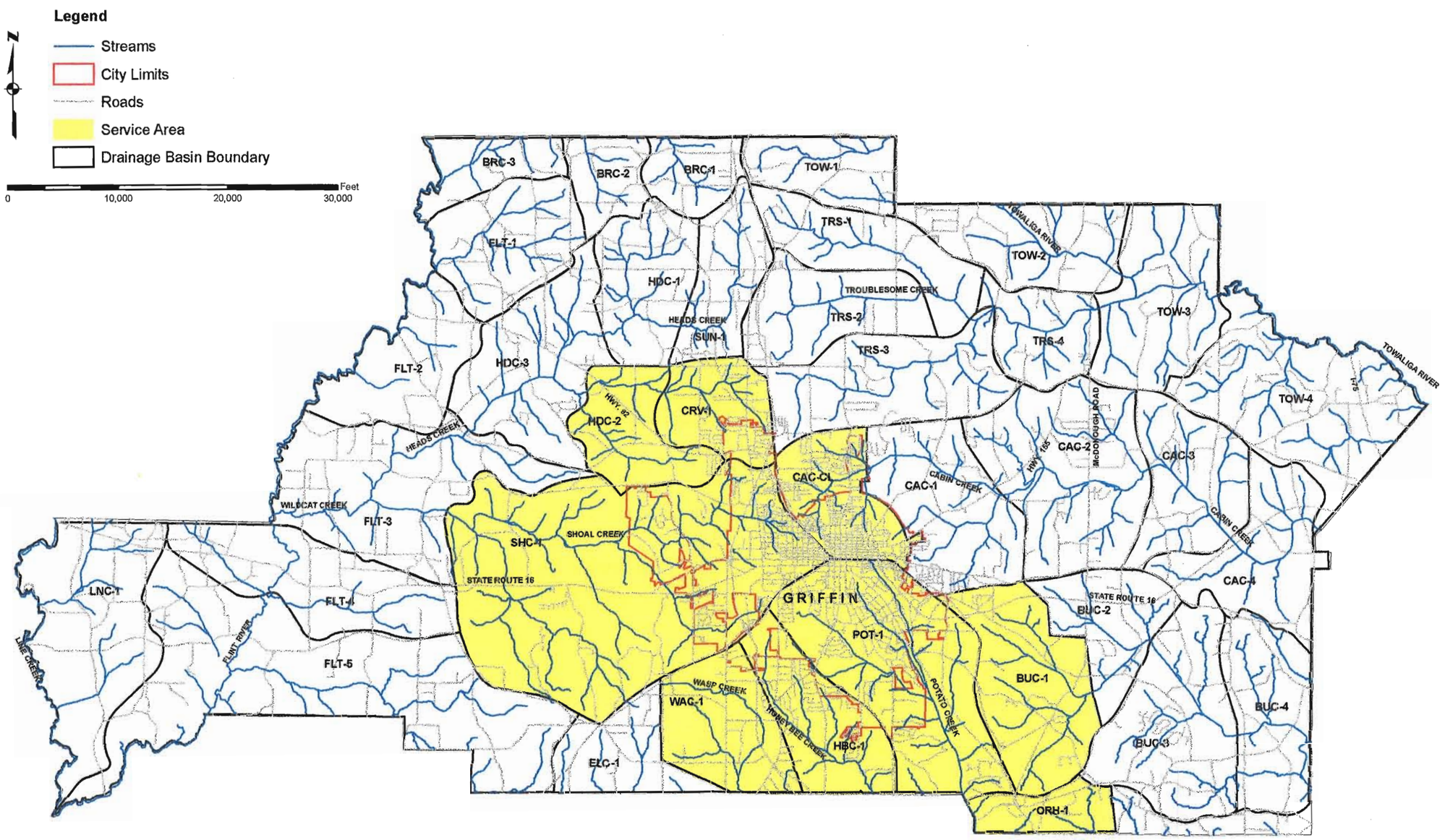


FIGURE 3-1:
SERVICE AREA MAP

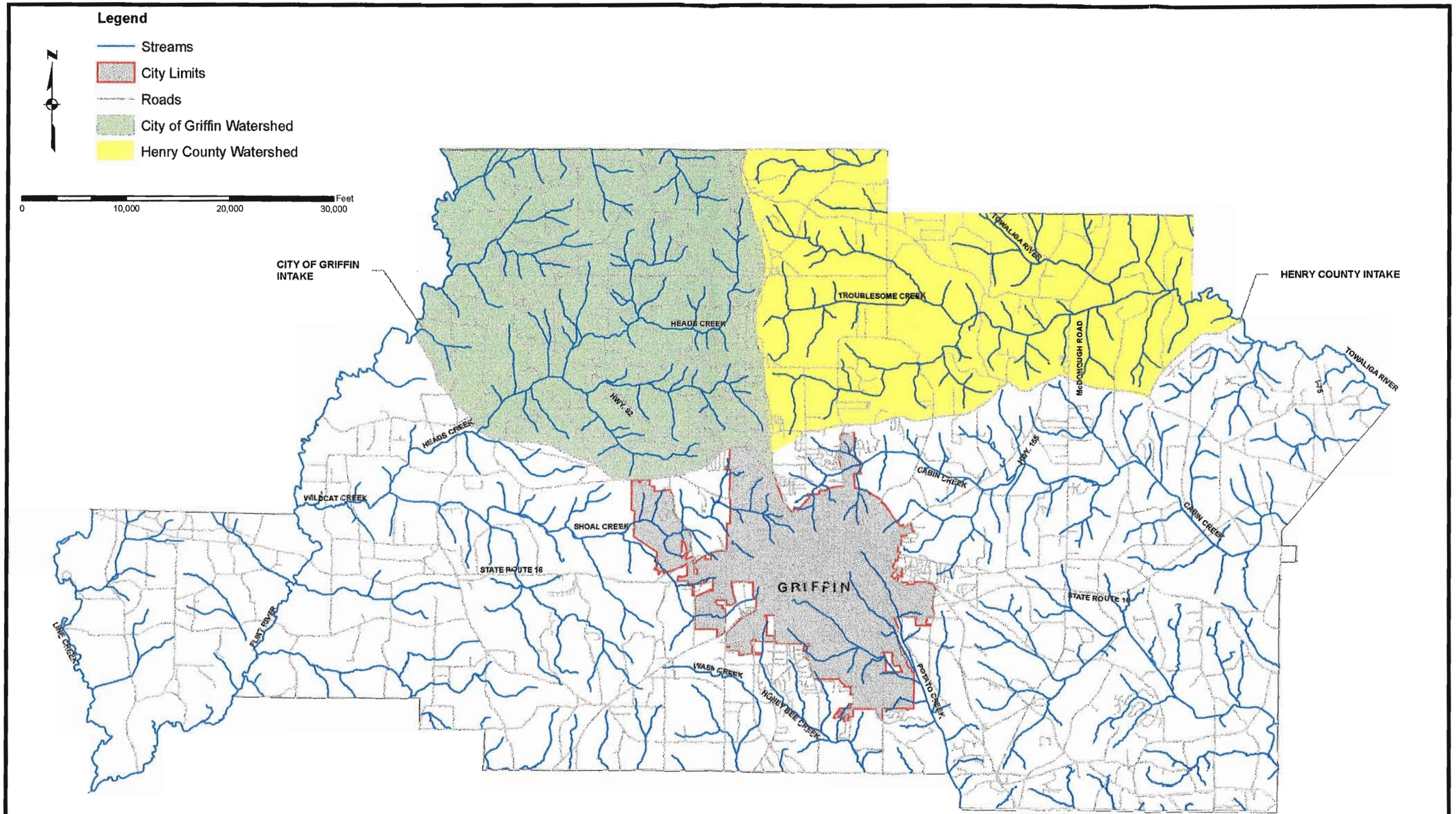


FIGURE 3-2:
PROTECTED WATER SUPPLY WATER SHEDS

Figure 3-3
Cabin Creek WWTP
Projected Future Wastewater Flows

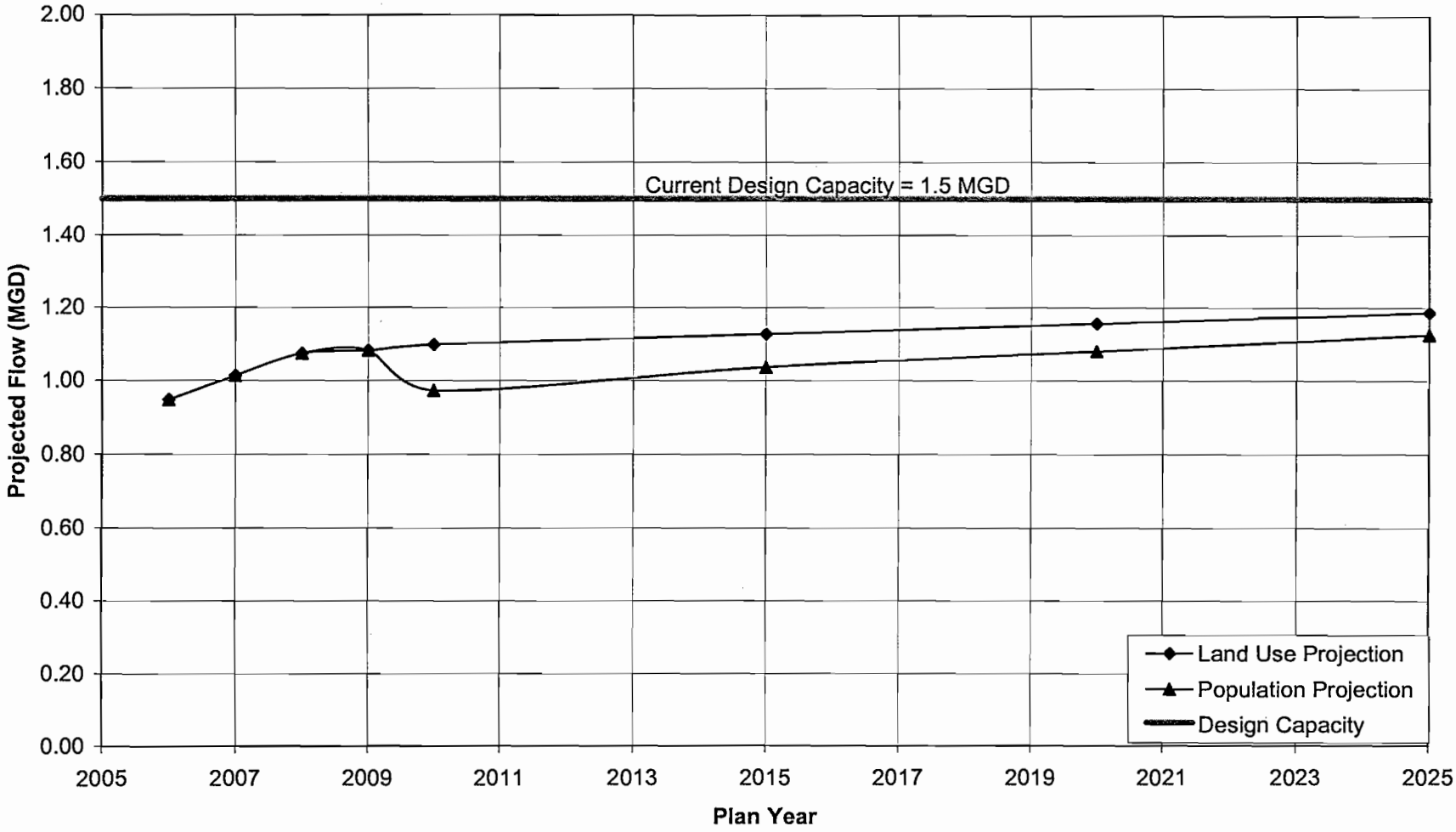


Figure 3-4
Potato Creek WWTP
Projected Future Wastewater Flows

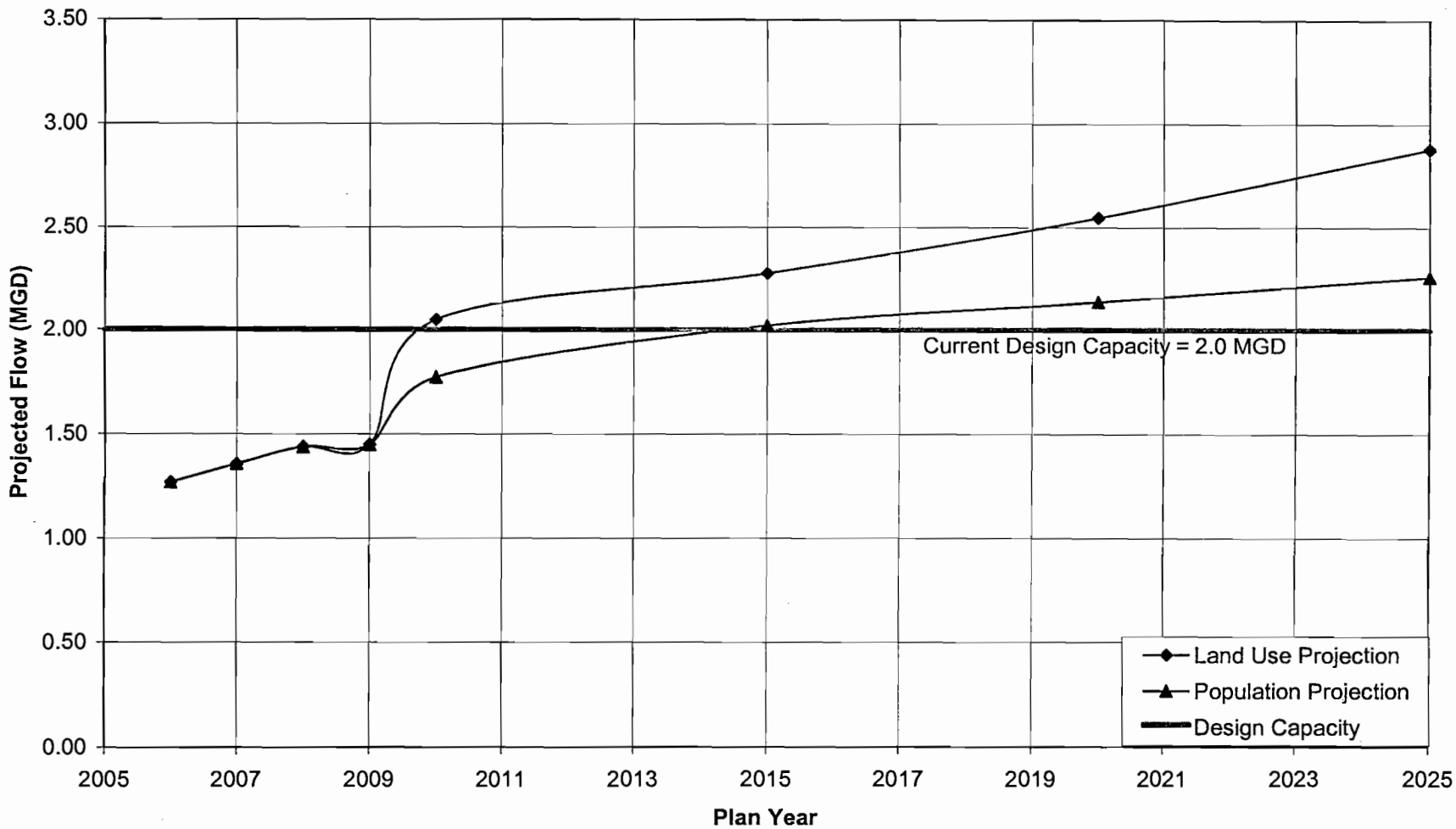


Figure 3-5
Shoal Creek WWTP
Projected Future Wastewater Flows

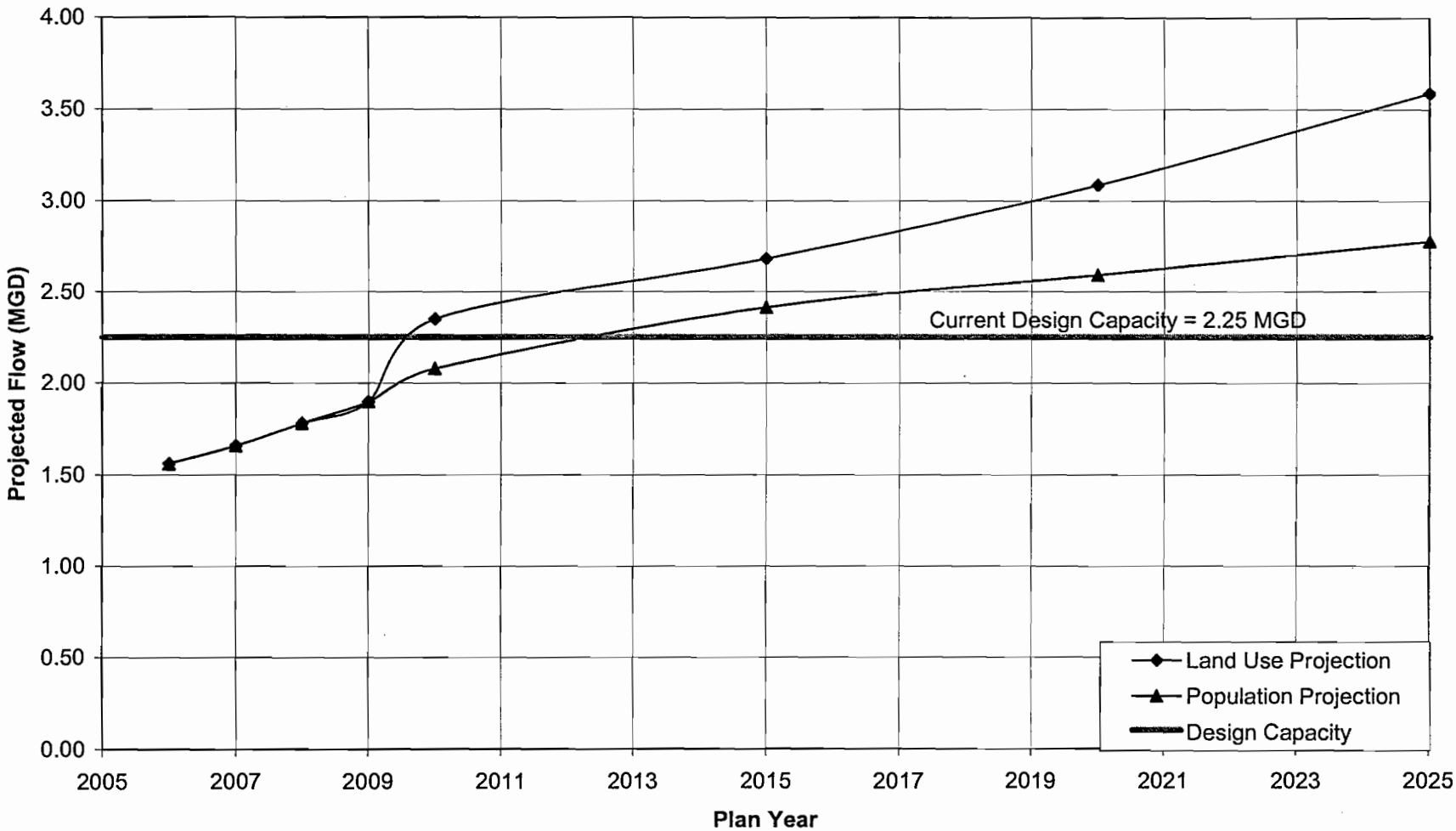


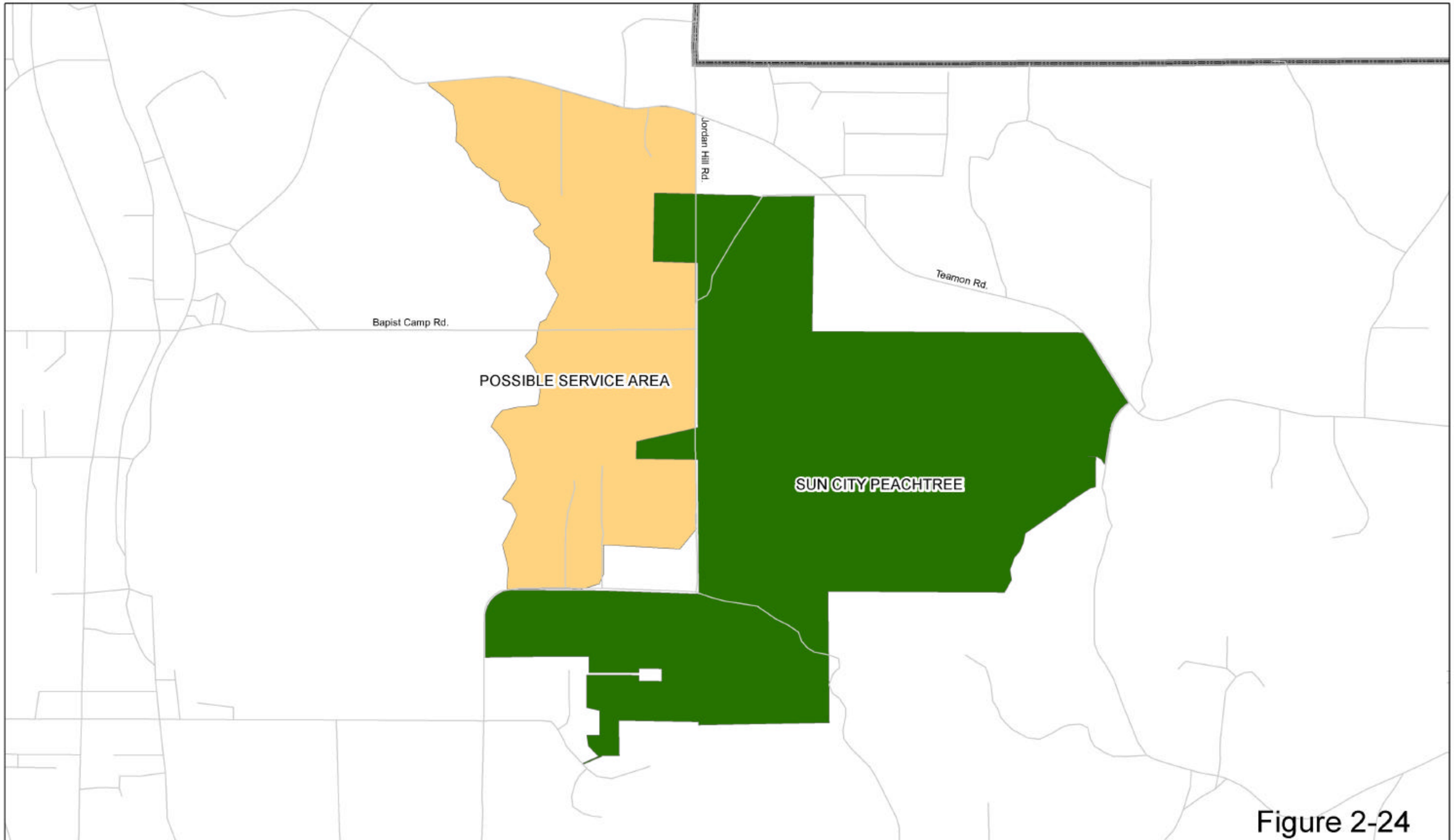
Figure 2-23

PARAGON consulting group
engineering • environmental • planning

HIGHLAND MILLS SERVICE AREA

0 1,000 2,000 3,000 4,000 Feet
1 inch equals 2,000 feet

N W E S



PARAGON consulting group
engineering • environmental • planning

SUN CITY PEACHTREE SERVICE AREA

0 1,000 2,000 3,000 4,000 Feet
1 inch equals 2,000 feet

N W E S

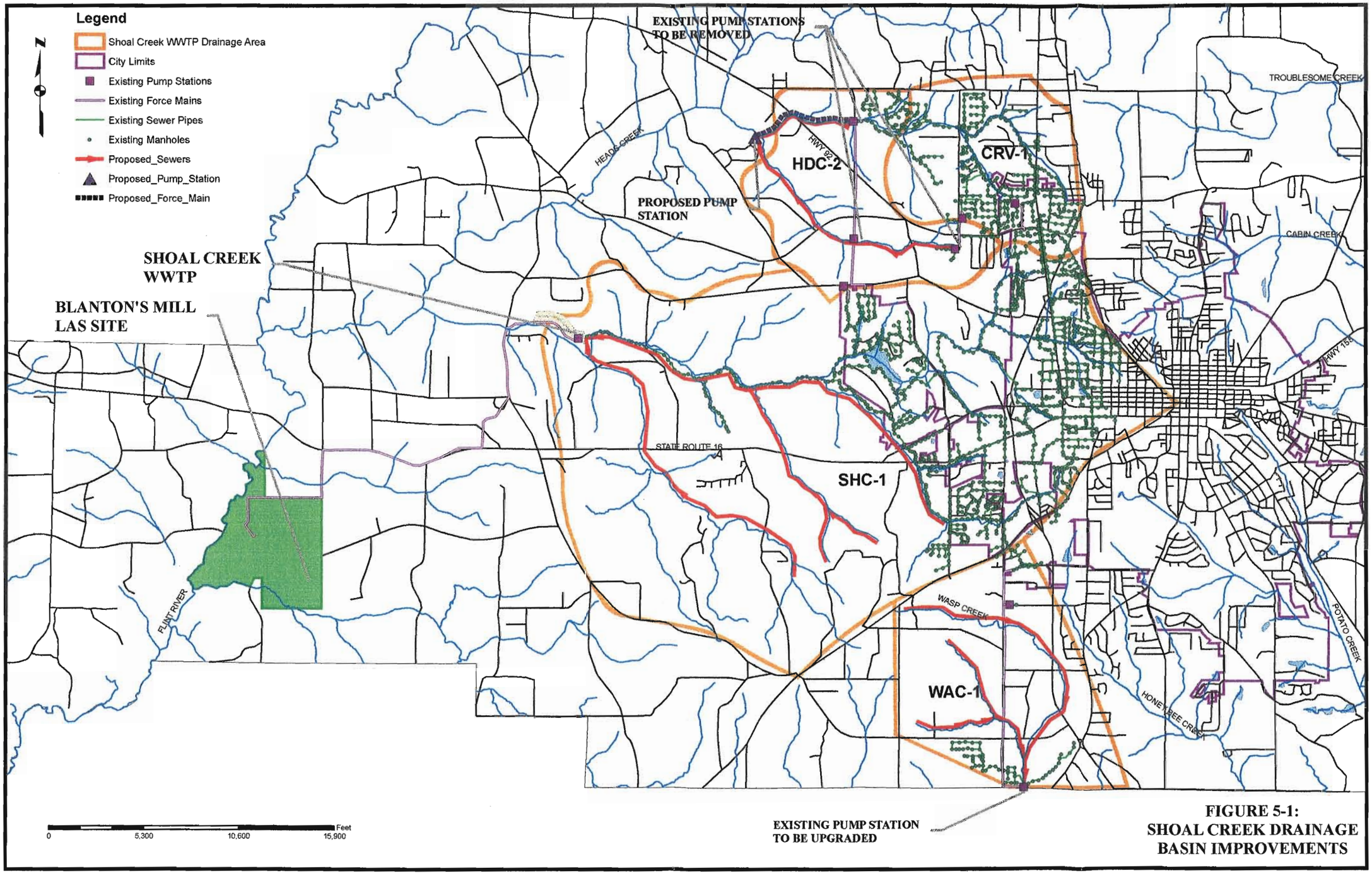


FIGURE 5-1: SHOAL CREEK DRAINAGE BASIN IMPROVEMENTS

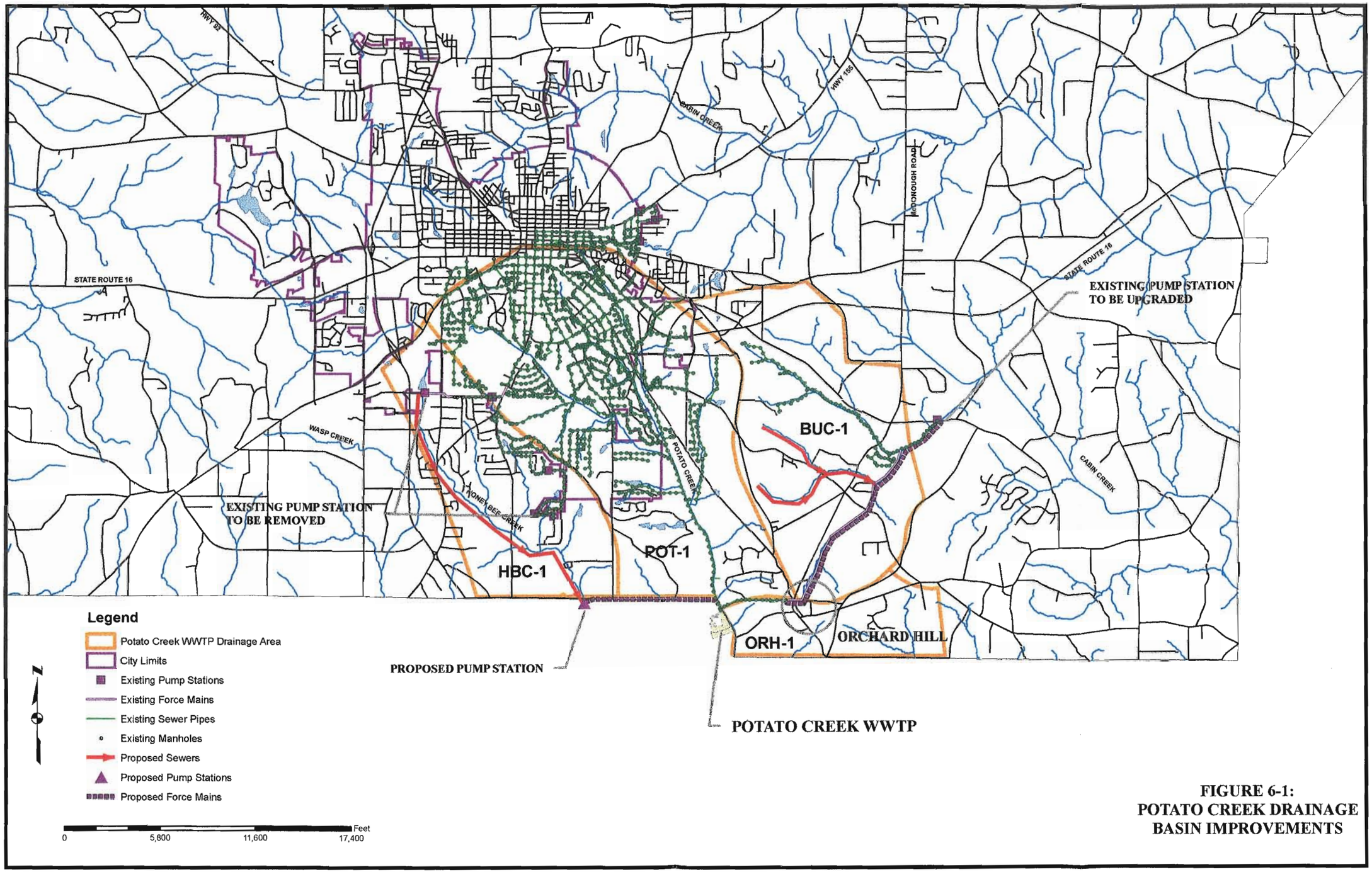
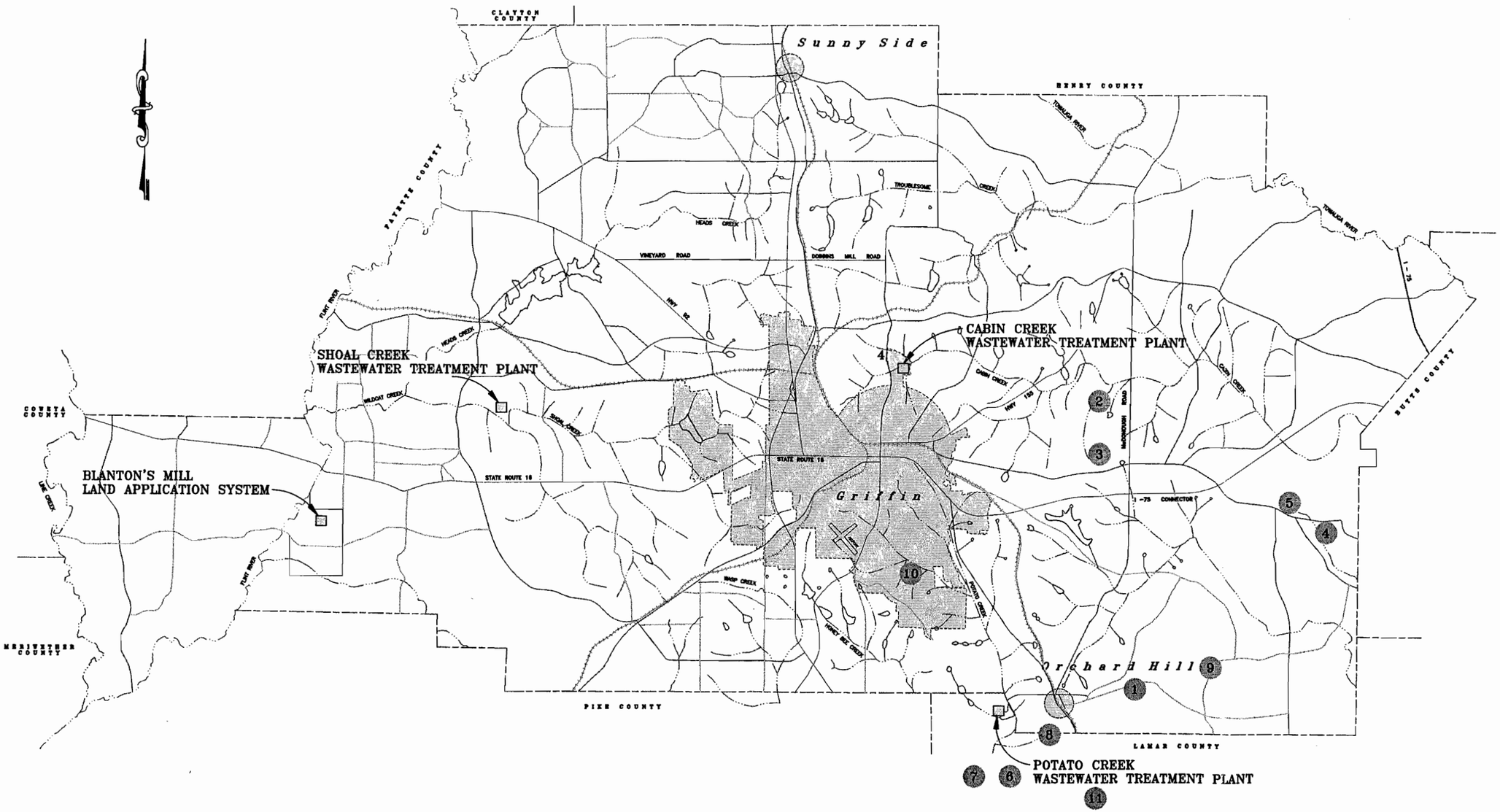


FIGURE 6-1:
POTATO CREEK DRAINAGE BASIN IMPROVEMENTS



LAND APPLICATION SITE - SEE TABLE FOR NAME AND ADDRESS

FIGURE 8-1

LOCATION OF SLUDGE LAND APPLICATION SITES

SCALE: 1" = 1.75 MILES

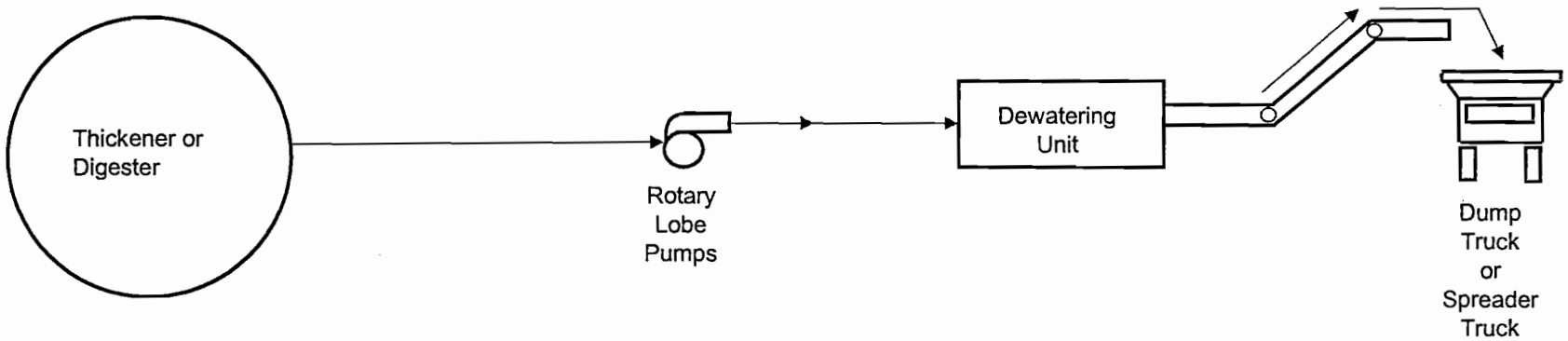


Figure 8-2 - Conceptual Plan for Sludge Dewatering System

Figure 10-1
Cabin Creek Drainage Basin
Peaking Factor Versus Rainfall

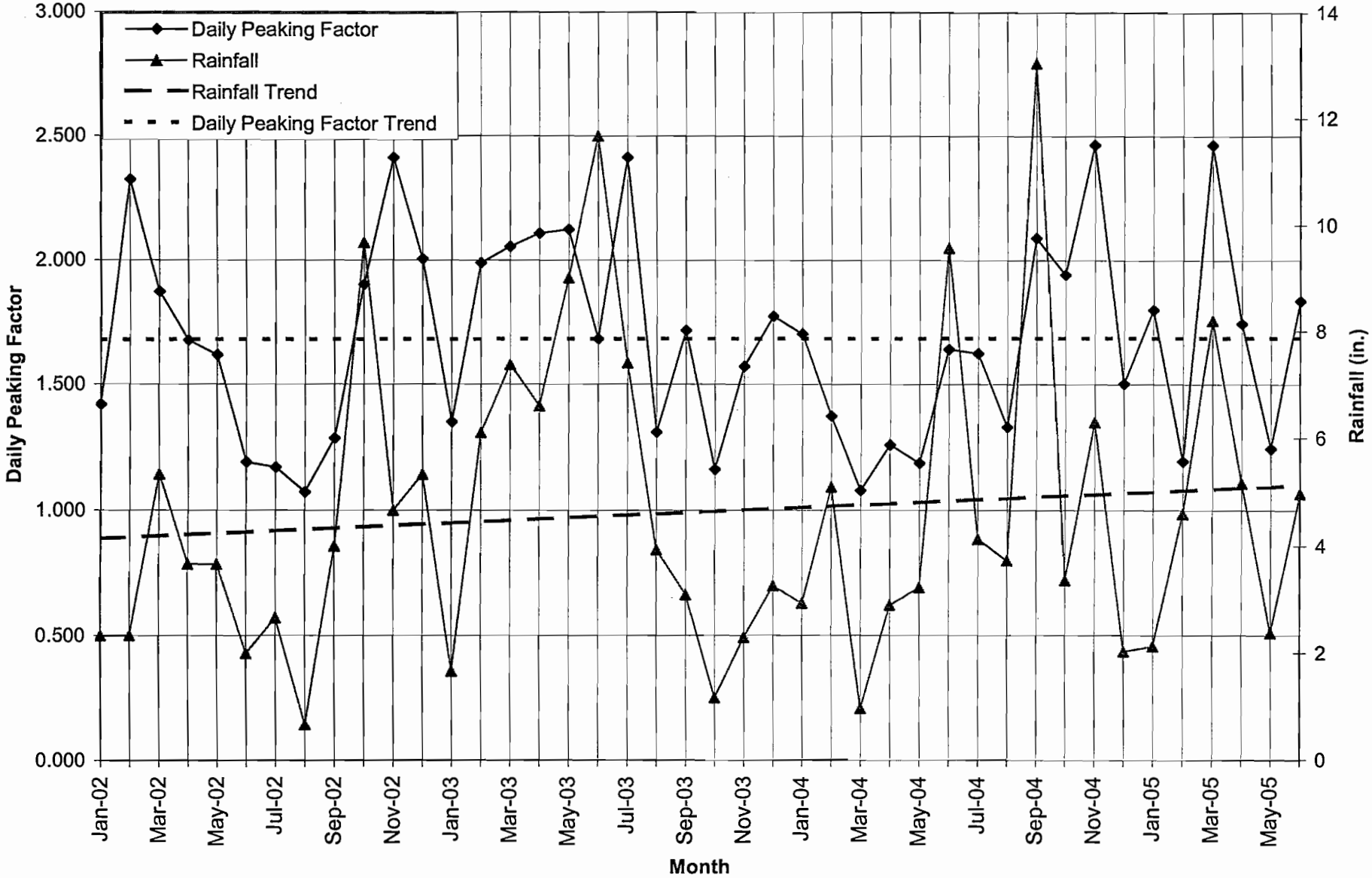


Figure 10-2
Potato Creek Drainage Basin
Peaking Factor Versus Rainfall

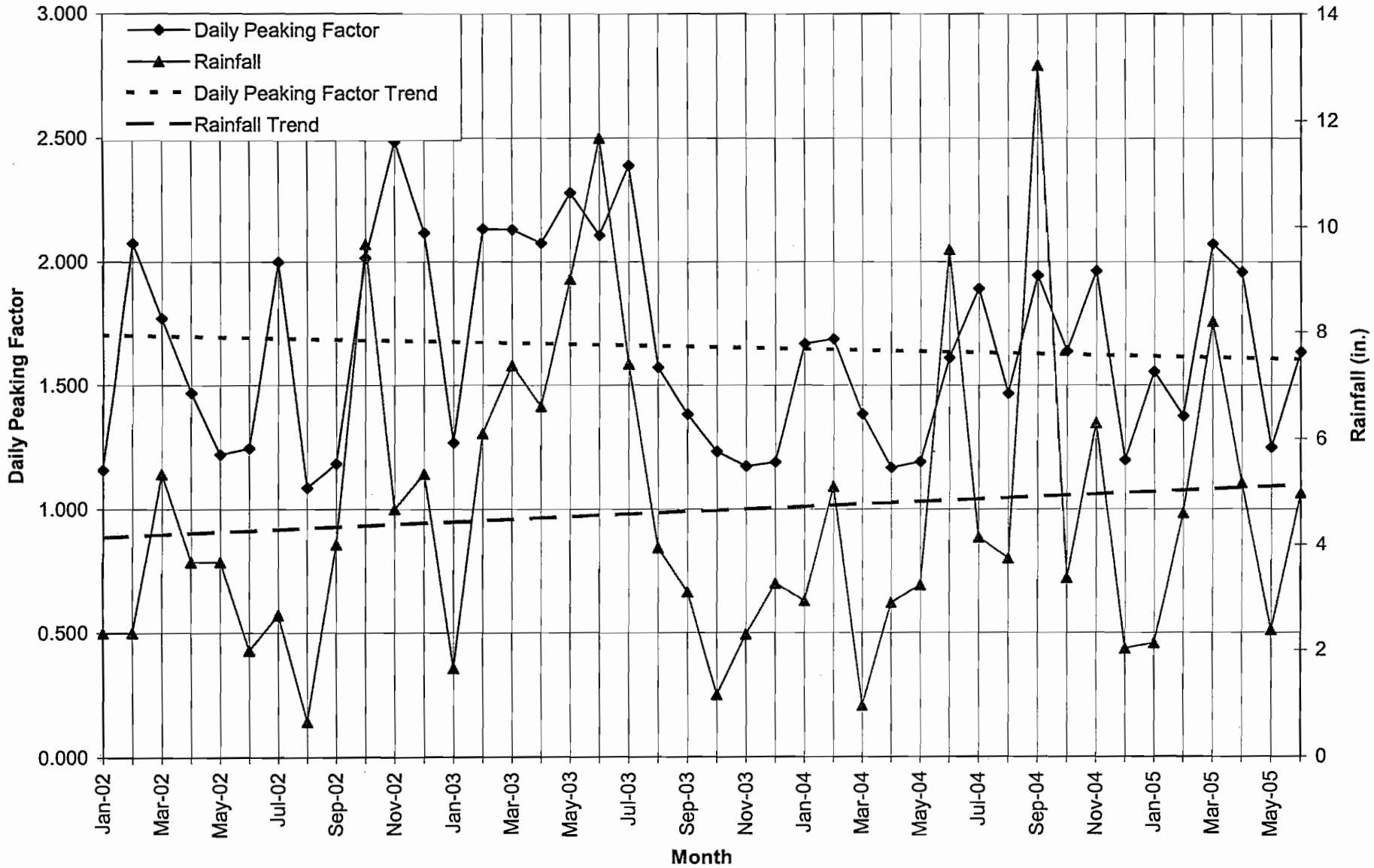
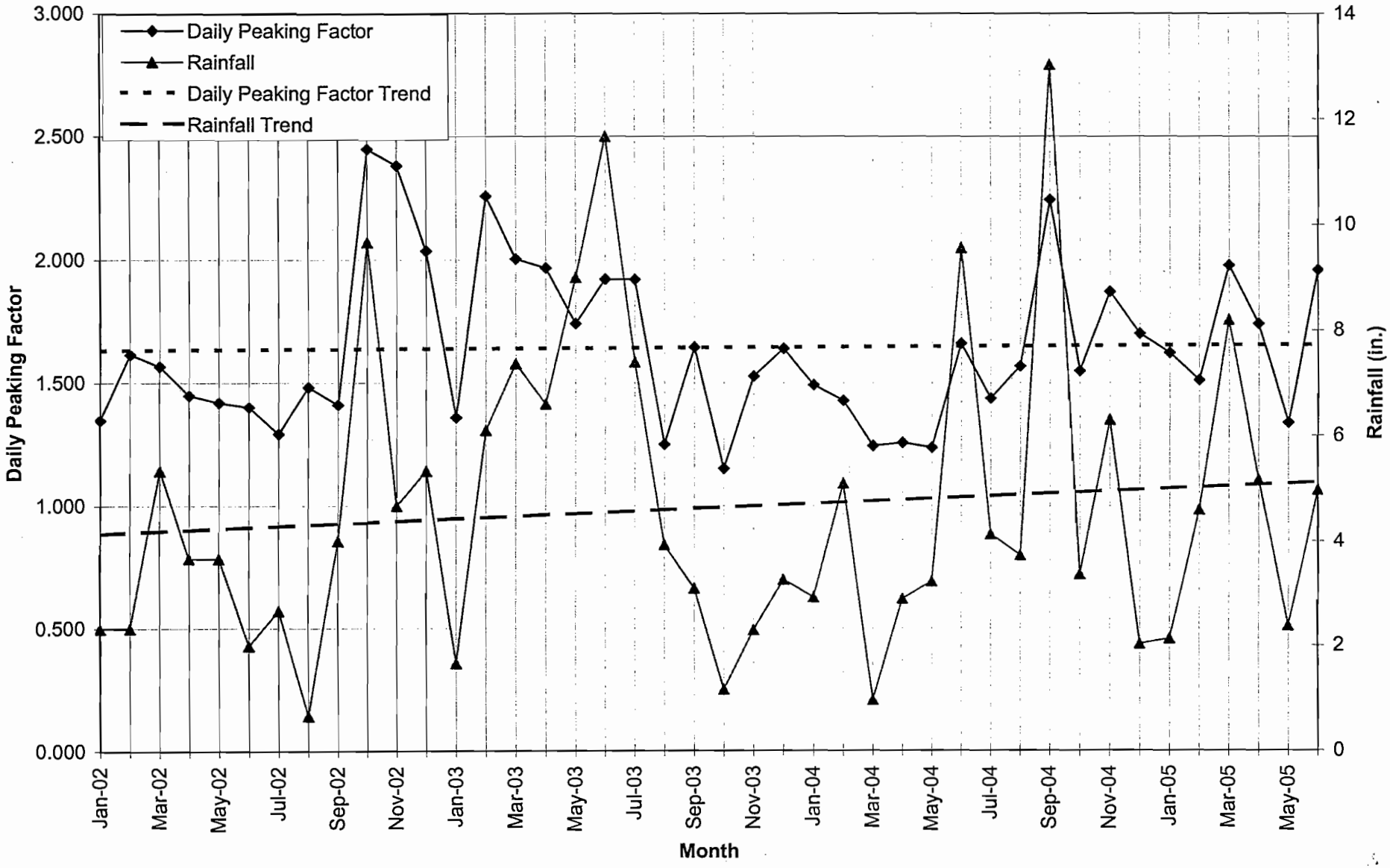


Figure 10-3
Shoal Creek Drainage Basin
Peaking Factor Versus Rainfall



Appendix A

Wastewater Treatment Plant Operation Data

Appendix A

Shoal Creek WWTP Performance Data
City of Griffin

				Influent				Effluent	
Month	ADF (MGD)	PDF (MGD)	Daily Peaking Factor	BOD (mg/L)	BOD Load (lbs/day)	TSS (mg/L)	TSS Load lbs/day)	BOD (mg/L)	TSS (mg/L)
Jan-02	1.403	1.890	1.347	314	3,674	153	1,790	44	46
Feb-02	1.467	2.370	1.616	260	3,181	148	1,811	48	33
Mar-02	1.678	2.630	1.567	222	3,107	143	2,001	62	59
Apr-02	1.526	2.210	1.448	258	3,284	147	1,871	41	45
May-02	1.607	2.280	1.419	194	2,600	135	1,809	27	47
Jun-02	1.421	1.990	1.400	212	2,512	168	1,991	28	46
Jul-02	1.393	1.800	1.292	249	2,893	173	2,010	30	66
Aug-02	1.350	2.000	1.481	335	3,772	220	2,477	33	37
Sep-02	1.411	1.990	1.410	350	4,119	207	2,436	26	31
Oct-02	1.753	4.290	2.447	208	3,041	129	1,886	26	48
Nov-02	1.718	4.090	2.381	272	3,897	179	2,565	19	23
Dec-02	1.689	3.440	2.037	231	3,254	194	2,733	20	30
Jan-03	1.597	2.170	1.359	133	1,771	381	5,075	23	30
Feb-03	2.116	4.780	2.259	97	1,712	111	1,959	42	27
Mar-03	2.280	4.570	2.004	212	4,031	166	3,157	28	62
Apr-03	2.033	4.000	1.968	227	3,849	143	2,425	39	47
May-03	2.239	3.900	1.742	169	3,156	229	4,276	28	23
Jun-03	2.191	4.210	1.921	147	2,686	122	2,229	45	46
Jul-03	2.104	4.040	1.920	149	2,615	158	2,772	39	60
Aug-03	1.736	2.170	1.250	226	3,272	89	1,289	44	70
Sep-03	1.629	2.680	1.645	300	4,076	142	1,929	30	33
Oct-03	1.553	1.790	1.153	240	3,108	170	2,202	67	89
Nov-03	1.532	2.340	1.527	214	2,734	168	2,147	83	111
Dec-03	1.366	2.240	1.640	297	3,384	187	2,130	46	57
Jan-04	1.562	2.330	1.492	536	6,983	141	1,837	42	30
Feb-04	1.849	2.640	1.428	323	4,981	150	2,313	32	30
Mar-04	1.503	1.870	1.244	322	4,036	158	1,981	50	69
Apr-04	1.488	1.870	1.257	287	3,562	126	1,564	49	35
May-04	1.515	1.875	1.238	244	3,083	110	1,390	35	49
Jun-04	1.741	2.890	1.660	245	3,557			47	53
Jul-04	1.580	2.270	1.437	234	3,083	146	1,924	47	64
Aug-04	1.556	2.440	1.568	286	3,711	163	2,115	42	80
Sep-04	1.995	4.478	2.245	171	2,845	147	2,446	47	67
Oct-04	1.731	2.680	1.548	180	2,599	298	4,302	25	24
Nov-04	1.865	3.488	1.870	182	2,831	253	3,935	15	19
Dec-04	1.675	2.848	1.700	187	2,612	112	1,565	27	40
Jan-05	1.710	2.774	1.622	226	3,223	108	1,540	48	35
Feb-05	1.956	2.956	1.511	264	4,307	168	2,741	37	36
Mar-05	2.081	4.117	1.978	294	5,103	174	3,020	36	37
Apr-05	2.055	3.576	1.740	276	4,730	138	2,365	29	11
May-05	1.674	2.240	1.338	239	3,337	127	1,773	32	26
Jun-05	1.772	3.472	1.959	198	2,926	157	2,320	40	62
Avg:	1.717	2.873	1.645	248	3,410	164	2,344	38	46
Max.	2.280	4.780	2.447	536	6,983	381	5,075	83	111
Min.	1.350	1.790	1.153	97	1,712	89	1,289	15	11
2005 Avg.:	1.875	3.189	1.692	250	3,938	145	2,293	37	35

Potato Creek WWTP Performance Data
City of Griffin

				Influent					Effluent			
Month	ADF (MGD)	PDF (MGD)	Daily Peaking Factor	BOD (mg/L)	BOD Load (lbs/day)	TSS (mg/L)	TSS Load (lbs/day)	NH_4-N (mg/L)	BOD (mg/L)	TSS (mg/L)	NH_4-N (mg/L)	Phos. (mg/L)
Jan-02	1.270	1.473	1.160	284	3,008	211	2,235	20	7	9	1.5	2.1
Feb-02	1.260	2.615	2.075	272	2,858	204	2,144	19	6	7	1.2	2.0
Mar-02	1.345	2.380	1.770	262	2,939	201	2,255	20	7	6	2.2	1.6
Apr-02	1.240	1.821	1.469	228	2,358	212	2,192	17	5	11	0.9	1.6
May-02	1.260	1.539	1.221	225	2,364	188	1,976	16	4	7	0.9	1.7
Jun-02	1.187	1.480	1.247	227	2,247	212	2,099	16	4	7	1.4	1.7
Jul-02	1.206	2.411	1.999	229	2,303	210	2,112	16	4	7	0.7	2.1
Aug-02	1.183	1.286	1.087	234	2,309	216	2,131	16	5	8	0.8	1.8
Sep-02	1.179	1.397	1.185	231	2,271	237	2,330	19	3	8	0.6	2.3
Oct-02	1.289	2.598	2.016	209	2,247	191	2,053	17	4	10	0.7	2.3
Nov-02	1.420	3.530	2.486	176	2,084	175	2,072	16	3	7	0.6	1.3
Dec-02	1.375	2.912	2.118	185	2,121	187	2,144	18	4	9	1.1	1.7
Jan-03	1.308	1.660	1.269	169	1,844	167	1,822	19	6	9	1.4	1.8
Feb-03	1.679	3.582	2.133	168	2,352	158	2,212	17	7	11	1.0	1.2
Mar-03	2.004	4.270	2.131	170	2,841	153	2,557	15	6	8	0.8	1.3
Apr-03	1.692	3.512	2.076	152	2,145	160	2,258	16	4	6	0.7	1.5
May-03	1.816	4.139	2.279	149	2,257	156	2,363	14	4	7	0.8	1.1
Jun-03	1.729	3.643	2.107	173	2,495	167	2,408	14	3	5	1.9	1.0
Jul-03	1.812	4.330	2.390	152	2,297	130	1,965	14	4	6	0.7	0.8
Aug-03	1.604	2.520	1.571	160	2,140	154	2,060	15	3	5	0.5	1.1
Sep-03	1.193	1.649	1.382	193	1,920	179	1,781	18	3	5	0.5	1.1
Oct-03	1.159	1.429	1.233	223	2,156	193	1,866	22	4	5	0.7	1.9
Nov-03	1.164	1.366	1.174	203	1,971	201	1,951	23	3	5	0.9	1.8
Dec-03	1.232	1.467	1.191	181	1,860	181	1,860	23	4	7	0.7	1.6
Jan-04	1.276	2.126	1.666	203	2,160	170	1,809	22	4	5	1.3	1.6
Feb-04	1.752	2.952	1.685	170	2,484	146	2,133	19	7	10	0.9	1.2
Mar-04	1.444	1.999	1.384	178	2,144	170	2,047	20	4	6	0.7	1.2
Apr-04	1.336	1.561	1.168	183	2,039	193	2,150	20	4	11	0.5	1.9

Potato Creek WWTP Performance Data
City of Griffin

				Influent					Effluent			
Month	ADF (MGD)	PDF (MGD)	Daily Peaking Factor	BOD (mg/L)	BOD Load (lbs/day)	TSS (mg/L)	TSS Load (lbs/day)	NH_4-N (mg/L)	BOD (mg/L)	TSS (mg/L)	NH_4-N (mg/L)	Phos. (mg/L)
May-04	1.245	1.485	1.193	197	2,046	206	2,139	20	4	15	0.4	2.1
Jun-04	1.261			167	1,756		0	18	3	6	0.2	2.2
Jul-04	1.433	2.710	1.891	156	1,864	159	1,900	18	3	7	0.3	1.7
Aug-04	1.280	1.878	1.467	157	1,676	169	1,804	19	4	12	0.8	2.0
Sep-04	1.661	3.229	1.944	141	1,953	156	2,161	17	3	5	0.4	1.5
Oct-04	1.453	2.377	1.636	153	1,854	171	2,072	18	3	5	0.5	1.7
Nov-04	1.609	3.158	1.963	164	2,201	172	2,308	17	3	4	0.5	1.6
Dec-04	1.500	1.800	1.200	166	2,077	161	2,014	19	3	6	0.3	1.5
Jan-05	1.503	2.336	1.554	150	1,880	178	2,231	19	3	6	0.5	1.5
Feb-05	1.905	2.623	1.377	142	2,256	179	2,844	13	7	8	0.5	1.1
Mar-05	2.116	4.385	2.072	127	2,241	137	2,418	12	6	9	0.4	1.2
Apr-05	2.171	4.250	1.958	141	2,553	130	2,354	13	4	5	0.6	1.0
May-05	1.534	1.919	1.251	190	2,431	224	2,866	17	3	4	2.1	1.4
Jun-05	1.682	2.747	1.633	134	1,880	162	2,273	15.0	3	3	1.7	1.4
Avg.	1.471	2.501	1.654	185	2,211	179	2,104	17.5	4	7	0.9	1.6
Max.	2.171	4.385	2.486	284	3,008	237	2,866	22.7	7	15	2.2	2.3
Min.	1.159	1.286	1.087	127	1,676	130	0	12.2	3	3	0.2	0.8
2005 Avg.:	1.819	3.043	1.641	147	2,207	168	2,497	14.9	4	6	1.0	1.3

Cabin Creek WWTP Performance Data
City of Griffin

				Influent						Effluent			
Month	ADF (MGD)	PDF (MGD)	Daily Peaking Factor	BOD (mg/L)	BOD Load (lbs/day)	TSS (mg/L)	TSS Load (lbs/day)	NH_3 (mg/L)	Phos. (mg/L)	BOD (mg/L)	TSS (mg/L)	NH_3 (mg/L)	Phos. (mg/L)
Jan-02	0.803	1.140	1.420	329	2,203	176	1,179	19.0	4.0	7	11	2.8	0.30
Feb-02	0.835	1.940	2.323	292	2,033	229	1,595	17.0	5.0	7	15	3.1	0.34
Mar-02	0.972	1.820	1.872	265	2,148	171	1,386	15.0	5.0	5	16	2.4	0.36
Apr-02	0.907	1.520	1.676	248	1,876	188	1,422	17.0	5.0	4	17	1.4	0.37
May-02	0.915	1.480	1.617	255	1,946	174	1,328	17.0	4.0	3	13	1.1	0.32
Jun-02	0.832	0.990	1.190	273	1,894	237	1,645	21.0	5.0	4	12	1.1	0.26
Jul-02	0.829	0.970	1.170	269	1,860	208	1,438	18.0	5.0	4	19	1.8	0.42
Aug-02	0.793	0.850	1.072	266	1,759	193	1,276	18.0	5.0	3	19	0.9	0.51
Sep-02	0.825	1.060	1.285	315	2,167	240	1,651	21.0	5.0	4	18	1.1	0.48
Oct-02	0.957	1.820	1.902	270	2,155	228	1,820	16.0	4.0	4	18	1.2	0.40
Nov-02	1.078	2.600	2.412	206	1,852	156	1,403	13.0	4.0	6	18	1.6	0.69
Dec-02	1.067	2.140	2.006	220	1,958	165	1,468	17.0	5.0	5	15	3.0	0.58
Jan-03	1.037	1.400	1.350	226	1,955	158	1,366	16.0	4.0	8	20	4.7	0.87
Feb-03	1.357	2.700	1.990	199	2,252	150	1,698	23.0	4.0	8	16	2.7	0.64
Mar-03	1.484	3.050	2.055	179	2,215	161	1,993	13.0	5.0	7	14	2.9	0.49
Apr-03	1.228	2.590	2.109	181	1,854	158	1,618	17.0	3.0	5	12	2.0	0.21
May-03	1.398	2.970	2.124	161	1,877	132	1,539	14.0	3.0	6	17	1.5	0.44
Jun-03	1.492	2.510	1.682	191	2,377	151	1,879	6.7	3.0	4	7	1.2	0.20
Jul-03	1.181	2.850	2.413	198	1,950	127	1,251	15.0	3.0	5	9	0.8	0.38
Aug-03	0.985	1.290	1.310	230	1,889	149	1,224	20.0	3.0	4	10	1.1	0.36
Sep-03	0.798	1.370	1.717	266	1,770	184	1,225	23.0	4.0	4	12	1.1	0.29
Oct-03	0.697	0.810	1.162	256	1,488	204	1,186	26.0	5.0	6	11	3.6	0.42
Nov-03	0.668	1.050	1.572	260	1,448	174	969	25.0	5.0	2	7	2.4	0.19
Dec-03	0.637	1.130	1.774	259	1,376	180	956	25.0	5.0	3	10	3.7	0.19
Jan-04	0.711	1.210	1.702	285	1,690	216	1,281	23.0	5.0	6	10	5.0	0.32
Feb-04	0.841	1.155	1.373	243	1,704	137	961	17.0	4.0	8	15	5.0	0.35
Mar-04	0.771	0.832	1.079	285	1,833	181	1,164	22.0	5.0	5	11	5.6	0.16
Apr-04	0.700	0.881	1.259	271	1,582	169	987	24.0	5.0	4	16	3.2	0.42

Cabin Creek WWTP Performance Data
City of Griffin

				Influent						Effluent			
Month	ADF (MGD)	PDF (MGD)	Daily Peaking Factor	BOD (mg/L)	BOD Load (lbs/day)	TSS (mg/L)	TSS Load (lbs/day)	NH_3 (mg/L)	Phos. (mg/L)	BOD (mg/L)	TSS (mg/L)	NH_3 (mg/L)	Phos. (mg/L)
May-04	0.778	0.924	1.188	276	1,791	184	1,194	25.0	4.0	3	9	1.5	0.31
Jun-04	0.867		0.000	247	1,786	164	1,186	21.0		3	8	0.9	0.26
Jul-04	0.901	1.463	1.624	238	1,788	161	1,210	20.0	4.0	2	10	0.8	0.23
Aug-04	0.815	1.084	1.330	231	1,570	158	1,074	20.0	4.0	2	13	0.9	0.30
Sep-04	1.035	2.163	2.090	179	1,545	166	1,433	18.0	3.0	3	8	1.0	0.27
Oct-04	0.836	1.624	1.943	221	1,541	47	328	20.0	4.0	2	9	1.0	0.26
Nov-04	0.926	2.282	2.464	240	1,853	213	1,645	20.0	4.0	10	3	1.7	0.33
Dec-04	0.824	1.238	1.502	257	1,766	200	1,374	21.0	4.0	4	9	2.8	0.28
Jan-05	0.840	1.512	1.800	248	1,737	181	1,268	21.0	5.0	5	9	3.0	0.35
Feb-05	1.066	1.273	1.194	213	1,894	66	587	15.0	4.0	5	12	3.0	0.50
Mar-05	1.172	2.888	2.464	201	1,965	166	1,623	14.0	4.0	6	12	2.8	0.45
Apr-05	1.388	2.422	1.745	228	2,639	137	1,586	16.0	4.0	7	15	1.6	0.46
May-05	1.013	1.261	1.245	216	1,825	153	1,293	20.0	4.0	5	11	1.5	0.50
Jun-05	1.177	2.162	1.837	206	2,022	140	1,374	16.0	4.0	2	6	0.8	0.32
Avg.	0.963	1.669	1.644	240	1,877	170	1,335	18.7	4.2	5	12	2.2	0.4
Max.	1.492	3.050	2.464	329	2,639	240	1,993	26.0	5.0	10	20	5.6	0.9
Min.	0.637	0.810	0.000	161	1,376	47	328	6.7	3.0	2	3	0.8	0.2
2005 Avg.:	1.109	1.920	1.714	219	2,014	141	1,288	17.0	4.2	5	11	2.1	0.4

Appendix B

Copy of Operating Permits

Georgia Department of Natural Resources
2 Martin Luther King, Jr. Drive, S.E., Suite 1152 East Tower, Atlanta, Georgia 30334-900
Lonice C. Barrett, Commissioner
Carol A. Couch, Ph.D., Director
Environmental Protection Division
404/656-471

RECEIVED
APR 21 2004
By BENSLEY

April 16, 2004

Honorable Geraldine Jackson, Mayor
City of Griffin
Post Office Box T
Griffin, Georgia 30224

RE: City of Griffin- Shoal Creek
Blanton Mill Site
Land Application System (LAS)
Permit No. GA02-036

Dear Mayor Jackson:

Pursuant to the Georgia Water Quality Control Act as amended and the Rules and Regulations promulgated thereunder, we have today issued the attached Land Application System permit for the referenced wastewater treatment facility. The permit has been modified to remove the requirement to monitor for total coliform bacteria in groundwater from the permit per the permittee's request. The requirement for monitoring total coliform in groundwater has been replaced with a requirement to monitor fecal coliform bacteria in groundwater.

Please be advised that on and after the effective date indicated in the attached LAS Permit, the permittee must comply with all the terms, conditions and limitations of this permit.

Sincerely,

Carol A. Couch, Ph.D.
Director

CAC/gms
Attachment

cc: Mr. Brant Keller, Ph.D.,
Director of the City of Griffin Public Works Department

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

LAND APPLICATION SYSTEM PERMIT

PERMIT NO. GA02-036

In accordance with the provisions of the Georgia Water Quality Control Act (Georgia Laws 1964, p. 416, as amended), and the Rules and Regulations promulgated pursuant thereto, this permit is issued to the following:

City of Griffin
Post Office Box T
Griffin, Georgia 30224

is authorized to operate the land application system located at

Shoal Creek-Blanton Mill Site
1600 Blanton Mill Road
Griffin, Georgia (Spalding County)
(Flint River Basin)

This permit is conditioned upon the permittee complying with the effluent limitations, monitoring requirements and other conditions set forth in the permit and with the statements and supporting data submitted with the application and filed with the Environmental Protection Division of the Department of Natural Resources.

This permit is effective on the date signed by the Director of the Environmental Protection Division and is subject to revocation on evidence of noncompliance with any of the provisions of the Georgia Water Quality Control Act or any of the Rules and Regulations promulgated pursuant thereto; or with any presentation made in the above mentioned application or the statements and supporting data entered therein or attached thereto; or with any conditions of this permit.

This permit shall become effective on April 16, 2004. This permit shall expire at midnight, on September 14, 2008.

This is a modification of the permit issued on September 15, 2003.

Signed this 16th day of April 2004.

Director
Environmental Protection Division

PART I.

A. CONDITIONS

1. DEFINITIONS

a. Division: the Environmental Protection Division of the Department of Natural Resources.

b. Monthly Average: the arithmetic or geometric mean of values for samples collected in a period of 30 consecutive days.

c. Non-restricted Access: landscaped areas where reclaimed wastewater is used for irrigation purposes and public access cannot be controlled and adequate buffer zones cannot be maintained. Reclaimed wastewater used to irrigate non-restricted access areas must be treated to urban water reuse standards.

d. Preapplication Treatment System: the wastewater treatment facility which reduces high strength organic waste to low levels prior to application to the sprayfield area. The preapplication treatment system can consist of a mechanical plant or a pond system.

e. Restricted Access: landscaped areas where reclaimed wastewater is used for irrigation purposes and public access is restricted to specific and controlled periods of time. Wastewater used to irrigate restricted access areas must be pretreated to secondary levels and receive disinfection.

f. Sprayfield: the wetted area of the land application site, excluding the buffer zone.

g. State Act: the Georgia Water Quality Control Act (Official Code of Georgia Annotated; Title 12, Chapter 5, Article 2).

2. MONITORING

a. The permittee shall monitor and record the amount of rainfall at the land application system site on a daily basis.

b. A composite sample shall consist of a minimum of 5 subsamples collected at least every 2 hours for a period of at least 8 hours, and composited proportionately to flow.

c. Flow measurements shall be conducted using the flow measuring device(s) in accordance with the approved design of the facility. If secondary flow measurement devices are installed, calibration shall be maintained to ± 10% of the actual flow. Flow shall be measured manually to check the flow meter calibration once per week.

If secondary flow instruments are in use and malfunction or fail to maintain calibration as required in (I.A.1.c.) the flow shall be computed from manual measurements or by other method(s) approved by EPD until such time as the secondary flow instrument is repaired.

For facilities which utilize alternate technologies for measuring flow, the flow measurement device must be calibrated semi-annually by qualified personnel. Records of the calibration checks shall be maintained.

d. Quarterly analyses required in I.B. shall be performed in March, June, September, and December. Analyses required twice per year will be performed in June and December. Analyses required annually will be performed in June.

e. Some parameters must be analyzed to the detection limits specified by the EPD. These parameters will be reported as "not detected" when they are below the detection limit and will then be considered in compliance with the effluent limit. The detection limit will also be reported.

3. SLUDGE DISPOSAL AND MONITORING REQUIREMENTS

a. The permittee shall develop and implement procedures to ensure adequate year-round sludge disposal. The permittee shall monitor the volume and concentration of solids removed from the plant. Records shall be maintained which document that the quantity of solids removed from the plant is equal to the solids generated on an average daily basis. The ultimate disposal of solids shall be reported monthly (in the unit of lbs/day) to the Division with the Monitoring Report Forms.

b. For land application of nonhazardous municipal sewage sludge, the permittee shall at a minimum comply with the general criteria outlined in the Division's "Guidelines for Land Application of Sewage Sludge (Biosolids) at Agronomic Rates." Prior to disposal of municipal sewage sludge by land application, or any method other than co-disposal in a permitted sanitary landfill, the permittee shall submit a proposal to the Division for approval. The Division will evaluate the permittee's proposal and may determine that more stringent control of this activity is required. Upon written notification, the permittee shall submit to the Division, a detailed plan of operation for land application of sludge. This plan will become a part of the Land Application System Permit upon approval.

c. If an applicable management practice or numerical limitation for pollutants in sewage sludge is promulgated under Section 405(d) of the Federal Act after approval of the plan, then the plan shall be promptly modified to conform to any subsequently promulgated State regulations. The permittee shall give prior notice to the Division of any changes planned in the permittee's approved sludge management plan.

B.1. TREATMENT POND SYSTEM

The weekly average effluent flow from the wastewater treatment facility to the storage pond must not exceed 2.8 MGD. Influent shall refer to the influent to the facility and effluent shall refer to the discharge from the treatment pond to the storage pond. Monitoring shall be performed by the permittee for the parameters and at the frequency listed below:

Parameters	Discharge Limitation Monthly Average, mg/l unless otherwise specified	Monitoring Requirements	
		Measurement Frequency	Sample Location
Flow (MGD)	2.25	Seven Days/Week	Effluent
Biochemical Oxygen Demand (5-Day)	50	Two Days/Month	Influent and Effluent
Total Suspended Solids	90	Two Days/Month	Influent and Effluent
pH, standard units	--	Three Days/Week	Effluent
Nitrate-Nitrogen	--	Once/Month	Effluent

Continuous recording measurements are required for effluent flow monitoring. If influent flow monitoring is required, instantaneous flow measurements are acceptable.

B.2. STORAGE POND MONITORING

Influent shall refer to the influent to the storage pond and effluent shall refer to the discharge from the storage pond to the sprayfields. Monitoring shall be performed by the permittee for the parameters and at the frequency listed below:

Parameters	Monitoring Requirements	
	Measurement Frequency	Sample Location
Flow (MGD)	Daily	Effluent
Biochemical Oxygen Demand (5-Day)	One/Week	Effluent
Suspended Solids	One/Week	Effluent
pH, standard units	One/Week	Effluent
Nitrate-Nitrogen	One/Month	Effluent

Continuous recording measurements are required for effluent flow monitoring. If influent flow monitoring is required, instantaneous flow measurements are acceptable.

B.3. SOIL MONITORING REQUIREMENTS

Representative samples shall be collected from each major soil series present within the spray field area. The samples shall be analyzed in accordance with the latest edition of Methods of Soil Analysis (published by the American Society of Agronomy, Madison, Wisconsin) or other methods approved by the Division. The soil samples shall be analyzed for the parameters and at the frequency listed below:

Parameter	Measurement Frequency
pH, standard units	One/Year
Cation Exchange Capacity	If pH changes by one unit
Percent Base Saturation	If pH changes by one unit

Where there are categorical and/or significant industrial discharges to the sewer system, the permittee may be required, upon written notification by the Division, to sample for additional parameters. These parameters may include heavy metals and organic compounds.

B.4. GROUNDWATER MONITORING REQUIREMENTS

Groundwater leaving the land application system boundaries must not exceed maximum contaminant levels for drinking water. The groundwater shall be monitored from each groundwater monitoring well by the permittee for the parameters and at the frequency listed below:

Parameter	Measurement Frequency
Depth to Groundwater	One/Month
pH, standard units	One/Month
Electrical Conductivity	One/Month
Nitrate-Nitrogen	One/Month
Fecal Coliform Bacteria	One/Six Months

Where there are categorical and/or significant industrial discharges to the sewer system, the permittee may be required to sample for additional parameters. These parameters may include heavy metals and organic compounds.

B.5. SURFACE WATER MONITORING

The water quality of any surface water adjacent to or traversing the land application site shall be monitored. Grab samples collected upstream and downstream of the sprayfield area shall be monitored for the parameters and at the frequency listed below:

Parameter	Measurement Frequency
Biochemical Oxygen Demand (5-Day)	One/Quarter
Suspended Solids	One/Quarter
Dissolved Oxygen	One/Quarter
pH, standard units	One/Quarter
Fecal Coliform Bacteria	One/Quarter
Nitrate-Nitrogen	One/Quarter

C. APPLICATION RATES

The wetted sprayfield area of the land application system shall consist of 520 acres. The hydraulic wastewater loading to the sprayfield area must not exceed the rate established and approved by the Division. The design application rate is 2.5 inches per week (inches/week). The instantaneous application rate is 0.25 inches per hour (inches/hour). Any request for a higher loading rate must be submitted to the Division for approval.

D. MONITORING AND REPORTING

1. REPRESENTATIVE SAMPLING

Samples and measurements taken for the purpose of monitoring shall be representative of the volume and nature of the monitored waste stream. The permittee shall maintain a written sampling and monitoring schedule.

2. REPORTING

Monitoring Report Forms shall be completed each month with the monitoring results, signed by a principal executive officer or ranking elected official, or by a duly authorized representative of that person who has the authority to act for or on behalf of that person, and submitted to the Division, postmarked no later than the 15th day of the month following the reporting period. Monitoring results for parameters analyzed less frequently than once per month shall be submitted to the Division postmarked no later than the 15th day of the month following the specified reporting period. The Division may require the reporting of additional monitoring results by written notification. Signed copies of these and all other reports required herein shall be submitted to the following address:

Georgia Environmental Protection Division
Permitting, Compliance and Enforcement Program
4220 International Parkway, Suite 101
Atlanta, Georgia 30354

3. MONITORING PROCEDURES

Analytical procedures, sample containers, sample preservation techniques and sample holding times must be consistent with the techniques and procedures approved pursuant to 40 CFR Part 136, unless other techniques and test procedures have been specified in this permit.

4. RECORDING OF RESULTS

For each measurement of sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

1. The exact place, date, and time of sampling, and the person(s) collecting the samples,

2. The dates and times the analyses were performed,

3. The person(s) who performed the analyses,

4. The analytical procedures or methods used,

5. The results of all required analyses.

5. ADDITIONAL MONITORING BY PERMITTEE

If the permittee monitors any pollutant at, or in addition to, the location(s) designated herein more frequently than required by this permit, the permittee shall analyze all samples collected using approved analytical methods, and the results of such monitoring shall be included in the calculation and reporting of the values required in the Monitoring Report Forms. Such increased monitoring frequency shall also be indicated. The Division may require by written notification, more frequent monitoring or the monitoring of other pollutants not specified in this permit.

6. RECORDS RETENTION

The permittee shall retain records of:

a. All laboratory analyses performed including sample data, quality control data, and standard curves;

b. Calibration and maintenance records of laboratory instruments;

c. Calibration and maintenance records and recordings from continuous recording instruments;

d. Process control monitoring records;

e. Facility operation and maintenance records;

f. Copies of all reports required by this permit;

g. All data and information used to complete the permit application; and

h. All monitoring data related to sludge use and disposal.

These records shall be kept for at least three years. Sludge handling records must be kept for at least five years. Either period may be extended by EPD written notification.

PART II.

A. MANAGEMENT REQUIREMENTS

1. FACILITY OPERATION

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities (and related appurtenances) which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. Proper operation of the land application system also includes the best management practice of establishing and maintaining a vegetative cover on the sprayfield area.

2. NONCOMPLIANCE NOTIFICATION

If, for any reason the permittee does not comply with, or will be unable to comply with any effluent limitations specified in the permit, the permittee shall provide EPD with an oral report within 24 hours from the time the permittee becomes aware of the circumstances followed by a written report within five (5) days of becoming aware of such condition. The written submission shall contain the following information:

a. A description of the noncompliance and its cause; and

b. The period of noncompliance, including the exact date and times; or, if not corrected, the anticipated time the noncompliance is expected to continue; and

c. The steps taken to reduce, eliminate, and prevent recurrence of the non-complying discharge.

3. ANTICIPATED NONCOMPLIANCE NOTIFICATION

The permittee shall give written notice to the EPD at least 10 days before:

a. Any planned changes in the permitted facility; or

b. Any activity which may result in noncompliance with the permit.

4. OTHER NONCOMPLIANCE

The permittee must report all instances of noncompliance not reported under other specific reporting requirements, at the time monitoring reports are submitted. The reports shall contain the information required under conditions of twenty-four hour reporting.

5. OPERATOR CERTIFICATION REQUIREMENTS

The permittee shall ensure that the person in responsible charge of the daily operation of this land application system shall be a Class II Certified Operator in accordance with the Georgia Certification of Water and Wastewater Plant Operators and Laboratory Analysts Act, as amended, and specified by Subparagraph 391-3-6-.12 of the Rules and Regulations for Water Quality Control. Operators, other than the person in responsible charge, must obtain certification in Class III operator classification in accordance with the above Act.

6. LABORATORY ANALYST CERTIFICATION REQUIREMENTS

The permittee shall ensure that, when required, the person(s) performing the laboratory analyses for this wastewater treatment plant is a Certified Laboratory Analyst in accordance with the Georgia Certification of Water and Wastewater Treatment Plant Operators and Laboratory Analysts Act, as amended, and the Rules promulgated thereunder.

7. POWER FAILURES

If the primary source of power to this facility is reduced or lost, the permittee shall use an alternative source of power to reduce or control all discharges to maintain permit compliance.

8. ADVERSE IMPACT

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge disposal which might adversely affect human health or the environment.

9. NOTICE CONCERNING ENDANGERING WATERS OF THE STATE

Whenever, because of an accident or otherwise, any toxic or taste and color producing substance, or any other substance which would endanger downstream users of the waters of the State or would damage property, is discharged into such waters, or is so placed that it might flow, be washed, or fall into them, it shall be the duty of the person in charge of such substances at the time to forthwith notify EPD in person or by telephone of the location and nature of the danger, and it shall be such person's further duty to immediately take all reasonable and necessary steps to prevent injury to property and downstream users of said water.

Spills and Major Spills:

A "spill" is any discharge of raw sewage by a Publicly Owned Treatment Works (POTW) to the waters of the State.

A "major spill" is any discharge of raw sewage that exceeds 10,000 gallons or results in water quality violations in the waters of the State or the discharge of pollutants into waters of the State by a POTW that exceeds the weekly average permitted effluent limit for BOD_5 or TSS by 50 percent or greater for any one day.

"Consistently exceeding effluent limitation" means a POTW exceeding the 30-day average limit for biochemical oxygen demand or total suspended solids for at least five days out of each seven-day period during a total period of 180 consecutive days.

The following specific requirements shall apply to POTW's. If a spill or major spill occurs, the owner of a POTW shall immediately:

a. Notify EPD, in person or by telephone, when a spill or major spill occurs in the system.

b. Report the incident to the local health department(s) for the area affected by the incident.

   The report at a minimum shall include the following:

   1. Date of the spill or major spill;
   2. Location and cause of the spill or major spill;
   3. Estimated volume discharged and name of receiving waters; and
   4. Corrective action taken to mitigate or reduce the adverse effects of the spill or major spill.

c. Post a notice as close as possible to where the spill or major spill occurred and where the spill entered State waters and also post additional notices along portions of the waterway affected by the incident (i.e. bridge crossings, boat ramps, recreational areas, and other points of public access to the affected waterway). The notice at a minimum shall include the same information required in 9 (b)(1-4) above. These notices shall remain in place for a minimum of seven days after the spill or major spill has ceased.

d. Within 24 hours of becoming aware of a spill or major spill, the owner of a POTW shall report the incident to the local media (television, radio, and print media). The report shall include the same information required in 9(b)(1-4) above.

e. Within five (5) days (of the date of the spill or major spill), the owner of a POTW shall submit to EPD a written report which includes the same information required in 9(b)(1-4) above.

f. Within 7 days (after the date of a major spill), the owner of a POTW responsible for the major spill, shall publish a notice in the largest legal organ of the County where the incident occurred. The notice shall include the same information required in 9(b)(1-4) above.

g. The owner of a POTW shall immediately establish a monitoring program of the receiving waters affected by a major spill or by consistently exceeding an effluent limit, with such monitoring being at the expense of the POTW for at least one year. The monitoring program shall include an upstream sampling point as well as sufficient downstream locations to accurately characterize the impact of the

major spill or the consistent exceedence of effluent limitations described in the definition of "Consistently exceeding effluent limitation" above. As a minimum, the following parameters shall be monitored in the receiving stream:

1. Dissolved Oxygen;
2. Fecal Coliform Bacteria;
3. pH;
4. Temperature; and
5. Other parameters required by the EPD.

The monitoring and reporting frequency as well as the need to monitor additional parameters, will be determined by EPD. The results of the monitoring will be provided by the POTW owner to EPD and all downstream public agencies using the affected waters as a source of a public water supply.

Within 24 hours of becoming aware of a major spill, the owner of a POTW shall provide notice of a major spill to every county, municipality, or other public agency whose public water supply is within a distance of 20 miles downstream and to any others which could be potentially affected by the major spill.

10. MONITORING WELL REQUIREMENTS

The permittee, upon written notification by the Division, may be required to install groundwater monitoring wells at an existing land application system. This requirement may apply if monitoring wells were not included in the original design of the facility and also, if the Division determines the existing groundwater monitoring wells are not adequate.

11. GROUNDWATER REQUIREMENTS

Groundwater leaving the land application system boundaries must not exceed maximum contaminant levels for drinking water. If groundwater samples indicate contamination, the permittee will be required, upon written notification by the Division, to develop a plan which will ensure that the primary maximum contaminant levels for drinking water are not exceeded. The plan will be implemented by the permittee immediately upon Division approval.

12. NO DISCHARGE SYSTEM

The wastewater and disposal system must be maintained as a no-discharge system; therefore, additional land for spraying must be utilized if the application rate cannot satisfactorily be handled by the currently approved sprayfield.

B. RESPONSIBILITIES

1. COMPLIANCE

The permittee must comply with this permit. Any permit noncompliance is a violation of the State Act, and the State Rules, and is grounds for:

a. Enforcement action;

b. Permit termination, revocation and reissuance, or modification; or

c. Denial of a permit renewal application.

It shall not be a defense of the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this permit.

2. RIGHT OF ENTRY

The permittee shall allow the Director of the EPD, the Regional Administrator of EPA, and their authorized representatives, agents, or employees after they present credentials to:

a. Enter the permittee's premises where a regulated activity or facility is located, or where any records required by this permit are kept;

b. Review and copy any records required by this permit;

c. Inspect any facilities, equipment, practices, or operations regulated or required by this permit; and

d. Sample any substance or parameter at any location.

3. SUBMITTAL OF INFORMATION

The permittee shall furnish to the Division, within a reasonable time, any information which the Division may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Division upon request, copies of records required to be kept by this permit. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Division, the permittee shall promptly submit such facts or information.

4. TRANSFER OF OWNERSHIP OR CONTROL

A permit may be transferred to another person by a permittee if:

a. The permittee notifies the Director in writing of the proposed transfer at least 30 days in advance of the proposed transfer;

b. A written agreement containing a specific date for transfer of permit responsibility and coverage between the current and new permittee (including acknowledgment that the existing permittee is liable for violations up to that date, and that the new permittee is liable for violations from that date on) is submitted to the Director at least 30 days in advance of the proposed transfer; and

c. The Director, within thirty (30) days, does not notify the current permittee and the new permittee of the Division's intent to modify, revoke and reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

5. PERMIT MODIFICATION

This permit may be modified, terminated, or revoked and reissued in whole or in part during its term for causes including, but not limited to:

a. Permit violations;

b. Obtaining this permit by misrepresentation or by failure to disclose all relevant facts;

c. Changing any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;

d. Changes in effluent characteristics; and

e. Violations of water quality standards.

The filing of a request by the permittee for permit modification, termination, revocation and reissuance, or notification of planned changes or anticipated noncompliance does not negate any permit condition.

6. PENALTIES

The State Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit, makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine or by imprisonment, or by both. The State Act also provides procedures for imposing civil penalties which may be levied for violations of the Act, any permit condition or limitation established pursuant to the Act, or negligently or

intentionally failing or refusing to comply with any final or emergency order of the Director of the Division.

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. CIVIL AND CRIMINAL LIABILITIES

The permittee is liable for civil or criminal penalties for noncompliance with this permit and must comply with applicable State laws including promulgated water quality standards. The permit cannot be interpreted to relieve the permittee of this liability even if it has not been modified to incorporate new requirements.

8. EXPIRATION OF PERMIT

The permittee shall not operate the system after the expiration date. In order to receive authorization to operate beyond the expiration date, the permittee shall submit such information, forms, and fees as are required by the Division no later than 180 days prior to the expiration date.

9. CONTESTED HEARINGS

Any person aggrieved or adversely affected by any action of the Director of the EPD shall petition the Director for a hearing within 30 days of notice of the action.

10. SEVERABILITY

The provisions of this permit are severable. If any permit provision or the application of any permit provision to any circumstance is held invalid, the provision does not affect other circumstances or the remainder of this permit.

11. NEW LAS SYSTEMS

Upon completion of construction of a new land application system, the facility will not be allowed to be placed into service until: 1) the Operations Manual for the facility has been approved by the Division, 2) the final inspection has been conducted, and 3) written authorization to commence operation has been provided by the Division.

PART III

A. APPROVED INDUSTRIAL PRETREATMENT PROGRAM FOR PUBLICLY OWNED TREATMENT WORKS (POTWs)

1. The permittee's approved pretreatment program shall be enforceable through this permit.

2. The permittee shall administer the approved pretreatment program by:

   a. Maintaining records identifying the character and volume of pollutants contributed by industrial users to the POTW.

   b. Enforcing and obtaining appropriate remedies for noncompliance by any industrial user with any applicable pretreatment standard or requirement defined by Section 307(b) and (c) of the Federal Act, 40 CFR Part 403.5 and 403.6 or any State or local requirement, whichever is more stringent.

   c. Revising the adopted local limits based on technical analyses to ensure that the local limits continue to prevent:

      1. Interference with the operation of the POTW;
      2. Pass-through of pollutants in violation of this permit;
      3. Municipal sludge contamination; and
      4. Toxicity to life in the receiving stream.

      Within 180 days of the effective date of this permit issuance or reissuance (excluding permit modifications), the permittee shall review the local limits of the program and submit to EPD a written technical evaluation of the need to revise the local limits.

   d. Ensuring that industrial wastewater discharges from industrial users are regulated through discharge permits or equivalent individual control mechanisms. Compliance schedules will be required of each industrial user for the installation of control technologies to meet applicable pretreatment standards and the requirements of the approved program.

   e. Inspecting, surveying, and monitoring to determine if the industrial user is in compliance with the applicable pretreatment standards.

   f. Equitably maintaining and adjusting revenue levels to ensure adequate and continued pretreatment program implementation.

   g. Preparing a list of industrial users which, during the previous twelve months, have been in significant noncompliance with the pretreatment requirements enumerated in 40 CFR Part 403.8 (f)(2)(vii). This list will be published annually in the newspaper with the largest circulation in the service area during November through October, with the first publication due December 2001.

B. APPROVED PRETREATMENT PROGRAM ANNUAL REPORT

1. Within 30 days of the close of the reporting period November through October, with the first report due December 2001 and each December thereafter, the permittee shall submit a report to the EPD that includes:

   a. An updated list of POTW industrial users;

   b. The results of POTW sampling and analyses required by the EPD;

   c. A summary of POTW industrial user inspections;

   d. A summary of POTW operations including information on upsets, interferences, pass through events, or violations of the permit related to industrial user discharges;

   e. A summary of all activities to involve and inform the public of pretreatment requirements;

   f. A summary of the annual pretreatment program budget;

   g. A descriptive summary of any compliance activities initiated, ongoing, or completed against industrial users which shall include the number of administrative orders, show cause hearings, penalties, civil actions, and fines;

   h. A list of contributing industries using the treatment works, divided into Standard Industrial Classification Code (SIC) categories, which have been issued permits or similar enforceable individual control mechanisms, and a status of compliance for each industrial user. The list should also identify the industries that are categorical or significant industrial users

   i. The name and address of each industrial user that has received a conditionally revised discharge limit;

   j. A list of all industrial users who were in significant noncompliance with applicable pretreatment standards and requirements;

   k. A list of all industrial users showing the date that each was notified that a categorical pretreatment standard had been promulgated by EPA for their industrial category and the status of each industrial user in achieving compliance within the 3 year period allowed by the Federal Act; and

   l. A description of all substantial changes proposed for the program. All substantial changes must first be approved by the EPD before formal adoption by the POTW. Substantial changes shall include but not be limited to:

B. APPROVED PRETREATMENT PROGRAM ANNUAL REPORT

1. Within 30 days of the close of the reporting period November through October, with the first report due December 2001 and each December thereafter, the permittee shall submit a report to the EPD that includes:

   a. An updated list of POTW industrial users;

   b. The results of POTW sampling and analyses required by the EPD;

   c. A summary of POTW industrial user inspections;

   d. A summary of POTW operations including information on upsets, interferences, pass through events, or violations of the permit related to industrial user discharges;

   e. A summary of all activities to involve and inform the public of pretreatment requirements;

   f. A summary of the annual pretreatment program budget;

   g. A descriptive summary of any compliance activities initiated, ongoing, or completed against industrial users which shall include the number of administrative orders, show cause hearings, penalties, civil actions, and fines;

   h. A list of contributing industries using the treatment works, divided into Standard Industrial Classification Code (SIC) categories, which have been issued permits or similar enforceable individual control mechanisms, and a status of compliance for each industrial user. The list should also identify the industries that are categorical or significant industrial users

   i. The name and address of each industrial user that has received a conditionally revised discharge limit;

   j. A list of all industrial users who were in significant noncompliance with applicable pretreatment standards and requirements;

   k. A list of all industrial users showing the date that each was notified that a categorical pretreatment standard had been promulgated by EPA for their industrial category and the status of each industrial user in achieving compliance within the 3 year period allowed by the Federal Act; and

   l. A description of all substantial changes proposed for the program. All substantial changes must first be approved by the EPD before formal adoption by the POTW. Substantial changes shall include but not be limited to:

1. Changes in legal authority;
2. Changes in local limits;
3. Changes in the control mechanisms;
4. Changes in the method for implementing categorical pretreatment standards.
5. A decrease in the frequency of self-monitoring or reporting required of industrial users;
6. A decrease in the frequency of industrial user inspections or sampling by the POTW;
7. Significant reductions in the program resources including personnel commitments, equipment, and funding levels;
8. Changes in confidentiality procedures; and
9. Changes in the POTW sludge disposal and management practices.

2. Reports submitted by an industrial user will be retained by the permittee for at least 3 years and shall be available to the EPD for inspection and copying. This period shall be extended during the course of any unresolved litigation concerning the discharge of pollutants by an industrial user or concerning the operations of the program or when requested by the Director.

C. INDUSTRIAL PRETREATMENT STANDARDS

Effluent limitations for the permittee's discharge are listed in Part I. Other pollutants attributable to industrial users may also be present in the discharge. When sufficient information becomes available, this permit may be revised to specify effluent limitations for these pollutants based on best practicable technology or water quality standards. Once the specific nature of industrial contributions has been identified, data collection and reporting may be required for parameters not specified in Part I.

D. REQUIREMENTS FOR EFFLUENT LIMITATIONS ON POLLUTANTS ATTRIBUTABLE TO INDUSTRIAL USERS

1. The permittee shall require all industrial dischargers to the POTW to meet State pretreatment regulations promulgated in response to Section 307(b) of the Federal Act. Other information about new industrial discharges may be required and will be requested from the permittee after the EPD has received notice of the discharge.

2. The permittee may be required to supplement the requirements of the State and Federal pretreatment regulations to ensure compliance with all applicable effluent limitations listed in Part I. Supplemental actions by the permittee concerning some or all of the industries discharging to the POTW may be necessary.

E. RETAINER

The EPD may require the permittee to amend an approved pretreatment program to incorporate revisions in State Pretreatment Regulations or other EPD requirements. Any required revision must be incorporated into the program within one year of notification by the EPD. Implementation of any revision or amendments to the program shall be described in the subsequent annual report to the EPD.

PERMIT NO. GA0030791

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Georgia Water Quality Control Act (Georgia Laws 1964, p. 416, as amended), hereinafter called the State Act; the Federal Water Pollution Control Act, as amended (33 U.S. C. 1251 et seq.), hereinafter called the Federal Act; and the Rules and Regulations promulgated pursuant to each of these Acts,

City of Griffin
Post Office Box T
Griffin, Georgia 30224

is authorized to discharge from a facility located at

Griffin– Potato Creek
Water Pollution Control Plant
1150 County Line Road
Griffin, Georgia 30224
(Lamar County)

to receiving waters

Potato Creek to the Flint River

in accordance with effluent limitations, monitoring requirements and other conditions set forth in parts I, II,III, and IV hereof.

This permit shall become effective on October 8, 2004.

This permit and the authorization to discharge shall expire at midnight, December 31, 2008.

Signed this 8th day of October 2004.

Director,
Environmental Protection Division

PART I

EPD is the Environmental Protection Division of the Department of Natural Resources.

The Federal Act referred to is The Clean Water Act.

The State Act referred to is The Water Quality Control Act (Act No. 870).

The State rules referred to are The Rules and Regulations for Water Quality Control (Chapter 391-3-6).

A. SPECIAL CONDITIONS

1. MONITORING

The concentration of pollutants in the discharge will be limited as indicated by the table(s) labelec "Effluent Limitations and Monitoring Requirements." The effluent shall meet the requirements in the table(s) or the condition in paragraph I.A.1.a., whichever yields the higher quality effluent.

a. For 5 day biochemical oxygen demand (BOD_5) and total suspended solids (TSS), the arithmetic mean of the values of the effluent samples collected during a month shall not exceed 15 percent of the arithmetic mean of values for influent samples collected at approximately the same times (85 percent removal). For water pollution control plants followed by a polishing pond or consisting of a waste stabilization pond, the 85 percent removal for TSS is not applicable.

b. The monthly average, other than for fecal coliform bacteria, is the arithmetic mean of values obtained for samples collected during a calendar month.

c. The weekly average, other than for fecal coliform bacteria, is the arithmetic mean of values obtained for samples collected during a 7-day period. The week begins 12:00 midnight Saturday and ends at 12:00 midnight the following Saturday. To define a different starting time for the sampling period, the permittee must notify the EPD in writing. For reporting required by I.C.2. of this permit, a week that starts in one month and ends in another month shall be considered part of the second month. The permittee may calculate and report the weekly average as a 7 day moving average.

d. Fecal coliform bacteria will be reported as the geometric mean of the values for the samples collected during the time periods in I.A.1.b. and I.A.1.c.

e. Untreated wastewater influent samples required by I.B. shall be collected before any return or recycle flows. These flows include returned activated sludge, supernatants, centrates, filtrates, and backwash.

f. Effluent samples required by I.B. of this permit shall be collected after the final treatment process and before discharge to receiving waters. Composite samples may be collected before chlorination with written EPD approval.

g. A composite sample shall consist of a minimum of 5 subsamples collected at least once every 2 hours for at least 8 hours and shall be composited proportionately to flow.

h. The permittee shall have a primary flow measuring device that is correctly installed and operable. Secondary flow measurements must be made using a continuous totalizer and an indicating recorder. Calibration of secondary instruments will be maintained to $\pm$ 10% of the

actual flow. The head shall be measured manually to check the flow meter calibration at least once during each composite sampling period. Records of the calibration checks shall be maintained.

i. If secondary flow instruments malfunction or fail to maintain calibration as required in I.A.1.h., the flow shall be computed from manual measurements taken at the times specified for the collection of composite samples.

j. Quarterly analyses required in I.B. shall be performed in March, June, September, and December. Analyses required twice per year will be performed in June and December. Analyses required annually will be performed in June.

k. Some parameters must be analyzed to the detection limits specified by the EPD. These parameters will be reported as "not detected" when they are below the detection limit and will then be considered in compliance with the effluent limit. The detection limit will also be reported.

2. SLUDGE DISPOSAL REQUIREMENTS

Sludge shall be disposed of according to the regulations and guidelines established by the EPD and the Federal Act section 405(d) and (e), and the Resource Conservation and Recovery Act (RCRA). In land applying nonhazardous municipal sewage sludge, the permittee shall comply with the general criteria outlined in the most current version of the EPD "Guidelines for Land Application of Sewage Sludge (Biosolids) at Agronomic Rates" and with the State Rules, Chapter 391-3-6-.17. Before disposing of municipal sewage sludge by land application or any method other than co-disposal in a permitted sanitary landfill, the permittee shall submit a sludge management plan to EPD for written approval. This plan will become a part of the NPDES Permit after approval and modification of the permit. The permittee shall notify the EPD of any changes planned in an approved sludge management plan.

If an applicable management practice or numerical limitation for pollutants in sewage sludge is promulgated under Section 405(d) of the Federal Act after approval of the plan, then the plan shall be modified to conform with the new regulations.

3. SLUDGE MONITORING REQUIREMENTS

The permittee shall develop and implement procedures to ensure adequate year-round sludge disposal. The permittee shall monitor and maintain records documenting the quantity of sludge removed from the facility. Records shall be maintained documenting that the quantity of solids removed from the facility equals the solids generated on an average day. The total quantity of sludge removed from the facility during the reporting period shall be reported each month with the Discharge Monitoring Reports as required under Part I.C.2.of this permit. The quantity shall be reported on a dry weight basis.

Pond treatment systems are required to report the total quantity of sludge removed from the facility only during the months that sludge is removed.

4. INTRODUCTION OF POLLUTANTS INTO THE PUBLICLY OWNED TREATMENT WORKS (POTW)

The permittee must notify EPD of:

a. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to Sections 301 or 306 of the Federal Act if the pollutants were directly discharged to a receiving stream; and

b. Any substantial change in the volume or character of pollutants from a source that existed when the permit was issued.

This notice shall include information on the quality and quantity of the indirect discharge introduced and any anticipated impact on the quantity or quality of effluent to be discharged from the POTW.

5. EFFLUENT TOXICITY AND BIOMONITORING REQUIREMENTS

The permittee shall comply with effluent standards or prohibitions established by section 307(a) of the Federal Act and with chapter 391-3-6-.03(5) of the State Rules and may not discharge toxic pollutants in concentrations or combinations that are harmful to humans, animals, or aquatic life.

If toxicity is suspected in the effluent, the EPD may require the permittee to perform any of the following actions:

a. Acute biomonitoring tests;

b. Chronic biomonitoring tests;

c. Stream studies;

d. Priority pollutant analyses;

e. Toxicity reduction evaluations (TRE); or

f. Any other appropriate study.

The EPD will specify the requirements and methodologies for performing any of these tests or studies. Unless other concentrations are specified by the EPD, the critical concentration used to determine toxicity in biomonitoring tests will be the effluent instream wastewater concentration (IWC) based on the permitted monthly average flow of the facility and the critical low flow of the receiving stream (7Q10). The endpoints that will be reported are the effluent concentration that is lethal to 50% of the test organisms (LC50) if the test is for acute toxicity, and the no observed effect concentration (NOEC) of effluent if the test is for chronic toxicity.

The permittee must eliminate effluent toxicity and supply the EPD with data and evidence to confirm toxicity elimination.

B. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The discharge from the water pollution control plant shall be limited and monitored by the permittee as follows:

Parameter	Discharge Limitations mg/l (kg/day) unless otherwise specified		Monitoring Requirements		
	Monthly Avg.	Weekly Avg.	Measurement Frequency	Sample Type	Sample Location
Flow-m^3/day (MGD)	2.0 (7570)	2.5 (9462)	Seven Days/Week	Continuous Recording	Effluent
<u>Biochemical Oxygen Demand (5-day)</u>					
December– April	30 (227)	45 (284)	Three Days/Week	Composite	Influent and Effluent
May	20 (152)	30 (190)			
June-July	11(83)	16.5 (104)			
Aug- September	10 (76)	15 (95)			
October	15 (114)	22.5(142)			
November	27(205)	40.5 (256)			
Total Suspended Solids (TSS)	30 (227)	45 (284)	Three Days/Week	Composite	Influent and Effluent
Fecal Coliform Bacteria (#/100 ml)	200/100 ml	400/100 ml	Two Days/Week	Grab	Effluent
<u>Ammonia (as N)</u>					
December-March	17.4 (132)	26.1(165)	Three Days/Week	Composite	Effluent
April	10 (76)	15 (95)			
May	5 (38)	7.5 (47)			
June-September	4.1(31)	6.2 (39)			
October	5.6 (43)	8.4 (53)			
November	9 (68)	13.5 (85)			
Total Residual Chlorine (TRC)	0.011*	0.011*	Seven Days/Week	Grab	Effluent
Total Phosphorus (as P)	Report mg/l (kg/day)	NA (NA)	Two Days/Week	Composite	Effluent
Chronic Whole Effluent Toxicity (WET) Testing	**NOEC≥ IWC	NA	Annually	Composite	Effluent

uent limitations continued on the next page.

The discharge from the water pollution control plant shall be limited and monitored by the permittee as follows:

Parameter	Discharge Limitations mg/l (kg/day) unless otherwise specified		Monitoring Requirements		
	Monthly Avg.	Weekly Avg.	Measurement Frequency	Sample Type	Sample Location
Dissolved Oxygen December-April May-November	 2.0 mg/l 6.0 mg/l	 NA NA	Seven Days/Week	Grab	Effluent
Total Recoverable Zinc	0.0652 (0.4946)	***0.0652 (0.4946)	One/Month	Composite	Effluent
Total Recoverable Copper	0.0102 (0.078)	***0.0132 (0.100)	One/Month	Composite	Effluent

The pH shall not be less than 6.0 standard units or greater than 8.5 standard units and shall be monitored on the final effluent by analyzing grab samples taken seven days per week.

*This is a daily maximum limitation for TRC and shall be analyzed to the specific detection limit of 0.10 mg/l.

** WET limit – The No Observed Effect Concentration (NOEC) is greater than or equal to the Instream Wastewater Concentration (IWC) of 92%.

*** This is a daily maximum limit for zinc and copper.

The discharge from the water pollution control plant shall be limited and monitored by the permittee as follows:

Parameter	Discharge Limitations mg/l (kg/day) unless otherwise specified		Monitoring Requirements		
	Monthly Avg.	Weekly Avg.	Measurement Frequency	Sample Type	Sample Location
Dissolved Oxygen	Report	Report	One Day/Week	Grab	In the receiving stream in Potato Creek upstream and downstream from the plant discharge.

C. MONITORING AND REPORTING

1. REPRESENTATIVE SAMPLING

Samples and measurements of the monitored waste shall represent the volume and nature of the waste stream. The permittee shall maintain a written sampling and monitoring schedule.

2. REPORTING

All reports or information submitted in compliance with this permit or requested by EPD must be signed and certified by a principal executive officer, elected official, or other authorized representative. Required analytical results obtained by the permittee shall be summarized on a Discharge Monitoring Report form and any additional EPD specified forms. Monitoring results shall be submitted to the EPD postmarked no later than the 15th day of the month following the end of the reporting period. The EPD may require in writing that additional monitoring results be reported. Signed copies of these and all other required reports shall be submitted to:

Georgia Environmental Protection Division
Permitting, Compliance and Enforcement Program
4220 International Parkway, Suite 101
Atlanta, Georgia 30354

3. MONITORING PROCEDURES

Analytical procedures, sample containers, sample preservation techniques, and sample holding times must be consistent with the techniques and procedures listed in 40 CFR Part 136 for monitoring specified in I.B. EPA approved methods used must be applicable to the concentration ranges of the NPDES samples.

4. RECORDING OF RESULTS

For each required parameter analyzed, the permittee shall record:

a. The exact place, date, and time of sampling, and the person(s) collecting the sample. For flow proportioned composite samples, this shall include the instantaneous flow and the corresponding volume of each sample aliquot, and other information relevant to document flow proportioning of composite samples;

b. The dates and times the analyses were performed;

c. The person(s) who performed the analyses;

d. The analytical procedures or methods used;

e. The results of all required analyses.

5. ADDITIONAL MONITORING BY PERMITTEE

If the permittee monitors required parameters at the locations designated in I.B. more frequently than required, the permittee shall analyze all samples using approved analytical methods specified in I.C.3. The results of this additional monitoring shall be included in calculating and reporting the values on the Discharge Monitoring Report forms. The permittee shall indicate the monitoring frequency on the report. The EPD may require in writing more frequent monitoring, or monitoring of other pollutants not specified in this permit.

6. RECORDS RETENTION

The permittee shall retain records of:

a. All laboratory analyses performed including sample data, quality control data, and standard curves;

b. Calibration and maintenance records of laboratory instruments;

c. Calibration and maintenance records and recordings from continuous recording instruments;

d. Process control monitoring records;

e. Facility operation and maintenance records;

f. Copies of all reports required by this permit;

g. All data and information used to complete the permit application; and

h. All monitoring data related to sludge use and disposal.

These records shall be kept for at least three years. Sludge handling records must be kept for at least five years. Either period may be extended by EPD written notification.

7. PENALTIES

Both the Federal and State Acts provide that any person who falsifies or tampers with any monitoring device or method required under this permit, or who makes any false statement, representation, or certification in any record submitted or required by this permit shall, if convicted, be punished by a fine or by imprisonment or by both. The Acts include procedures for imposing civil penalties for violations or for negligent or intentional failure or refusal to comply with any final or emergency order of the Director of the EPD.

8. WATERSHED ASSESSMENT AND WATERSHED PROTECTION PLAN

Upon the issuance date of this permit, the permittee must conduct a watershed assessment and develop a watershed protection plan for all the watersheds that are contained within the permittee's Assessment Area. The Assessment Area is defined as all basins or subbasins that are served by the facility and for the watersheds contained within the permittee's jurisdictional boundaries. The watershed assessment should include a study to document baseline water quality and identify stressors which affect the quality of the water resources in the area. The scope of the work for the watershed protection plan must include defining what steps will be necessary to improve and ultimately meet water quality standards. At a minimum, the watershed assessment should include the following:

Watershed Assessment

a. Develop a plan for the monitoring and assessment of all streams in the Assessment Area. This should include parameters to be monitored, monitoring frequencies, and other data to be collected.

b. Determine methods for identifying waters not supporting designated water uses.

c. Identify water resource concerns and priority issues for the Assessment Area.

Watershed Protection Plan

The permittee must develop a watershed protection plan that reflects the findings of the watershed assessment.

The watershed protection plan will provide for the following:

The watershed protection plan will apply to the Assessment Area as defined above. The plan will utilize the information generated in the permittee's watershed assessment to establish a baseline of watershed conditions and to provide ongoing long-term monitoring according to the approved plan to either verify that the plan is effective or to modify the plan such that water quality standards will be achieved.

The watershed protection plan must include a schedule for correcting current water quality problems that are causing water quality standards violations. The permittee shall provide ongoing monitoring to verify that the actions taken to correct the water quality problems are effective.

The permittee shall develop and put in place best management practices (BMPs) to prevent future water quality standards violations.

The plan will provide for ongoing monitoring to verify that the BMPs are working or to provide the information necessary to modify the BMPs to achieve water quality standards.

Compliance Schedule

The permittee shall complete its watershed assessment and develop its watershed protection plan in accordance with the following schedule:

a. Submit a plan for conducting the watershed assessment to EPD for review within nine (9) months of the issuance date of this permit.

b. Begin stream sampling within one (1) month of receiving EPD approval of watershed assessment plan.

c. Complete watershed assessment within 3.5 years (42 months) of the issuance date of the permit.

d. Submit an approvable watershed protection plan no later than four years after the issuance date of the permit.

Beginning 15 months from the issuance date of the permit and every 6 months thereafter until EPD approves the permittee's watershed protection plan, the permittee is to submit a report to EPD regarding the progress it has made towards completing its watershed assessment and developing its watershed protection plan. After EPD approval of the watershed assessment plan, the progress reports should include a summary of what stream data has been collected the previous 6 months. This data should be sent in the form of an electronic spreadsheet developed in coordination with EPD. The report should also estimate what percentage of the watershed assessment is complete.

Annual Report

Once the Watershed Protection Plan is approved, each June 30th the permittee is to submit the following to EPD:

a. An annual certification statement documenting that the plan is being implemented as approved. The certification statement shall read as follows: " I certify, under penalty of law, that the watershed protection plan is being implemented. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

b. All watershed plan data collected during the previous year in an electronic format. This data shall be archived using a digital format such as a spreadsheet developed in coordination with EPD. All archived records, data, and information pertaining to the watershed protection plan shall be maintained permanently.

c. A progress report that provides a summary of the BMPs that have been implemented and documented water quality improvements. The progress report shall also include any necessary changes to the Watershed Protection Plan.

PART II

A. MANAGEMENT REQUIREMENTS

1. FACILITY OPERATION

The permittee shall maintain and operate efficiently all treatment or control facilities and related equipment installed or used by the permittee to achieve compliance with this permit. Efficient operation and maintenance include effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. Back-up or auxiliary facilities or similar systems shall be operated only when necessary to achieve permit compliance.

2. CHANGE IN DISCHARGE

Any anticipated facility expansions, or process modifications which will result in new, different, or increased discharges of pollutants requires the submission of a new NPDES permit application. If the changes will not violate the permit effluent limitations, the permittee may notify EPD without submitting an application. The permit may then be modified to specify and limit any pollutants not previously limited.

3. NONCOMPLIANCE NOTIFICATION

If, for any reason the permittee does not comply with, or will be unable to comply with any effluent limitations specified in the permitee's NPDES permit, the permittee shall provide EPD with an oral report within 24 hours from the time the permittee becomes aware of the circumstances followed by a written report within five (5) days of becoming aware of such condition. The written submission shall contain the following information:

a. A description of the noncompliance and its cause; and

b. The period of noncompliance, including the exact date and times; or, if not corrected, the anticipated time the noncompliance is expected to continue; and

c. The steps taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

4. ANTICIPATED NONCOMPLIANCE NOTIFICATION

The permittee shall give written notice to the EPD at least 10 days before:

a. Any planned changes in the permitted facility; or

b. Any activity which may result in noncompliance with the permit.

5. OTHER NONCOMPLIANCE

The permittee must report all instances of noncompliance not reported under other specific reporting requirements, at the time monitoring reports are submitted. The reports shall contain the information required under conditions of twenty-four hour reporting.

6. OPERATOR CERTIFICATION REQUIREMENTS

The person responsible for the daily operation of the facility must be a Class II Certified Operator in compliance with the Georgia State Board of Examiners for Certification of Water and Wastewater Plant Operators and Laboratory Analysts Act, as amended, and as specified by Subparagraph 391-3-6-.12 of the Rules and Regulations for Water Quality Control. All other operators must have the minimum certification required by this Act.

7. LABORATORY ANALYST CERTIFICATION REQUIREMENTS

Laboratory Analysts must be certified in compliance with the Georgia State Board of Examiners for Certification of Water and Wastewater Treatment Plant Operators and Laboratory Analysts Act, as amended.

8. BYPASSING

Any diversion of wastewater from or bypassing of wastewater around the permitted treatment works is prohibited, except if:

a. Bypassing is unavoidable to prevent loss of life, personal injury, or severe property damage;

b. There are no feasible alternatives to bypassing; and

c. The permittee notifies the EPD at least 10 days before the date of the bypass.

Feasible alternatives to bypassing include use of auxiliary treatment facilities and retention of untreated waste. The permittee must take all possible measures to prevent bypassing during routine preventative maintenance by installing adequate back-up equipment.

The permittee shall operate the facility and the sewer system to minimize discharge of pollutants from combined sewer overflows or bypasses and may be required by the EPD to submit a plan and schedule to reduce bypasses, overflows, and infiltration.

Any unplanned bypass must be reported following the requirements for noncompliance notification specified in II.A.3. The permittee may be liable for any water quality violations that occur as a result of bypassing the facility.

9. POWER FAILURES

If the primary source of power to this water pollution control facility is reduced or lost, the permittee shall use an alternative source of power if available, to reduce or control all discharges to maintain permit compliance.

10. ADVERSE IMPACT

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge disposal which might adversely affect human health or the environment.

11. NOTICE CONCERNING ENDANGERING WATERS OF THE STATE

Whenever, because of an accident or otherwise, any toxic or taste and color producing substance, or any other substance which would endanger downstream users of the waters of the State or would damage property, is discharged into such waters, or is so placed that it might flow, be washed, or fall into them, it shall be the duty of the person in charge of such substances at the time to forthwith notify EPD in person or by telephone of the location and nature of the danger, and it shall be such person's further duty to immediately take all reasonable and necessary steps to prevent injury to property and downstream users of said water.

Spills and Major Spills:

A "spill" is any discharge of raw sewage by a Publicly Owned Treatment Works (POTW) to the waters of the State.

A "major spill" is any discharge of raw sewage that exceeds 10,000 gallons or results in water quality violations in the waters of the State or the discharge of pollutants into waters of the State by a POTW that exceeds the weekly average permitted effluent limit for BOD_5 or TSS by 50 percent or greater for any one day.

"Consistently exceeding effluent limitation" means a POTW exceeding the 30 day average limit for biochemical oxygen demand or total suspended solids for at least five days out of each seven day period during a total period of 180 consecutive days.

The following specific requirements shall apply to POTW's. If a spill or major spill occurs, the owner of a POTW shall immediately:

a. Notify EPD, in person or by telephone, when a spill or major spill occurs in the system.

b. Report the incident to the local health department(s) for the area affected by the incident. The report at a minimum shall include the following:

    1. Date of the spill or major spill;
    2. Location and cause of the spill or major spill;
    3. Estimated volume discharged and name of receiving waters; and
    4. Corrective action taken to mitigate or reduce the adverse effects of the spill or major spill.

c. Post a notice as close as possible to where the spill or major spill occurred and where the spill entered State waters and also post additional notices along portions of the waterway affected by the incident (i.e. bridge crossings, boat ramps, recreational areas, and other points of public access to the affected waterway). The notice at a minimum shall include the same information required in 11(b)(1-4) above. These notices shall remain in place for a minimum of seven days after the spill or major spill has ceased.

d. Within 24 hours of becoming aware of a spill or major spill, the owner of a POTW shall report the incident to the local media (television, radio, and print media). The report shall include the same information required in 11(b)(1-4) above.

e. Within five (5) days (of the date of the spill or major spill), the owner of a POTW shall submit to EPD a written report which includes the same information required in 11(b)(1-4) above.

f. Within 7 days (after the date of a major spill), the owner of a POTW responsible for th major spill, shall publish a notice in the largest legal organ of the County where the incide occurred. The notice shall include the same information required in 11(b)(1-4) above.

g. The owner of a POTW shall immediately establish a monitoring program of the receivin waters affected by a major spill or by consistently exceeding an effluent limit, with suc monitoring being at the expense of the POTW for at least one year. The monitoring progra shall include an upstream sampling point as well as sufficient downstream locations t accurately characterize the impact of the major spill or the consistent exceedence of effluer limitations described in the definition of "Consistently exceeding effluent limitation" above As a minimum, the following parameters shall be monitored in the receiving stream:

1. Dissolved Oxygen;
2. Fecal Coliform Bacteria;
3. pH;
4. Temperature; and
5. Other parameters required by the EPD.

The monitoring and reporting frequency as well as the need to monitor additiona parameters, will be determined by EPD. The results of the monitoring will be provided by the POTW owner to EPD and all downstream public agencies using the affected waters as a source of a public water supply.

h. Within 24 hours of becoming aware of a major spill, the owner of a POTW shall provide notice of a major spill to every county, municipality, or other public agency whose public water supply is within a distance of 20 miles downstream and to any others which could be potentially affected by the major spill.

B. RESPONSIBILITIES

1. COMPLIANCE

The permittee must comply with this permit. Any permit noncompliance is a violation of the Federal Act, State Act, and the State Rules, and is grounds for:

a. Enforcement action;

b. Permit termination, revocation and reissuance, or modification; or

c. Denial of a permit renewal application.

It shall not be a defense of the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this permit.

2. RIGHT OF ENTRY

The permittee shall allow the Director of the EPD, the Regional Administrator of EPA, and their authorized representatives, agents, or employees after they present credentials to:

a. Enter the permittee's premises where a regulated activity or facility is located, or where any records required by this permit are kept;

b. Review and copy any records required by this permit;

c. Inspect any facilities, equipment, practices, or operations regulated or required by this permit; and

d. Sample any substance or parameter at any location.

3. SUBMITTAL OF INFORMATION

The permittee shall furnish any information required by the EPD to determine whether cause exists to modify, revoke and reissue, or terminate this permit or to determine compliance with this permit. The permittee shall also furnish the EPD with requested copies of records required by this permit. If the permittee determines that any relevant facts were not included in a permit application or that incorrect information was submitted in a permit application or in any report to the EPD, the permittee shall promptly submit the additional or corrected information.

4. TRANSFER OF OWNERSHIP OR CONTROL

A permit may be transferred to another person by a permittee if:

a. The permittee notifies the Director in writing at least 30 days in advance of the proposed transfer;

b. An agreement is written containing a specific date for transfer of permit responsibility including acknowledgment that the existing permittee is liable for violations up to that date, and that the new permittee is liable for violations from that date on. This agreement must be submitted to the Director at least 30 days in advance of the proposed transfer; and

c. The Director does not notify the current permittee and the new permittee within 30 days of EPD intent to modify, revoke and reissue, or terminate the permit. The Director may require that a new application be filed instead of agreeing to the transfer of the permit.

5. AVAILABILITY OF REPORTS

Except for data determined to be confidential by the Director of EPD under O.C.G.A. 12-5-26 or by the Regional Administrator of EPA under the Code of Federal Regulations, Title 40, Part 2, all reports prepared to comply with this permit shall be available for public inspection at an EPD office. Effluent data, permit applications, permittees' names and addresses, and permits shall not be considered confidential.

6. PERMIT MODIFICATION

This permit may be modified, terminated, or revoked and reissued in whole or in part during its term for causes including, but not limited to:

a. Permit violations;

b. Obtaining this permit by misrepresentation or by failure to disclose all relevant facts;

c. Changing any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;

d. Changes in effluent characteristics; and

e. Violations of water quality standards.

The filing of a request by the permittee for permit modification, termination, revocation and reissuance, or notification of planned changes or anticipated noncompliance does not negate any permit condition.

7. CIVIL AND CRIMINAL LIABILITY

The permittee is liable for civil or criminal penalties for noncompliance with this permit and must comply with applicable State and Federal laws including promulgated water quality standards. The permit cannot be interpreted to relieve the permittee of this liability even if it has not been modified to incorporate new requirements.

8. PROPERTY RIGHTS

The issuance of this permit does not convey any property rights of either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, or any infringement of Federal, State or local laws or regulations.

9. EXPIRATION OF PERMIT

The permittee shall submit an application for permit reissuance at least 180 days before the expiration date of this permit. The permittee shall not discharge after the permit expiration date without written authorization from the EPD. To receive this authorization, the permittee shall submit the information, forms, and fees required by the EPD no later than 180 days before the expiration date.

10. CONTESTED HEARINGS

Any person aggrieved or adversely affected by any action of the Director of the EPD shall petition the Director for a hearing within 30 days of notice of the action.

11. SEVERABILITY

The provisions of this permit are severable. If any permit provision or the application of any permit provision to any circumstance is held invalid, the provision does not affect other circumstances or the remainder of this permit.

12. PREVIOUS PERMITS

All previous State water quality permits issued to this facility for construction or operation are revoked by the issuance of this permit. The permit governs discharges from this facility under the National Pollutant Discharge Elimination System (NPDES).

PART III

A. APPROVED INDUSTRIAL PRETREATMENT PROGRAM FOR PUBLICLY OWNED TREATMENT WORKS (POTWs)

1. The permittee's approved pretreatment program shall be enforceable through this permit.

2. The permittee shall administer the approved pretreatment program by:

   a. Maintaining records identifying the character and volume of pollutants contributed by industrial users to the POTW.

   b. Enforcing and obtaining appropriate remedies for noncompliance by any industrial user with any applicable pretreatment standard or requirement defined by Section 307(b) and (c) of the Federal Act, 40 CFR Part 403.5 and 403.6 or any State or local requirement, whichever is more stringent.

   c. Revising the adopted local limits based on technical analyses to ensure that the local limits continue to prevent:

      1. Interference with the operation of the POTW;
      2. Pass-through of pollutants in violation of this permit;
      3. Municipal sludge contamination; and
      4. Toxicity to life in the receiving stream.

      Within 180 days of the effective date of this permit issuance or reissuance (excluding permit modifications), the permittee shall review the local limits of the program and submit to EPD a written technical evaluation of the need to revise the local limits.

   d. Ensuring that industrial wastewater discharges from industrial users are regulated through discharge permits or equivalent individual control mechanisms. Compliance schedules will be required of each industrial user for the installation of control technologies to meet applicable pretreatment standards and the requirements of the approved program.

   e. Inspecting, surveying, and monitoring to determine if the industrial user is in compliance with the applicable pretreatment standards.

   f. Equitably maintaining and adjusting revenue levels to ensure adequate and continued pretreatment program implementation.

   g. Preparing a list of industrial users which, during the previous twelve months, have been in significant noncompliance with the pretreatment requirements enumerated in 40 CFR Part 403.8 (f)(2)(vii). This list will be published annually in the newspaper with the largest circulation in the service area during November through December, with the first publication due in December.

B. APPROVED PRETREATMENT PROGRAM ANNUAL REPORT

1. Within 30 days of the close of the reporting period November through December, with the first report due in December and each December thereafter, the permittee shall submit a report to the EPD that includes:

a. An updated list of POTW industrial users;

b. The results of POTW sampling and analyses required by the EPD;

c. A summary of POTW industrial user inspections;

d. A summary of POTW operations including information on upsets, interferences, pass through events, or violations of the permit related to industrial user discharges;

e. A summary of all activities to involve and inform the public of pretreatment requirements;

f. A summary of the annual pretreatment program budget;

g. A descriptive summary of any compliance activities initiated, ongoing, or completed against industrial users which shall include the number of administrative orders, show cause hearings, penalties, civil actions, and fines;

h. A list of contributing industries using the treatment works, divided into Standard Industrial Classification Code (SIC) categories, which have been issued permits or similar enforceable individual control mechanisms, and a status of compliance for each industrial user. The list should also identify the industries that are categorical or significant industrial users

i. The name and address of each industrial user that has received a conditionally revised discharge limit;

j. A list of all industrial users who were in significant noncompliance with applicable pretreatment standards and requirements;

k. A list of all industrial users showing the date that each was notified that a categorical pretreatment standard had been promulgated by EPA for their industrial category and the status of each industrial user in achieving compliance within the 3 year period allowed by the Federal Act; and

l. A description of all substantial changes proposed for the program. All substantial changes must first be approved by the EPD before formal adoption by the POTW. Substantial changes shall include but not be limited to:

1. Changes in legal authority;
2. Changes in local limits;
3. Changes in the control mechanisms;
4. Changes in the method for implementing categorical pretreatment standards.
5. A decrease in the frequency of self-monitoring or reporting required of industrial users;
6. A decrease in the frequency of industrial user inspections or sampling by the POTW;
7. Significant reductions in the program resources including personnel commitments, equipment, and funding levels;
8. Changes in confidentiality procedures; and
9. Changes in the POTW sludge disposal and management practices.

2. Reports submitted by an industrial user will be retained by the permittee for at least 3 years and shall be available to the EPD for inspection and copying. This period shall be extended during the course of any unresolved litigation concerning the discharge of pollutants by an industrial user or concerning the operations of the program or when requested by the Director.

C. INDUSTRIAL PRETREATMENT STANDARDS

Effluent limitations for the permittee's discharge are listed in Part I. Other pollutants attributable to industrial users may also be present in the discharge. When sufficient information becomes available, this permit may be revised to specify effluent limitations for these pollutants based on best practicable technology or water quality standards. Once the specific nature of industrial contributions has been identified, data collection and reporting may be required for parameters not specified in Part I.

D. REQUIREMENTS FOR EFFLUENT LIMITATIONS ON POLLUTANTS ATTRIBUTABLE TO INDUSTRIAL USERS

1. The permittee shall require all industrial dischargers to the POTW to meet State pretreatment regulations promulgated in response to Section 307(b) of the Federal Act. Other information about new industrial discharges may be required and will be requested from the permittee after the EPD has received notice of the discharge.

2. The permittee may be required to supplement the requirements of the State and Federal pretreatment regulations to ensure compliance with all applicable effluent limitations listed in Part I. Supplemental actions by the permittee concerning some or all of the industries discharging to the POTW may be necessary.

E. RETAINER

The EPD may require the permittee to amend an approved pretreatment program to incorporate revisions in State Pretreatment Regulations or other EPD requirements. Any required revision must be incorporated into the program within one year of notification by the EPD. Implementation of any revision or amendments to the program shall be described in the subsequent annual report to the EPD.

PART IV

A. APPROVED SLUDGE MANAGEMENT PLAN

1. The permittee's approved Sludge Management Plan shall be implemented in accordance with Chapter 391-3-6-.17 of the State Rules and EPD's, "*Guidelines for Land Application of Sewage Sludge (Biosolids) at Agronomic Rates*", unless a more stringent requirement is stated in this Permit, and shall be enforceable through this Permit.

2. The permittee will submit an annual report pertaining to the most recent calendar year, as required under Chapter 391-3-6-.17(14) of the State Rules. The annual report shall be submitted to EPD no later than January 31 of the following year.

3. The permittee will maintain records of the amount of sludge land applied to each site. The amount of sludge land applied during each calendar year will be reported in the annual report in units of dry tons per year.

4. The permittee will monitor in accordance with the following requirements:

   a. The pH of the sludge and soil mixture from each field within each land application site will be measured once per year. The sample will be a composite sample of all soil types found in each field.

   b. The sewage sludge shall be monitored for the following parameters at the frequencies specified in Part IV.A.5:

Parameter	**Units***
Total nitrogen	Percent
Ammonia-nitrogen	Percent
Nitrate-nitrogen	Percent
Volatile solids	Percent
Total solids	Percent
pH	Standard units
Arsenic	mg/kg
Cadmium	mg/kg
Copper	mg/kg
Lead	mg/kg
Mercury	mg/kg
Molybdenum	mg/kg
Nickel	mg/kg
Selenium	mg/kg
Zinc	mg/kg

   *Units must be reported on a dry weight basis with the exception of pH.

   c. The pathogen density requirements listed in Chapter 391-3-6-.17(7) of the State Rules shall be monitored at the frequency listed in Part IV.A.5.

   d. The vector attraction reduction requirements listed in Chapter 391-3-6-.17(8)(a) through (8)(h) of the State Rules shall be monitored at the frequency listed in Part IV.A.5.

5. Monitoring Frequency:

Amount of Sewage Sludge* (dry tons/year)	Frequency
0-300	Once/year
300-1,600	Once/quarter
1,600-16,000	Once/two months
>16,000	Once/month

*The amount of sewage sludge refers to either the amount of bulk sewage sludge (dry weight) applied to the land or the amount of sewage sludge (dry weight) received by a preparer that sells or otherwise distributes sewage sludge in a bag or other container for application to the land.

6. In accordance with Chapter 391-3-6-.17(12) of the State Rules, sewage sludge samples shall be analyzed using EPA approved methods contained in 40 CFR Part 503.8.

7. A proposed addition (or removal) of a new land application site(s) will be subject to EPD's review and approval process as outlined in the Guidelines for Land Application of Sewage Sludge (Biosolids). Upon written approval of the Director, addition or removal of a land application site(s) will be considered as amending the approved Sludge Management Plan and as an addendum to the permit.

Georgia Department of Natural Resources
2 Martin Luther King, Jr. Drive, S.E., Suite 1152 East Tower, Atlanta, Georgia 30334-900
Noel Holcomb, Commissione
Carol A. Couch, Ph.D., Directo
Environmental Protection Divisio
404/656-471

October 8, 2004

Honorable Cynthia Ward, Mayor
City of Griffin
Post Office Box T
Griffin, Georgia 30224-0046

RE: City of Griffin
Water Pollution Control Plant
(WPCP)
NPDES Permit No. GA0030791

Dear Mayor Ward:

Pursuant to the Georgia Water Quality Control Act, as amended; the Federal Water Pollution Control Act, as amended; and the Rules and Regulations promulgated thereunder, we have today issued the attached National Pollutant Discharge Elimination System (NPDES) permit for the referenced water pollution control plant.

The permit has been modified to include a limit for total recoverable copper, monitoring for phosphorus has been added to the permit and also language for an approved sludge management plan which is included as Part IV of the permit. Further, the permit includes a schedule for meeting watershed assessment and watershed protection plan requirements.

Please be advised that on and after the effective date indicated in the attached NPDES permit, the permittee must comply with all the terms, conditions and limitations of the permit.

Sincerely,

Carol A. Couch, Ph.D.
Director

CAC/gms

ATTACHMENT

cc: Environmental Protection Agency
Mr. Brant D. Keller, Ph.D.,
Director of Public Works

PUBLIC NOTICE

NOTICE OF APPLICATION FOR A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT TO DISCHARGE TREATED WASTEWATER INTO THE WATERS OF THE STATE OF GEORGIA.

The Georgia Environmental Protection Division (EPD) is considering the reissuance and modification of an NPDES permit for the following applicant, subject to specific pollutant limitations and special conditions:

City of Griffin, Post Office Box T, Griffin, Georgia, 30224, NPDES Permit No. GA0030791 for the water pollution control plant located on 1150 County Line Road, Griffin, Georgia 30224. 2.0 MGD of treated wastewater is discharged to Potato Creek tributary to Potato Creek in the Flint River Basin. The permit has been modified to include a limit for total recoverable copper, monitoring for phosphorus, to add language for the facility to conduct a watershed assessment and develop a watershed protection plan and also the permit has also been modified to include language for an approved sludge management plan which is included as Part IV of the draft permit.

Persons wishing to comment on the proposed permit are invited to submit their comments in writing to the EPD address below, within 30 days of this notice. All comments received before or on that date will be considered in the formulation of final determinations for this permit. "City of Griffin- Potato Creek Water Pollution Control Plant (Lamar County)" should be placed at the top of the first page of comments. A public hearing may be held if the EPD Director finds a significant degree of public interest in the proposed permit. Additional information regarding public hearing procedures is available by writing the EPD.

The permit application, draft permit, and other information are available for review at 4220 International Parkway, Suite 101, Atlanta, Georgia 30354, between the hours of 8:30 a.m. and 4:00 p.m., Monday through Friday and at City Hall during normal business hours.

Please bring this to the attention of persons who you know will be interested in this matter.

GMS/gms

Rec 11-08-00

PERMIT NO. GA0020214

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Georgia Water Quality Control Act (Georgia Laws 1964, p. 416, as amended), hereinafter called the "State Act;" the Federal Water Pollution Control Act, as amended (33 U.S. C. 1251 et seq.), hereinafter called the "Federal Act;" and the Rules and Regulations promulgated pursuant to each of these Acts,

City of Griffin – Cabin Creek
Water Pollution Control Plant

is authorized to discharge from a facility located at

1140 North Hill Street
Griffin, Georgia 30224
(Spalding County)

to receiving waters

Cabin Creek tributary to the Towaliga River tributary to the Ocmulgee River

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II and III hereof.

This permit shall become effective on November 1, 2000.

This permit and the authorization to discharge shall expire at midnight, June 18, 2003.

This permit is a modification of the previous permit issued on June 19, 1998 and a subsequent modification issued on August 23, 2000.

Signed this 1st day of November 2000.

Harold F. Reheis

Director,
Environmental Protection Division

PART I

EPD is the Environmental Protection Division of the Department of Natural Resources.

The Federal Act referred to is The Clean Water Act.

The State Act referred to is The Water Quality Control Act (Act No. 870).

The State rules referred to are The Rules and Regulations for Water Quality Control (Chapter 391-3-6).

A. SPECIAL CONDITIONS

1. MONITORING

The concentration of pollutants in the discharge will be limited as indicated by the table(s) labeled "Effluent Limitations and Monitoring Requirements." The effluent shall meet the requirements in the table(s) or the condition in paragraph I.A.1.a., whichever yields the higher quality effluent.

Act U

a. For 5 day biochemical oxygen demand (BOD_5) and total suspended solids (TSS), the arithmetic mean of the values of the effluent samples collected during a month shall not exceed 15 percent of the arithmetic mean of values for influent samples collected at approximately the same times (85 percent removal). For water pollution control plants followed by a polishing pond or consisting of a waste stabilization pond, the 85 percent removal for TSS is not applicable.

b. The monthly average, other than for fecal coliform bacteria, is the arithmetic mean of values obtained for samples collected during a calendar month.

c. The weekly average, other than for fecal coliform bacteria, is the arithmetic mean of values obtained for samples collected during a 7 day period. The week begins 12:00 midnight Saturday and ends at 12:00 midnight the following Saturday. To define a different starting time for the sampling period, the permittee must notify the EPD in writing. For reporting required by I.C.2. of this permit, a week that starts in one month and ends in another month shall be

considered part of the second month. The permittee may calculate and report the weekly average as a 7 day moving average.

d. Fecal coliform bacteria will be reported as the geometric mean of the values for the samples collected during the time periods in I.A.1.b. and I.A.1.c.

e. Untreated wastewater influent samples required by I.B. shall be collected before any return or recycle flows. These flows include returned activated sludge, supernatants, centrates, filtrates, and backwash.

f. Effluent samples required by I.B. of this permit shall be collected after the final treatment process and before discharge to receiving waters. Composite samples may be collected before chlorination with EPD written approval.

g. A composite sample shall consist of a minimum of 5 subsamples collected at least once every 2 hours for at least 8 hours and shall be composited proportionately to flow.

h. The permittee shall have a primary flow measuring device that is correctly installed and operable. Secondary flow measurements must be made using a continuous totalizer and an indicating recorder. Calibration of secondary instruments will be maintained to $\pm$ 10% of the actual flow. The head shall be measured manually to check the flow meter calibration at least once during each composite sampling period. Records of the calibration checks shall be maintained.

i. If secondary flow instruments malfunction or fail to maintain calibration as required in I.A.1.h., the flow shall be computed from manual measurements taken at the times specified for the collection of composite samples.

j. Quarterly analyses required in I.B. shall be performed in March, June, September, and December. Analyses required twice per year will be performed in June and December. Analyses required annually will be performed in June.

k. Some parameters must be analyzed to the detection limits specified by the EPD. These parameters will be reported as "not detected" when they are below the detection limit and will then be considered in compliance with the effluent limit. The detection limit will also be reported.

2. SLUDGE DISPOSAL REQUIREMENTS

Sludge shall be disposed of according to the regulations and guidelines established by the EPD and the Federal Act section 405(d), and the Resource Conservation and Recovery Act (RCRA). In land applying nonhazardous municipal sewage sludge, the permittee shall comply with the general criteria outlined in the most current version of the EPD "Guidelines for Land Application of Sewage Sludge (Biosolids) at Agronomic Rates" and with the State Rules, Chapter 391-3-6-.17. Before disposing of municipal sewage sludge by land application or any method other than co-disposal in a permitted sanitary landfill, the permittee shall submit a sludge management plan to the EPD for written approval. This plan will become a part of the NPDES Permit after approval. The permittee shall notify the EPD of any changes planned in an approved sludge management plan.

If an applicable management practice or numerical limitation for pollutants in sewage sludge is promulgated under Section 405(d) of the Federal Act after approval of the plan, then the plan shall be modified to conform with the new regulations.

3. SLUDGE MONITORING REQUIREMENTS

The permittee shall develop and implement procedures to ensure adequate year-round sludge disposal. The permittee shall monitor the volume and concentration of solids removed from the plant. Records shall be maintained documenting that the quantity of solids removed from the facility equals the solids generated on an average day. The solids removed from the facility shall be reported monthly as pounds per day with the Discharge Monitoring Report required under I.C.2. of this permit.

All analyses performed to show compliance with the monitoring requirements of 40 CFR 503 must be conducted using EPA approved methods. These methods are specified in 40 CFR 503.8.

4. INTRODUCTION OF POLLUTANTS INTO THE PUBLICLY OWNED TREATMENT WORKS (POTW)

The permittee must notify EPD of:

a. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to Sections 301 or 306 of the Federal Act if the pollutants were directly discharged to a receiving stream; and

b. Any substantial change in the volume or character of pollutants from a source that existed when the permit was issued.

This notice shall include information on the quality and quantity of the indirect discharge introduced and any anticipated impact on the quantity or quality of effluent to be discharged from the POTW.

5. EFFLUENT TOXICITY AND BIOMONITORING REQUIREMENTS

The permittee shall comply with effluent standards or prohibitions established by section 307(a) of the Federal Act and with chapter 391-3-6-.03(5) of the State Rules and may not discharge toxic pollutants in concentrations or combinations that are harmful to humans, animals, or aquatic life.

If toxicity is suspected in the effluent, the EPD may require the permittee to perform any of the following actions:

a. Acute biomonitoring tests;

b. Chronic biomonitoring tests;

c. Stream studies;

d. Priority pollutant analyses;

e. Toxicity reduction evaluations (TRE); or

f. Any other appropriate study.

The EPD will specify the requirements and methodologies for performing any of these tests or studies. Unless other concentrations are specified by the EPD, the critical concentration used to determine toxicity in biomonitoring tests will be the effluent instream wastewater concentration (IWC) based on the permitted monthly average flow of the facility and the critical low flow of the receiving stream (7Q10). The endpoints that will be reported are the effluent concentration that is lethal to 10% of the test organisms (LC10) if the test is for acute toxicity, and the no observed effect concentration (NOEC) of effluent if the test is for chronic toxicity.

The permittee must eliminate effluent toxicity and supply the EPD with data and evidence to confirm toxicity elimination.

B. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The Discharge(s) from the water pollution control plant shall be limited and monitored by the permittee as follows:

Parameter	Discharge Limitations mg/l (kg/day) unless otherwise specified		Monitoring Requirements		
	Monthly Avg.	Weekly Avg.	Measurement Frequency	Sample Type	Sample Location
Flow-m^3/Day (MGD)	5678 (1.5)	7098 (1.88)	Seven/Week	Continuous Recording	Effluent
Biochemical Oxygen Demand (5-Day)	30 (171)	45 (213)	Two/Week	Composite	Influent and Effluent
Total Suspended Solids	30 (171)	45 (213)	Two/Week	Composite	Influent and Effluent
Ammonia (as N)			Two/Week	Composite	Effluent
January	8.9 (50.6)	13.4 (63.4)			
February	9.9 (56.3)	14.9 (70.5)			
March	10.6 (60.3)	15.9 (75.5)			
April	7.4 (42.1)	11.1 (52.7)			
May	4.4 (25.0)	6.6 (31.4)			
June	3.5 (19.9)	5.3 (24.9)			
July	3.4 (19.3)	5.1 (24.2)			
August	3.3 (18.8)	5.0 (23.5)			
September	3.6 (20.5)	5.4 (25.7)			
October	5.0 (28.4)	7.5 (35.6)			
November	7.0 (39.8)	10.5 (49.9)			
December	7.9 (44.9)	11.9 (56.3)			
Fecal Coliform Bacteria	200/100 ml	400/100 ml	One/Week	Grab	Effluent
Total Residual Chlorine	0.012*	0.012*	Seven/Week	Grab	Effluent
Total Phosphorus (as P)	1.0 (5.7)	1.5 (7.1)	Two/Week	Composite	Effluent

The pH shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored on the final effluent by analyzing grab samples taken seven times per week.
The minimum effluent Dissolved Oxygen shall be 5.0 mg/l or higher and shall be monitored on the final effluent by analyzing grab samples taken seven times per week.
* This is a daily maximum limitation for TRC and shall be analyzed to the specific detection limit of 0.10 mg/l.

C. MONITORING AND REPORTING

1. REPRESENTATIVE SAMPLING

Samples and measurements of the monitored waste shall represent the volume and nature of the waste stream. The permittee shall maintain a written sampling and monitoring schedule.

2. REPORTING

All reports or information submitted in compliance with this permit or requested by EPD must be signed by a principal executive officer, elected official, or other authorized representative. Required analytical results obtained by the permittee shall be summarized on a Discharge Monitoring Report form and any additional EPD specified forms. Monitoring results shall be submitted to the EPD postmarked no later than the 15th day of the month following the end of the reporting period. The EPD may require in writing that additional monitoring results be reported. Signed copies of these and all other required reports shall be submitted to:

Georgia Environmental Protection Division
Permitting, Compliance and Enforcement Program
4244 International Parkway, Suite 110
Atlanta, Georgia 30354

3. MONITORING PROCEDURES

Analytical procedures, sample containers, sample preservation techniques, and sample holding times must be consistent with the techniques and procedures listed in 40 CFR Part 136 for monitoring specified in I.B. EPA approved methods used must be applicable to the concentration ranges of the NPDES samples.

4. RECORDING OF RESULTS

For each required parameter analyzed, the permittee shall record:

a. The exact place, date, and time of sampling, and the person(s) collecting the sample. For flow proportioned composite samples, this shall include the instantaneous flow and the corresponding volume of each sample aliquot, and other information relevant to

document flow proportioning of composite samples;

b. The dates and times the analyses were performed;

c. The person(s) who performed the analyses;

d. The analytical procedures or methods used;

e. The results of all required analyses.

5. ADDITIONAL MONITORING BY PERMITTEE

If the permittee monitors required parameters at the locations designated in I.B. more frequently than required, the permittee shall analyze all samples using approved analytical methods specified in I.C.3. The results of this additional monitoring shall be included in calculating and reporting the values on the Discharge Monitoring Report forms. The permittee shall indicate the monitoring frequency on the report. The EPD may require in writing more frequent monitoring, or monitoring of other pollutants not specified in this permit.

6. RECORDS RETENTION

The permittee shall retain records of:

a. All laboratory analyses performed including sample data, quality control data, and standard curves;

b. Calibration and maintenance records of laboratory instruments;

c. Calibration and maintenance records and recordings from continuous recording instruments;

d. Process control monitoring records;

e. Facility operation and maintenance records;

f. Copies of all reports required by this permit;

g. All data and information used to complete the permit application;

and

h. All monitoring data related to sludge use and disposal.

These records shall be kept for at least three years. Sludge handling records must be kept for at least five years. Either period may be extended by EPD written notification.

7. PENALTIES

Both the Federal and State Acts provide that any person who falsifies or tampers with any monitoring device or method required under this permit, or who makes any false statement, representation, or certification in any record submitted or required by this permit shall, if convicted, be punished by a fine or by imprisonment or by both. The Acts include procedures for imposing civil penalties for violations or for negligent or intentional failure or refusal to comply with any final or emergency order of the Director of the EPD.

8. COMPLIANCE SCHEDULE

a. The permittee shall achieve compliance with the ammonia limit specified in this permit in accordance with the following schedule:

1) Beginning on June 19, 1998, the permittee shall meet an interim ammonia limitation of 17.4 mg/l (99 kg/day) monthly average and 26.1 mg/l (124 kg/day) weekly average. Ammonia shall be monitored at the effluent as a flow proportioned composite sample twice per week. The results shall be reported on the Discharge Monitoring Reports submitted by the permittee.

2) The permittee shall submit a preliminary investigation report together with the results of any treatability tests to the EPD for review by December 19, 1998.

3) The permittee shall submit an engineering report and plans and specifications for EPD review and approval for any necessary upgrading of the facility, if appropriate, to enable the facility to achieve compliance with the ammonia limit by March 19, 1999.

4) The permittee shall submit a first report of progress to the EPD providing a status on achieving compliance with the ammonia limit by December 19, 1999.

5) The permittee shall submit a second report of progress to the EPD providing a status on achieving compliance with the ammonia limit by September 19, 2000.

6) The permittee shall attain compliance with the ammonia effluent limitations and monitoring requirements specified in Part I .B. by June 19, 2001.

PART II

A. MANAGEMENT REQUIREMENTS

1. FACILITY OPERATION

The permittee shall maintain and operate efficiently all treatment or control facilities and related equipment installed or used by the permittee to achieve compliance with this permit. Efficient operation and maintenance include effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. Back-up or auxiliary facilities or similar systems shall be operated only when necessary to achieve permit compliance.

2. CHANGE IN DISCHARGE

Any anticipated facility expansions, or process modifications which will result in new, different, or increased discharges of pollutants requires the submission of a new NPDES permit application. If the changes will not violate the permit effluent limitations, the permittee may notify EPD without submitting an application. The permit may then be modified to specify and limit any pollutants not previously limited.

3. NONCOMPLIANCE NOTIFICATION

A permittee who does not comply with any permit effluent limit shall provide the EPD with an oral report within 24 hours from the time the permittee becomes aware of the circumstances, followed by a written report within 5 days. The written report shall contain:

a. A description of the noncompliance and its cause;

b. The exact dates and times of noncompliance or, if not corrected, the anticipated time the noncompliance is expected to continue; and

c. The steps taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

4. ANTICIPATED NONCOMPLIANCE NOTIFICATION

The permittee shall give written notice to the EPD at least 10 days before:

a. Any planned changes in the permitted facility; or

b. Any activity which may result in noncompliance with the permit.

5. OPERATOR CERTIFICATION REQUIREMENTS

The person responsible for the daily operation of the facility must be a Class II Certified Operator in compliance with the Georgia State Board of Examiners for Certification of Water and Wastewater Plant Operators and Laboratory Analysts Act, as amended, and as specified by Subparagraph 391-3-6-.12 of the Rules and Regulations for Water Quality Control. All other operators must have the minimum certification required by this Act.

6. LABORATORY ANALYST CERTIFICATION REQUIREMENTS

Laboratory Analysts must be certified in compliance with the Georgia State Board of Examiners for Certification of Water and Wastewater Treatment Plant Operators and Laboratory Analysts Act, as amended.

7. BYPASSING

Any diversion of wastewater from or bypassing of wastewater around the permitted treatment works is prohibited, except if:

a. Bypassing is unavoidable to prevent loss of life, personal injury, or severe property damage;

b. There are no feasible alternatives to bypassing; and

c. The permittee notifies the EPD at least 10 days before the date of the bypass.

Feasible alternatives to bypassing include use of auxiliary treatment facilities and retention of untreated waste. The permittee must take all possible measures to prevent bypassing during routine preventative

maintenance by installing adequate back-up equipment.
The permittee shall operate the facility and the sewer system to minimize discharge of pollutants from combined sewer overflows or bypasses and may be required by the EPD to submit a plan and schedule to reduce bypasses, overflows, and infiltration.

Any unplanned bypass must be reported following the requirements for noncompliance notification specified in II.A.3. The permittee may be liable for any water quality violations that occur as a result of bypassing the facility.

8. POWER FAILURES

If the primary source of power to this water pollution control facility is reduced or lost, the permittee shall use an alternative source of power if available, to reduce or control all discharges to maintain permit compliance.

9. ADVERSE IMPACT

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge disposal which might adversely affect human health or the environment.

10. MAJOR SPILLS

A major spill is any discharge of raw sewage that exceeds 10,000 gallons or results in a water quality violation, or the discharge of pollutants by a facility that exceeds the weekly average permitted effluent limits for BOD_5 or TSS by 50 percent or greater. If a major spill occurs, the permittee shall:

a. Immediately notify the EPD.

b. Meet the written reporting requirements for noncompliance notification described in II.A.3.

c. Within 7 days publish a notice of the spill in the largest newspaper of the county where the spill occurred. The notice shall include:

1. The date of the spill;

2. The location and cause of the spill;
3. The estimated volume discharged and name of receiving stream; and
4. The actions taken to reduce the adverse effects of the spill.

d. Immediately establish a monitoring program of the receiving waters affected by the spill. Samples shall be collected upstream and downstream of the spill location at a frequency determined by the EPD. These parameters shall be monitored for at least one year:

1. Dissolved Oxygen;
2. Fecal Coliform Bacteria;
3 pH;
4. Temperature; and
5. Other parameters required by the EPD.

B. RESPONSIBILITIES

1. COMPLIANCE

The permittee must comply with this permit. Any permit noncompliance is a violation of the Federal Act, State Act, and the State Rules, and is grounds for:

a. Enforcement action;

b. Permit termination, revocation and reissuance, or modification; or

c. Denial of a permit renewal application.

It shall not be a defense of the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this permit.

2. RIGHT OF ENTRY

The permittee shall allow the Director of the EPD, the Regional Administrator of EPA, and their authorized representatives, agents, or employees after they present credentials to:

a. Enter the permittee's premises where a regulated activity or facility is located, or where any records required by this permit are kept;

b. Review and copy any records required by this permit;

c. Inspect any facilities, equipment, practices, or operations regulated or required by this permit; and

d. Sample any substance or parameter at any location.

3. SUBMITTAL OF INFORMATION

The permittee shall furnish any information required by the EPD to determine whether cause exists to modify, revoke and reissue, or terminate this permit or to determine compliance with this permit. The permittee shall also furnish the EPD with requested copies of records required by this permit. If the permittee determines that any relevant facts were not included in a permit application or that incorrect information was submitted in a permit application or in any report to the EPD, the permittee shall promptly submit the additional or corrected information.

4. TRANSFER OF OWNERSHIP OR CONTROL

A permit may be transferred to another person by a permittee if:

a. The permittee notifies the Director in writing at least 30 days in advance of the proposed transfer;

b. An agreement is written containing a specific date for transfer of permit responsibility including acknowledgment that the existing permittee is liable for violations up to that date, and that the new permittee is liable for violations from that date on. This agreement must be submitted to the Director at least 30 days in advance of the proposed transfer; and

c. The Director does not notify the current permittee and the new permittee within 30 days of EPD intent to modify, revoke and reissue, or terminate the permit. The Director may require that a new application be filed instead of agreeing to the transfer of the permit.

5. AVAILABILITY OF REPORTS

Except for data determined to be confidential by the Director of EPD under O.C.G.A. 12-5-26 or by the Regional Administrator of EPA under the Code of Federal Regulations, Title 40, Part 2, all reports prepared to comply with this permit shall be available for public inspection at an EPD office. Effluent data, permit applications, permittees' names and addresses, and permits shall not be considered confidential.

6. PERMIT MODIFICATION

This permit may be modified, terminated, or revoked and reissued in whole or in part during its term for causes including, but not limited to:

a. Permit violations;
b. Obtaining this permit by misrepresentation or by failure to disclose all relevant facts;

c. Changing any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;

d. Changes in effluent characteristics; and

e. Violations of water quality standards.

The filing of a request by the permittee for permit modification, termination, revocation and reissuance, or notification of planned changes or anticipated noncompliance does not negate any permit condition.

7. CIVIL AND CRIMINAL LIABILITY

The permittee is liable for civil or criminal penalties for noncompliance with this permit and must comply with applicable State and Federal laws including promulgated water quality standards. The permit cannot be interpreted to relieve the permittee of this liability even if it has not been modified to incorporate new requirements.

8. PROPERTY RIGHTS

The issuance of this permit does not convey any property rights of either real or personal property, or any exclusive privileges, nor does it authorize

any injury to private property or any invasion of personal rights, or any infringement of Federal, State or local laws or regulations.

9. EXPIRATION OF PERMIT

The permittee shall submit an application for permit reissuance at least 180 days before the expiration date of this permit. The permittee shall not discharge after the permit expiration date without written authorization from the EPD. To receive this authorization, the permittee shall submit the information, forms, and fees required by the EPD no later than 180 days before the expiration date.

10. CONTESTED HEARINGS

Any person aggrieved or adversely affected by any action of the Director of the EPD shall petition the Director for a hearing within 30 days of notice of the action.

11. SEVERABILITY

The provisions of this permit are severable. If any permit provision or the application of any permit provision to any circumstance is held invalid, the provision does not affect other circumstances or the remainder of this permit.

12. PREVIOUS PERMITS

All previous State water quality permits issued to this facility for construction or operation are revoked by the issuance of this permit. The permit governs discharges from this facility under the National Pollutant Discharge Elimination System (NPDES).

PART III

A. APPROVED INDUSTRIAL PRETREATMENT PROGRAM FOR PUBLICLY OWNED TREATMENT WORKS (POTWs)

1. The permittee's approved pretreatment program shall be enforceable through this permit.

2. The permittee shall administer the approved pretreatment program by:

   a. Maintaining records identifying the character and volume of pollutants contributed by industrial users to the POTW.

   b. Enforcing and obtaining appropriate remedies for noncompliance by any industrial user with any applicable pretreatment standard or requirement defined by Section 307(b) and (c) of the Federal Act, 40 CFR Part 403.5 and 403.6 or any State or local requirement, whichever is more stringent.

   c. Revising the adopted local limits based on technical analyses to ensure that the local limits continue to prevent:

      1. Interference with the operation of the POTW;
      2. Pass-through of pollutants in violation of this permit;
      3. Municipal sludge contamination; and
      4. Toxicity to life in the receiving stream.

   d. Ensuring that industrial wastewater discharges from industrial users are regulated through discharge permits or equivalent individual control mechanisms. Compliance schedules will be required of each industrial user for the installation of control technologies to meet applicable pretreatment standards and the requirements of the approved program.

   e. Inspecting, surveying, and monitoring to determine if the industrial user is in compliance with the applicable pretreatment standards.

   f. Equitably maintaining and adjusting revenue levels to ensure adequate and continued pretreatment program implementation.

g. Preparing a list of industrial users which, during the previous twelve months, have been in significant noncompliance with the pretreatment requirements enumerated in 40 CFR Part 403.8 (f)(2)(vii). This list will be published annually in the newspaper with the largest circulation in the service area during November with the first publication due December 1, 2001.

B. APPROVED PRETREATMENT PROGRAM ANNUAL REPORT

1. Within 30 days of the close of the reporting period November through October, with the first report due December 1, 2001 and each December thereafter, the permittee shall submit a report to the EPD that includes:

a. An updated list of POTW industrial users;

b. The results of POTW sampling and analyses required by the EPD;

c. A summary of POTW industrial user inspections;

d. A summary of POTW operations including information on upsets, interferences, pass through events, or violations of the permit related to industrial user discharges;

e. A summary of all activities to involve and inform the public of pretreatment requirements;

f. A summary of the annual pretreatment program budget;

g. A descriptive summary of any compliance activities initiated, ongoing, or completed against industrial users which shall include the number of administrative orders, show cause hearings, penalties, civil actions, and fines;

h. A list of contributing industries using the treatment works, divided into Standard Industrial Classification Code (SIC) categories, which have been issued permits or similar enforceable individual control mechanisms, and a status of compliance for each industrial user. The list should also identify the industries that are categorical or significant industrial users;

i. The name and address of each industrial user that has received a conditionally revised discharge limit;

j. A list of all industrial users who were in significant noncompliance with applicable pretreatment standards and requirements;

k. A list of all industrial users showing the date that each was notified that a categorical pretreatment standard had been promulgated by EPA for their industrial category and the status of each industrial user in achieving compliance within the 3 year period allowed by the Federal Act; and

l. A description of all substantial changes proposed for the program. All substantial changes must first be approved by the EPD before formal adoption by the POTW. Substantial changes shall include but not be limited to:

1. Changes in legal authority;
2. Changes in local limits;
3. Changes in the control mechanisms;
4. Changes in the method for implementing categorical pretreatment standards.
5. A decrease in the frequency of self-monitoring or reporting required of industrial users;
6. A decrease in the frequency of industrial user inspections or sampling by the POTW;
7. Significant reductions in the program resources including personnel commitments, equipment, and funding levels;
8. Changes in confidentiality procedures; and
9. Changes in the POTW sludge disposal and management practices.

2. Reports submitted by an industrial user will be retained by the permittee for at least 3 years and shall be available to the EPD for inspection and copying. This period shall be extended during the course of any unresolved litigation concerning the discharge of pollutants by an industrial user or concerning the operations of the program or when requested by the Director.

C. INDUSTRIAL PRETREATMENT STANDARDS

Effluent limitations for the permittee's discharge are listed in Part I. Other pollutants attributable to industrial users may also be present in the discharge. When sufficient information becomes available, this permit may be revised to specify effluent limitations for these pollutants based on best practicable technology or water quality standards. Once the specific nature of industrial contributions has been identified, data collection and reporting may be required for parameters not specified in Part I.

D. REQUIREMENTS FOR EFFLUENT LIMITATIONS ON POLLUTANTS ATTRIBUTABLE TO INDUSTRIAL USERS

1. The permittee shall require all industrial dischargers to the POTW to meet State pretreatment regulations promulgated in response to Section 307(b) of the Federal Act. Other information about new industrial discharges may be required and will be requested from the permittee after the EPD has received notice of the discharge.

2. The permittee may be required to supplement the requirements of the State and Federal pretreatment regulations to ensure compliance with all applicable effluent limitations listed in Part I. Supplemental actions by the permittee concerning some or all of the industries discharging to the POTW may be necessary.

E. RETAINER

The EPD may require the permittee to amend an approved pretreatment program to incorporate revisions in State Pretreatment Regulations or other EPD requirements. Any required revision must be incorporated into the program within one year of notification by the EPD. Implementation of any revision or amendments to the program shall be described in the subsequent annual report to the EPD.

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

LAND APPLICATION SYSTEM PERMIT

PERMIT NO. GA03-905

In accordance with the provisions of the Georgia Water Quality Control Act (Georgia Laws 1964, p. 416, as amended), and the Rules and Regulations promulgated pursuant thereto, this permit is issued to the following:

Minerva Properties, LLP
2292 Henderson Mill Road
Atlanta, Georgia 30345

is authorized to operate the land application system located at

Spring Lake Division
Jordan Hill Road
Griffin, Georgia 30224
(Spalding County)

This permit is conditioned upon the permittee complying with the effluent limitations, monitoring requirements and other conditions set forth in the permit and with the statements and supporting data submitted with the application and filed with the Environmental Protection Division of the Department of Natural Resources.

This permit is effective on the date signed by the Director of the Environmental Protection Division and is subject to revocation on evidence of noncompliance with any of the provisions of the Georgia Water Quality Control Act or any of the Rules and Regulations promulgated pursuant thereto; or with any presentation made in the above mentioned application or the statements and supporting data entered therein or attached thereto; or with any conditions of this permit.

This permit shall expire at midnight, April 7, 2010.

Signed this 8th day of April 2005.

Director,
Environmental Protection Division

PART I.

A. CONDITIONS

1. DEFINITIONS

a. Division: the Environmental Protection Division of the Department of Natural Resources.

b. Monthly Average: the arithmetic or geometric mean of values for samples collected in a period of 30 consecutive days.

c. Non-restricted Access: landscaped areas where reclaimed wastewater is used for irrigation purposes and public access cannot be controlled and adequate buffer zones cannot be maintained. Reclaimed wastewater used to irrigate non-restricted access areas must be treated to urban water reuse standards.

d. Preapplication Treatment System: the wastewater treatment facility which reduces high strength organic waste to low levels prior to application to the sprayfield area. The preapplication treatment system can consist of a mechanical plant or a pond system.

e. Restricted Access: landscaped areas where reclaimed wastewater is used for irrigation purposes and public access is restricted to specific and controlled periods of time. Wastewater used to irrigate restricted access areas must be pretreated to secondary levels and receive disinfection.

f. Sprayfield: the wetted area of the land application site, excluding the buffer zone.

g. State Act: the Georgia Water Quality Control Act (Official Code of Georgia Annotated; Title 12, Chapter 5, Article 2).

h. Urban Water Reuse: the use of reclaimed water as a substitute for other water sources for the beneficial irrigation of areas that may be accessible to the public, such as golf courses, residential and commercial landscaping, parks, athletic fields, roadway medians, and landscape impoundments

i. Reclaimed Water: wastewater that has received treatment to urban water reuse standards, meets the treatment criteria specific in the Guidelines for Water Reclamation and Urban Water Reuse, and is utilized at a reuse area or is sent to a designated user for reuse.

j. Reject Water: wastewater that does not meet the 3 NTU criteria or water treated after the disinfection system has failed.

k. Designated User or User: any site or facility, where reclaimed water is beneficially used under a contract with the permittee. User may also be defined as the customer to be supplied with reclaimed water

who has a written user agreement with the permittee. In addition, a designated user may also be a purveyor that provides reclaimed water to other customers.

l. Runoff: reclaimed water, which has been applied to a reuse area in sufficient amounts to cause the water to leave the irrigation area in the form of surface flow during and shortly after irrigation application.

2. MONITORING

a. A composite sample shall consist of a minimum of 5 subsamples collected at least every 2 hours for a period of at least 8 hours, and composited proportionately to flow.

b. Flow measurements shall be conducted using the flow measuring device(s) in accordance with the approved design of the facility. If secondary flow measurements are installed, calibration shall be maintained to ± 10% of the actual flow. Flow shall be measured manually to check the flow meter calibration at a frequency of once per week. If secondary flow instruments are in use and malfunction or fail to maintain calibration as required, the flow shall be computed from manual measurements or by other method(s) approved by EPD until such time as the secondary flow instrument is repaired.

For facilities which utilize alternate technologies for measuring flow, the flow measurement device must be calibrated semi-annually by qualified personnel.

Records of the calibration checks shall be maintained.

c. Quarterly analyses required in I.B. shall be performed in March, June, September, and December. Analyses required twice per year will be performed in June and December. Analyses required annually will be performed in June.

d. Some parameters must be analyzed to the detection limits specified by the EPD. These parameters will be reported as "not detected" when they are below the detection limit and will then be considered in compliance with the effluent limit. The detection limit will also be reported.

3. SLUDGE DISPOSAL AND MONITORING REQUIREMENTS

Sludge shall be disposed of according to the regulations and guidelines established by the EPD and the Federal Act section 405(d) and (e), and the Resource Conservation and Recovery Act (RCRA). In land applying nonhazardous municipal sewage sludge, the permittee shall comply with the general criteria outlined in the most current version of the EPD "Guidelines for Land Application of Sewage Sludge (Biosolids) at Agronomic Rates" and with the State Rules, Chapter 391-3-6-.17. Before disposing of municipal sewage sludge by land application or any method other than co-disposal in a permitted sanitary landfill, the permittee shall submit a sludge management plan to EPD for written approval. This plan will become a part of the Land

Application System Permit upon approval and modification of the permit. The permittee shall notify the EPD of any changes planned in an approved sludge management plan.

If an applicable management practice or numerical limitation for pollutants in sewage sludge is promulgated under Section 405(d) of the Federal Act after approval of the plan, then the plan shall be modified to conform with the new regulations.

The permittee shall develop and implement procedures to ensure adequate year-round sludge disposal. The permittee shall monitor and maintain records documenting the quantity of sludge removed from the facility. Records shall be maintained documenting that the quantity of solids removed from the facility equals the solids generated on an average day. The total quantity of sludge removed from the facility during the reporting period shall be reported each month with the Discharge Monitoring Reports as required under Part I.C.2.of this permit. The quantity shall be reported on a dry weight basis.

Pond treatment systems are required to report the total quantity of sludge removed from the facility only during the months that sludge is removed.

4. DESIGNATED USERS

After issuance of this permit, the permittee may provide reuse water to designated users. The permittee may provide reuse water to additional designated users as long as prior written notice is provided to the EPD and a public notice is provided to the community. The additional users list will be considered an addendum to the permit, but the permit will not be reopened to add new designated users. The permittee must keep records of the volume of reuse water provided to each of its designated users.

5. USER AGREEMENT

Any designated user receiving reuse water from the permittee must enter into an agreement with the permittee. At a minimum the agreement must address all items which are in EPD's Guidelines for Water Reclamation and Urban Water Reuse (Section 9.2).

B.1 PREAPPLICATION TREATMENT PLANT MONITORING

MECHANICAL PLANT - REUSE

The weekly average flow of effluent from the mechanical preapplication treatment plant must not exceed 0.344 MGD. For monitoring purposes, influent shall refer to the influent to the facility and effluent shall refer to the discharge from the urban reuse treatment facility. The mechanical preapplication treatment plant shall be monitored by the permittee for the parameters and at the frequency listed below effective the date EPD provides written approval for completion of construction for 0.275 MGD and written authorization to commence operation has been provided:

Parameters	Discharge Limitation Monthly Average, mg/l unless otherwise specified	Monitoring Requirements		
		Measurement Frequency	Sample Type	Sample Location
Flow (MGD)*	0.275	Seven Days/Week	Continuous Recording	Effluent
Biochemical Oxygen Demand (5-Day)	5	One/Week	Composite	Influent and Effluent
Suspended Solids	5	One/Week	Composite	Influent and Effluent
pH, standard units	6.0 - 9.0	Seven Days/Week	Grab	Effluent
Fecal Coliform Bacteria (#/100 ml)	23	Seven Days/Week	Grab	Effluent
**Turbidity (NTU)	3	Seven Days/Week	Continuous	Effluent

Continuously recorded turbidity measurements of the discharge from the preapplication treatment plant, prior to disinfection, will be required.

*The permittee must keep records of the volume of reuse water provided to each of its customers.

**Reclaimed water exceeding 3 NTU is to be considered reject water (Refer to Part I.A.1.j)

B.2. PREAPPLICATION TREATMENT PLANT MONITORING

MECHANICAL PLANT - REUSE

The weekly average flow of effluent from the mechanical preapplication treatment plant must not exceed 0.688 MGD. For monitoring purposes, influent shall refer to the influent to the facility and effluent shall refer to the discharge from the urban reuse treatment facility. The mechanical preapplication treatment plant shall be monitored by the permittee for the parameters and at the frequency listed below effective on the date the EPD provides written approval of completion of construction of the 0.550 MGD upgrade and written authorization to commence operation has been provided:

Parameters	Discharge Limitation Monthly Average, mg/l unless otherwise specified	Monitoring Requirements		
		Measurement Frequency	Sample Type	Sample Location
Flow (MGD)*	0.550	Seven Days/Week	Continuous Recording	Effluent
Biochemical Oxygen Demand (5-Day)	5	One/Week	Composite	Influent and Effluent
Suspended Solids	5	One/Week	Composite	Influent and Effluent
pH, standard units	6.0 - 9.0	Seven Days/Week	Grab	Effluent
Fecal Coliform Bacteria (#/100 ml)	23	Seven Days/Week	Grab	Effluent
**Turbidity (NTU)	3	Seven Days/Week	Continuous	Effluent

Continuously recorded turbidity measurements of the discharge from the preapplication treatment plant, prior to disinfection, will be required.

*The permittee must keep records of the volume of reuse water provided to each of its customers.

**Reclaimed water exceeding 3 NTU is to be considered reject water (Refer to Part I.A.1.j)

B.3. GROUNDWATER MONITORING REQUIREMENTS

Groundwater leaving the land application system boundaries must not exceed maximum contaminant levels for drinking water. The groundwater shall be monitored from each groundwater monitoring well by the permittee for the parameters and at the frequency listed below:

Parameter	Measurement Frequency
Depth to Groundwater	One/Month
pH, standard units	One/Quarter
Electrical Conductivity	One/Quarter
Nitrate-Nitrogen	One/Quarter
Fecal Coliform Bacteria	One/Six Months

Where there are categorical and/or significant industrial discharges to the sewer system, the permittee may be required to sample for additional parameters. These parameters may include heavy metals and organic compounds.

B.4. SURFACE WATER MONITORING

The water quality of any surface water adjacent to or traversing the land application site shall be monitored. Grab samples collected upstream and downstream of the sprayfield area shall be monitored for the parameters and at the frequency listed below:

Parameter	Measurement Frequency
Biochemical Oxygen Demand (5-Day)	One/Quarter
Suspended Solids	One/Quarter
Dissolved Oxygen	One/Quarter
pH, standard units	One/Quarter
Fecal Coliform Bacteria	One/Quarter
Nitrate-Nitrogen	One/Quarter

C. APPLICATION RATES

For B.1. effluent limitations, the wetted sprayfield area of the land application system shall consist of 38 acres. For B.2. effluent limitations, the wetted sprayfield area of the land application system shall consist of 77 acres. The hydraulic wastewater loading to the sprayfield area must not exceed the rate established and approved by the Division. The design application rate is 2.5 inches per week (inches/week). The instantaneous application rate is 0.25 inches per hour (inches/hour). Any request for a higher loading rate must be submitted to the Division for approval.

D. MONITORING AND REPORTING

1. REPRESENTATIVE SAMPLING

Samples and measurements taken for the purpose of monitoring shall be representative of the volume and nature of the monitored waste stream. The permittee shall maintain a written sampling and monitoring schedule.

2. REPORTING

Monitoring Report Forms shall be completed each month with the monitoring results, signed by a principal executive officer or ranking elected official, or by a duly authorized representative of that person who has the authority to act for or on behalf of that person, and submitted to the Division, postmarked no later than the 15th day of the month following the reporting period. Monitoring results for parameters analyzed less frequently than once per month shall be submitted to the Division postmarked no later than the 15th day of the month following the specified reporting period. The Division may require the reporting of additional monitoring results by written notification. Signed copies of these and all other reports required herein shall be submitted to the following address:

Georgia Environmental Protection Division
Mountain – Atlanta District Office
4244 International Parkway, Suite 114
Atlanta, Georgia 30354-3906

3. MONITORING PROCEDURES

Analytical procedures, sample containers, sample preservation techniques and sample holding times must be consistent with the techniques and procedures approved pursuant to 40 CFR Part 136, unless other techniques and test procedures have been specified in this permit.

4. RECORDING OF RESULTS

For each measurement of sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

1. The exact place, date, and time of sampling, and the person(s) collecting the samples,

2. The dates and times the analyses were performed,

3. The person(s) who performed the analyses,

4. The analytical procedures or methods used,

5. The results of all required analyses.

5. ADDITIONAL MONITORING BY PERMITTEE

If the permittee monitors any pollutant at, or in addition to, the location(s) designated herein more frequently than required by this permit, the permittee shall analyze all samples collected using approved analytical methods, and the results of such monitoring shall be included in the calculation and reporting of the values required in the Monitoring Report Forms. Such increased monitoring frequency shall also be indicated. The Division may require by written notification, more frequent monitoring or the monitoring of other pollutants not specified in this permit.

6. RECORDS RETENTION

The permittee shall retain records of:

a. All laboratory analyses performed including sample data, quality control data, and standard curves;

b. Calibration and maintenance records of laboratory instruments;

c. Calibration and maintenance records and recordings from continuous recording instruments;

d. Process control monitoring records;

e. Facility operation and maintenance records;

f. Copies of all reports required by this permit;

g. All data and information used to complete the permit application; and

h. All monitoring data related to sludge use and disposal.

These records shall be kept for at least three years. Sludge handling records must be kept for at least five years. Either period may be extended by EPD written notification.

PART II.

A. MANAGEMENT REQUIREMENTS

1. FACILITY OPERATION

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities (and related appurtenances) which are installed or used by the permittee to achieve compliance with the terms and conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. Proper operation of the land application system also includes the best management practice of establishing and maintaining a vegetative cover on the sprayfield area.

2. NONCOMPLIANCE NOTIFICATION

If, for any reason the permittee does not comply with, or will be unable to comply with any effluent limitations specified in the permit, the permittee shall provide EPD with an oral report within 24 hours from the time the permittee becomes aware of the circumstances followed by a written report within five (5) days of becoming aware of such condition. The written submission shall contain the following information:

a. A description of the noncompliance and its cause;

b. The period of noncompliance, including the exact date and times; or, if not corrected, the anticipated time the noncompliance is expected to continue; and

c. The steps taken to reduce, eliminate, and prevent recurrence of the non-complying discharge.

3. ANTICIPATED NONCOMPLIANCE NOTIFICATION

The permittee shall give written notice to the EPD at least 10 days before:

a. Any planned changes in the permitted facility; or

b. Any activity which may result in noncompliance with the permit.

4. OTHER NONCOMPLIANCE

The permittee must report all instances of noncompliance not reported under other specific reporting requirements, at the time monitoring reports are submitted. The reports shall contain the information required under conditions of twenty-four hour reporting.

5. OPERATOR CERTIFICATION REQUIREMENTS

The operator in responsible charge (ORC) for the facility shall be a Class I Biological Wastewater Operator. On-site operation shall be by an on-site operator (OSO) who is certified Class II Biological Wastewater Operator or higher for a minimum of 4 hours per day, 7 days a week in conjunction with automatic diversion of reclaimed water that does not meet the turbidity criteria and with the automatic diversion of reclaimed water should any component of the disinfection system fail. An operator shall be on call during all periods the plant is unattended and must be able to respond to the plant site within one hour of an alarm. The electronic monitoring and alarm system must record the date and time of all alarms and the date and time of the alarm override. All operators (other than the ORC and OSO) shall have a minimum of a Class III Biological Wastewater Operator certification.

6. LABORATORY ANALYST CERTIFICATION REQUIREMENTS

The permittee shall ensure that, when required, the person(s) performing the laboratory analyses for this wastewater treatment plant is a Certified Laboratory Analyst in accordance with the Georgia Certification of Water and Wastewater Treatment Plant Operators and Laboratory Analysts Act, as amended, and the Rules promulgated thereunder.

7. POWER FAILURES

If the primary source of power to this facility is reduced or lost, the permittee shall use an alternative source of power to reduce or control all discharges to maintain permit compliance.

8. ADVERSE IMPACT

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge disposal which might adversely affect human health or the environment.

9. MONITORING WELL REQUIREMENTS

The permittee, upon written notification by the Division, may be required to install groundwater monitoring wells at an existing land application system. This requirement may apply if monitoring wells were not included in the original design of the facility and also, if the Division determines the existing groundwater monitoring wells are not adequate.

10. GROUNDWATER REQUIREMENTS

Groundwater leaving the land application system boundaries must not exceed maximum contaminant levels for drinking water. If groundwater samples indicate contamination, the permittee will be required, upon written notification by the Division, to develop a plan which will ensure that the primary maximum contaminant levels for drinking water are not exceeded. The plan will be implemented by the permittee immediately upon Division approval.

11. NO DISCHARGE SYSTEM

The wastewater and disposal system must be maintained as a no-discharge system; therefore, additional land for spraying must be utilized if the application rate cannot satisfactorily be handled by the currently approved sprayfield.

B. RESPONSIBILITIES

1. COMPLIANCE

The permittee must comply with this permit. Any permit noncompliance is a violation of the State Act, and the State Rules, and is grounds for:

a. Enforcement action;

b. Permit termination, revocation and reissuance, or modification; or

c. Denial of a permit renewal application.

It shall not be a defense of the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this permit.

2. RIGHT OF ENTRY

The perrnittee shall allow the Director of the EPD, the Regional Administrator of EPA, and their authorized representatives, agents, or employees after they present credentials to:

a. Enter the permittee's premises where a regulated activity or facility is located, or where any records required by this permit are kept;

b. Review and copy any records required by this permit;

c. Inspect any facilities, equipment, practices, or operations regulated or required by this permit; and Sample any substance or parameter at any location.

d. Sample any substance or parameter at any location

3. SUBMITTAL OF INFORMATION

The permittee shall furnish to the Division, within a reasonable time, any information which the Division may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Division upon request, copies of records required to be kept by this permit. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Division, the permittee shall promptly submit such facts or information.

4. TRANSFER OF OWNERSHIP OR CONTROL

A permit may be transferred to another person by a permittee if:

a. The permittee notifies the Director in writing of the proposed transfer at least 30 days in advance of the proposed transfer;

b. A written agreement containing a specific date for transfer of permit responsibility and coverage between the current and new permittee (including acknowledgment that the existing permittee is liable for violations up to that date, and that the new permittee is liable for violations from that date on) is submitted to the Director at least 30 days in advance of the proposed transfer; and

c. The Director, within thirty (30) days, does not notify the current permittee and the new permittee of the Division's intent to modify, revoke and reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit.

5. PERMIT MODIFICATION

This permit may be modified, terminated, or revoked and reissued in whole or in part during its term for causes including, but not limited to:

a. Permit violations;

b. Obtaining this permit by misrepresentation or by failure to disclose all relevant facts;

c. Changing any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;

d. Changes in effluent characteristics; and

e. Violations of water quality standards.

The filing of a request by the permittee for permit modification, termination, revocation and reissuance, or notification of planned changes or anticipated noncompliance does not negate any permit condition.

6. PENALTIES

The State Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit, makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine or by imprisonment, or by both. The State Act also provides procedures for imposing civil penalties which may be levied for violations of the Act, any permit condition or limitation established pursuant to the Act, or negligently or intentionally failing or refusing to comply with any final or emergency order of the Director of the Division.

Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. CIVIL AND CRIMINAL LIABILITIES

The permittee is liable for civil or criminal penalties for noncompliance with this permit and must comply with applicable State laws including promulgated water quality standards. The permit cannot be interpreted to relieve the permittee of this liability even if it has not been modified to incorporate new requirements.

8. EXPIRATION OF PERMIT

The permittee shall not operate the system after the expiration date. In order to receive authorization to operate beyond the expiration date, the permittee shall submit such information, forms, and fees as are required by the Division no later than 180 days prior to the expiration date.

9. CONTESTED HEARINGS

Any person aggrieved or adversely affected by any action of the Director of the EPD shall petition the Director for a hearing within 30 days of notice of the action.

10. SEVERABILITY

The provisions of this permit are severable. If any permit provision or the application of any permit provision to any circumstance is held invalid, the provision does not affect other circumstances or the remainder of this permit.

11. NEW LAS SYSTEMS

Upon completion of construction of a new land application system, the facility will not be allowed to be placed into service until: 1) the Operations Manual for the facility has been approved by the Division, 2) the final inspection has been conducted, and 3) written authorization to commence operation has been provided by the Division.

Georgia Department of Natural Resources
2 Martin Luther King, Jr. Dr. S.E., Suite 1152 East Floyd Tower, Atlanta, Georgia 30334
Lonice C. Barrett, Commissioner
Harold F. Reheis, Director
David Word, Assistant Director
Environmental Protection Division
404/656-4713

June 5, 2003

RECEIVED
JUN 10 2003
SPALDING COUNTY COMMISSIONERS

Mr. William Wilson, County Manager
Spalding County Board of Commissioners
Post Office Box 1087
Griffin, Georgia 30224

RE: WWTP, Inc. Highland Mill
Water Pollution Control Plant (WPCP)
NPDES Permit No. GA0023752
Transfer of Ownership

Dear Mr. Wilson:

The Georgia Environmental Protection Division (EPD) has reviewed your request to transfer the above referenced NPDES permit from Mr. Bill Tenison of WWTP, Inc. to the Spalding County Board of Commissioners. The permit has been modified to transfer the ownership.

Please be advised, all monitoring and reporting requirements of the above referenced permit will remain valid.

Sincerely,

Harold F. Reheis
Director

HFR/jds

ATTACHMENT

cc: Environmental Protection Agency

PERMIT NO. GA0023752

STATE OF GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Georgia Water Quality Control Act (Georgia Laws 1964, p. 416, as amended), hereinafter called the State Act; the Federal Water Pollution Control Act, as amended (33 U.S. C. 1251 et seq.), hereinafter called the Federal Act; and the Rules and Regulations promulgated pursuant to each of these Acts,

Spalding County Board of Commissioners
Post Office Box 1087
Griffin, Georgia 30224

is authorized to discharge from a facility located at

WWTP – Highland Mill
Water Pollution Control Plant (WPCP)
440 Spring Street
Griffin, Georgia
(Spalding County)

to receiving waters

Wolf Creek tributary to Troublesome Creek tributary to the Towaliga River in the Lower Ocmulgee River Basin.

in accordance with effluent limitations, monitoring requirements and other conditions set forth in parts I, II and III hereof.

This permit shall become effective on June 5, 2003.

This is a modification of the permit previously issued on September 18, 2002.

This permit and the authorization to discharge shall expire at midnight, September 17, 2007.

Signed this 5th day of June 2003.

Director,
Environmental Protection Division

PART I

EPD is the Environmental Protection Division of the Department of Natural Resources.

The Federal Act referred to is The Clean Water Act.

The State Act referred to is The Water Quality Control Act (Act No. 870).

The State Rules referred to are The Rules and Regulations for Water Quality Control (Chapter 391-3-6).

A. SPECIAL CONDITIONS

1. MONITORING

The concentration of pollutants in the discharge will be limited as indicated by the table(s) labeled "Effluent Limitations and Monitoring Requirements."

a. The monthly average, other than for fecal coliform bacteria, is the arithmetic mean of values obtained for samples collected during a calendar month.

b. The weekly average, other than for fecal coliform bacteria, is the arithmetic mean of values obtained for samples collected during a 7 day period. The week begins 12:00 midnight Saturday and ends at 12:00 midnight the following Saturday. To define a different starting time for the sampling period, the permittee must notify the EPD in writing. For reporting required by I.C.2. of this permit, a week that starts in one month and ends in another month shall be considered part of the second month. The permittee may calculate and report the weekly average as a 7 day moving average.

c. Fecal coliform bacteria will be reported as the geometric mean of the values for the samples collected during the time periods in I.A.1.a. and I.A.1.b.

d. Untreated wastewater influent samples required by I.B. shall be collected before any return or recycle flows. These flows include returned activated sludge, supernatants, centrates, filtrates, and backwash.

e. Effluent samples required by I.B. of this permit shall be collected after the final treatment process and before discharge to receiving waters. Composite samples may be collected before chlorination with written EPD approval.

f. A composite sample shall consist of a minimum of 2 subsamples collected at least once every 5 hours for at least 8 hours and shall be composited proportionately to flow.

g. The permittee shall have a primary flow measuring device that is correctly installed and operable. Secondary flow measurements must be made using a continuous totalizer and an indicating recorder. Calibration of secondary instruments will be maintained to ± 10% of the actual flow. The head shall be measured manually to check the flow meter calibration at least once during each composite sampling period. Records of the calibration checks shall be maintained.

h. If secondary flow instruments malfunction or fail to maintain calibration as required in I.A.1.g., the flow shall be computed from manual measurements taken at the times specified for the collection of composite samples.

i. Quarterly analyses required in I.B. shall be performed in March, June, September, and December. Analyses required twice per year will be performed in June and December. Analyses required annually will be performed in June.

j. Some parameters must be analyzed to the detection limits specified by the EPD. These parameters will be reported as "not detected" when they are below the detection limit and will then be considered in compliance with the effluent limit. The detection limit will also be reported.

2. SLUDGE DISPOSAL REQUIREMENTS

Sludge shall be disposed of according to the regulations and guidelines established by the EPD and the Federal Act Section 405(d), and the Resource Conservation and Recovery Act (RCRA). In land applying nonhazardous municipal sewage sludge, the permittee shall comply with the general criteria outlined in the most current version of the EPD "Guidelines for Land Application of Sewage Sludge (Biosolids) at Agronomic Rates" and with the State Rules, Chapter 391-3-6-.17. Before disposing of municipal sewage sludge by land application or any method other than co-disposal in a permitted sanitary landfill, the permittee shall submit a sludge management plan to the EPD for written approval. This plan will become a part of the NPDES Permit after approval. The permittee shall notify the EPD of any changes planned in an approved sludge management plan.

If an applicable management practice or numerical limitation for pollutants in sewage sludge is promulgated under Section 405(d) of the Federal Act after approval of the plan, then the plan shall be modified to conform with the new regulations.

3. SLUDGE MONITORING REQUIREMENTS

The permittee shall develop and implement procedures to ensure adequate year-round sludge disposal. The permittee shall monitor the volume and concentration of solids removed from the plant. Records shall be maintained documenting that the quantity of solids removed from the facility equals the solids generated on an average day. The solids removed from the facility shall be reported monthly as pounds per day with the Discharge Monitoring Report required under I.C.2. of this permit.

All analyses performed to show compliance with the monitoring requirements of 40 CFR 503 must be conducted using EPA approved methods. These methods are specified in 40 CFR 503.8.

4. INTRODUCTION OF POLLUTANTS INTO THE PUBLICLY OWNED TREATMENT WORKS (POTW)

The permittee must notify EPD of:

a. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to Sections 301 or 306 of the Federal Act if the pollutants were directly discharged to a receiving stream; and

b. Any substantial change in the volume or character of pollutants from a source that existed when the permit was issued.

This notice shall include information on the quality and quantity of the indirect discharge introduced and any anticipated impact on the quantity or quality of effluent to be discharged from the POTW.

5. EFFLUENT TOXICITY AND BIOMONITORING REQUIREMENTS

The permittee shall comply with effluent standards or prohibitions established by section 307(a) of the Federal Act and with chapter 391-3-6-.03(5) of the State Rules and may not discharge toxic pollutants in concentrations or combinations that are harmful to humans, animals, or aquatic life.

If toxicity is suspected in the effluent, the EPD may require the permittee to perform any of the following actions:

a. Acute biomonitoring tests;

b. Chronic biomonitoring tests;

c. Stream studies;

d. Priority pollutant analyses;

e. Toxicity reduction evaluations (TRE); or

f. Any other appropriate study.

The EPD will specify the requirements and methodologies for performing any of these tests or studies. Unless other concentrations are specified by the EPD, the critical concentration used to determine toxicity in biomonitoring tests will be the effluent instream wastewater concentration (IWC) based on the permitted monthly average flow of the facility and the critical low flow of the receiving stream (7Q10). The endpoints that will be reported are the effluent concentration that is lethal to 50% of the test organisms (LC50) if the test is for acute toxicity, and the no observed effect concentration (NOEC) of effluent if the test is for chronic toxicity.

The permittee must eliminate effluent toxicity and supply the EPD with data and evidence to confirm toxicity elimination.

6. ELIMINATION OF DISCHARGE

Operation of this facility will cease and the discharge will be eliminated by connection to an appropriate municipal or privately owned water pollution control plant sewer system within three months of reasonable availability of the connection.

7. EXPANSION OF SYSTEM

The permittee shall not allow any new connections to the facility sewer system without written approval from the EPD.

B. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

The discharge from the water pollution control plant shall be limited and monitored by the permittee as follows:

Parameter	Discharge Limitations mg/l (kg/day) unless otherwise specified		Monitoring Requirements		
	Monthly Average	Weekly Average	Measurement Frequency	Sample Type	Sample Location
Flow-m^3/Day (MGD)	0.019	0.023	One/Month	Instantaneous	Effluent
Biochemical Oxygen Demand (5-Day)	30	45	One/Month	Grab	Effluent
Total Suspended Solids	30	45	One/Month	Grab	Effluent
Fecal Coliform acteria	200/100 ml	400/100 ml	One/Month	Grab	Effluent

The pH shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored on the final effluent by analyzing grab samples taken once per month.

C. MONITORING AND REPORTING

1. REPRESENTATIVE SAMPLING

Samples and measurements of the monitored waste shall represent the volume and nature of the waste stream. The permittee shall maintain a written sampling and monitoring schedule.

2. REPORTING

All reports or information submitted in compliance with this permit or requested by EPD must be signed by a principal executive officer, elected official, or other authorized representative. Required analytical results obtained by the permittee shall be summarized on a Discharge Monitoring Report form and any additional EPD specified forms. Monitoring results shall be submitted to the EPD postmarked no later than the 15th day of the month following the end of the reporting period. The EPD may require in writing that additional monitoring results be reported. Signed copies of these and all other required reports shall be submitted to:

Environmental Protection Division
Mountain District – Atlanta Office
4244 International Parkway, Suite 114
Atlanta, Georgia 30354

3. MONITORING PROCEDURES

Analytical procedures, sample containers, sample preservation techniques, and sample holding times must be consistent with the techniques and procedures listed in 40 CFR Part 136 for monitoring specified in I.B. EPA approved methods used must be applicable to the concentration ranges of the NPDES samples.

4. RECORDING OF RESULTS

For each required parameter analyzed, the permittee shall record:

a. The exact place, date, and time of sampling, and the person(s) collecting the sample. For flow proportioned composite samples, this shall include the instantaneous flow and the corresponding volume of each sample aliquot, and other information relevant to document flow proportioning of composite samples;

b. The dates and times the analyses were performed;

c. The person(s) who performed the analyses;

d. The analytical procedures or methods used;

e. The results of all required analyses.

5. ADDITIONAL MONITORING BY PERMITTEE

If the permittee monitors required parameters at the locations designated in I.B. more frequently than required, the permittee shall analyze all samples using approved analytical methods specified in I.C.3. The results of this additional monitoring shall be included in calculating and reporting the values on the Discharge Monitoring Report forms. The permittee shall indicate the monitoring frequency on the report. The EPD may require in writing more frequent monitoring, or monitoring of other pollutants not specified in this permit.

6. RECORDS RETENTION

The permittee shall retain records of:

a. All laboratory analyses performed including sample data, quality control data, and standard curves;

b. Calibration and maintenance records of laboratory instruments;

c. Calibration and maintenance records and recordings from continuous recording instruments;

d. Process control monitoring records;

e. Facility operation and maintenance records;

f. Copies of all reports required by this permit;

g. All data and information used to complete the permit application; and

h. All monitoring data related to sludge use and disposal.

These records shall be kept for at least three years. Sludge handling records must be kept for at least five years. Either period may be extended by EPD written notification.

7. PENALTIES

Both the Federal and State Acts provide that any person who falsifies or tampers with any monitoring device or method required under this permit, or who makes any false statement, representation, or certification in any record submitted or required by this permit shall, if convicted, be punished by a fine or by imprisonment or by both. The Acts include procedures for imposing civil penalties for violations or for negligent or intentional failure or refusal to comply with any final or emergency order of the Director of the EPD.

PART II

A. MANAGEMENT REQUIREMENTS

1. FACILITY OPERATION

The permittee shall maintain and operate efficiently all treatment or control facilities and related equipment installed or used by the permittee to achieve compliance with this permit. Efficient operation and maintenance include effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. Back-up or auxiliary facilities or similar systems shall be operated only when necessary to achieve permit compliance.

2. CHANGE IN DISCHARGE

Any anticipated facility expansions, or process modifications which will result in new, different, or increased discharges of pollutants requires the submission of a new NPDES permit application. If the changes will not violate the permit effluent limitations, the permittee may notify EPD without submitting an application. The permit may then be modified to specify and limit any pollutants not previously limited.

3. NONCOMPLIANCE NOTIFICATION

A permittee who does not comply with any permit effluent limit shall provide the EPD with an oral report within 24 hours from the time the permittee becomes aware of the circumstances, followed by a written report within 5 days. The written report shall contain:

a. A description of the noncompliance and its cause;

b. The exact dates and times of noncompliance or, if not corrected, the anticipated time the noncompliance is expected to continue; and

c. The steps taken to reduce, eliminate, and prevent recurrence of the noncomplying discharge.

4. ANTICIPATED NONCOMPLIANCE NOTIFICATION

The permittee shall give written notice to the EPD at least 10 days before:

a. Any planned changes in the permitted facility; or

b. Any activity which may result in noncompliance with the permit.

5. OPERATOR CERTIFICATION REQUIREMENTS

The person responsible for the daily operation of the facility must be a Class III Certified Operator in compliance with the Georgia State Board of Examiners for Certification of Water and Wastewater Plant Operators and Laboratory Analysts Act, as amended, and as specified by Subparagraph 391-3-6-.12 of the Rules and Regulations for Water Quality Control. All other operators must have the minimum certification required by this Act.

6. LABORATORY ANALYST CERTIFICATION REQUIREMENTS

Laboratory Analysts must be certified in compliance with the Georgia State Board of Examiners for Certification of Water and Wastewater Treatment Plant Operators and Laboratory Analysts Act, as amended.

7. BYPASSING

Any diversion of wastewater from or bypassing of wastewater around the permitted treatment works is prohibited, except if:

a. Bypassing is unavoidable to prevent loss of life, personal injury, or severe property damage;

b. There are no feasible alternatives to bypassing; and

c. The permittee notifies the EPD at least 10 days before the date of the bypass.

Feasible alternatives to bypassing include use of auxiliary treatment facilities and retention of untreated waste. The permittee must take all possible measures to prevent bypassing during routine preventative maintenance by installing adequate back-up equipment.

The permittee shall operate the facility and the sewer system to minimize discharge of pollutants from combined sewer overflows or bypasses and may be required by the EPD to submit a plan and schedule to reduce bypasses, overflows, and infiltration.

Any unplanned bypass must be reported following the requirements for noncompliance notification specified in II.A.3. The permittee may be liable for any water quality violations that occur as a result of bypassing the facility.

8. POWER FAILURES

If the primary source of power to this water pollution control facility is reduced or lost, the permittee shall use an alternative source of power if available, to reduce or control all discharges to maintain permit compliance.

9. ADVERSE IMPACT

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge disposal which might adversely affect human health or the environment.

B. RESPONSIBILITIES

1. COMPLIANCE

The permittee must comply with this permit. Any permit noncompliance is a violation of the Federal Act, State Act, and the State Rules, and is grounds for:

a. Enforcement action;

b. Permit termination, revocation and reissuance, or modification; or

c. Denial of a permit renewal application.

It shall not be a defense of the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this permit.

2. RIGHT OF ENTRY

The permittee shall allow the Director of the EPD, the Regional Administrator of EPA, and their authorized representatives, agents, or employees after they present credentials to:

a. Enter the permittee's premises where a regulated activity or facility is located, or where any records required by this permit are kept;

b. Review and copy any records required by this permit;

c. Inspect any facilities, equipment, practices, or operations regulated or required by this permit; and

d. Sample any substance or parameter at any location.

3. SUBMITTAL OF INFORMATION

The permittee shall furnish any information required by the EPD to determine whether cause exists to modify, revoke and reissue, or terminate this permit or to determine compliance with this permit. The permittee shall also furnish the EPD with requested copies of records required by this permit. If the permittee determines that any relevant facts were not included in a permit application or that incorrect information was submitted in a permit application or in any report to the EPD, the permittee shall promptly submit the additional or corrected information.

4. TRANSFER OF OWNERSHIP OR CONTROL

A permit may be transferred to another person by a permittee if:

a. The permittee notifies the Director in writing at least 30 days in advance of the proposed transfer;

b. An agreement is written containing a specific date for transfer of permit responsibility including acknowledgment that the existing permittee is liable for violations up to that date, and that the new permittee is liable for violations from that date on. This agreement must be submitted to the Director at least 30 days in advance of the proposed transfer; and

c. The Director does not notify the current permittee and the new permittee within 30 days of EPD intent to modify, revoke and reissue, or terminate the permit. The Director may require that a new application be filed instead of agreeing to the transfer of the permit.

5. AVAILABILITY OF REPORTS

Except for data determined to be confidential by the Director of EPD under O.C.G.A. 12-5-26 or by the Regional Administrator of EPA under the Code of Federal Regulations, Title 40, Part 2, all reports prepared to comply with this permit shall be available for public inspection at an EPD office. Effluent data, permit applications, permittees' names and addresses, and permits shall not be considered confidential.

6. PERMIT MODIFICATION

This permit may be modified, terminated, or revoked and reissued in whole or in part during its term for causes including, but not limited to:

a. Permit violations;

b. Obtaining this permit by misrepresentation or by failure to disclose all relevant facts;

c. Changing any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;

d. Changes in effluent characteristics; and

e. Violations of water quality standards.

The filing of a request by the permittee for permit modification, termination, revocation and reissuance, or notification of planned changes or anticipated noncompliance does not negate any permit condition.

7. CIVIL AND CRIMINAL LIABILITY

The permittee is liable for civil or criminal penalties for noncompliance with this permit and must comply with applicable State and Federal laws including promulgated water quality standards. The permit cannot be interpreted to relieve the permittee of this liability even if it has not been modified to incorporate new requirements.

8. PROPERTY RIGHTS

The issuance of this permit does not convey any property rights of either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, or any infringement of Federal, State or local laws or regulations.

9. EXPIRATION OF PERMIT

The permittee shall submit an application for permit reissuance at least 180 days before the expiration date of this permit. The permittee shall not discharge after the permit expiration date without written authorization from the EPD. To receive this authorization, the permittee shall submit the information, forms, and fees required by the EPD no later than 180 days before the expiration date.

10. CONTESTED HEARINGS

Any person aggrieved or adversely affected by any action of the Director of the EPD shall petition the Director for a hearing within 30 days of notice of the action.

11. SEVERABILITY

The provisions of this permit are severable. If any permit provision or the application of any permit provision to any circumstance is held invalid, the provision does not affect other circumstances or the remainder of this permit.

12. PREVIOUS PERMITS

All previous State water quality permits issued to this facility for construction or operation are revoked by the issuance of this permit. The permit governs discharges from this facility under the National Pollutant Discharge Elimination System (NPDES).

Detailed Reports

PCS

Report an Error

Results are based on data extracted on OCT-14-2005

Facility

FACILITY NAME (1) :	WWTP, INC. (WPCP)	**NPDES :**	GA0023752
FACILITY NAME (2) :			
STREET 1 :	440 SPRING STREET	**SIC CODE :**	2281 = YARN SPIN MILLS:COTTON, MM FIB
CITY :	GRIFFIN	**MAJOR / MINOR :**	
COUNTY NAME :	SPALDING	**TYPE OF OWNERSHIP :**	PRI = PRIVATE
STATE :	GA	**INDUSTRY CLASS :**	P
ZIP CODE :	30224	**ACTIVITY STATUS :**	A = Active
REGION :	04	**INACTIVE DATE :**	
LATITUDE :	+3316513		
LONGITUDE :	-08416563	**TYPE OF PERMIT ISSUED :**	S = STATE
LAT/LON CODE OF ACCURACY :	3 = NEAREST 10 SECONDS	**PERMIT ISSUED DATE :**	05-JUN-2003
LAT/LON METHOD :	B = NAVIGATION-QUALITY GPS	**PERMIT EXPIRED DATE :**	17-SEP-2007
LAT/LON SCALE :	3 = 24,000	**ORIGINAL PERMIT ISSUE DATE :**	07-NOV-1975
LAT/LON DATUM :	1 = NAD27		
LAT/LON DESCRIPTION :	01099		
USGS HYDRO BASIN CODE :		**STREAM SEGMENT :**	0095
FLOW :	.019	**MILEAGE IND :**	12730

RECEIVING STREAM CLASS CODE :		**FEDERAL_GRANT_IND :**	
RECEIVING WATERS :	WOLF CRK/TROUBLESOME CK/TOWALIGA RV	**FINAL LIMITS IND :**	F = FINAL
PRETREATMENT CODE :			
SLUDGE INDICATOR :		**SLUDGE CLASS FAC IND :**	
SLUDGE RELATED PERMIT NUM :		**ANNUAL DRY SLUDGE PROD :**	
MAILING NAME :	WWTP, INC. (HIGHLAND MILLS)		
MAILING STREET (1) :	SPALDING BRD. OF COMMISSIONERS	**MAILING STREET (2) :**	P.O. BOX 1087
MAILING CITY :	GRIFFIN	**MAILING STATE :**	GA
MAILING ZIP CODE :	30224		
SLUDGE COMMERCIAL HANDLER :			
SLUDGE HANDLER STREET (1) :		**SLUDGE HANDLER STREET (2) :**	
SLUDGE HANDLER CITY :		**SLUDGE HANDLER STATE :**	
SLUDGE HANDLER ZIP CODE :			
COGNIZANT OFFICIAL :		**COGNIZANT OFFICIAL TEL :**	

Permit Documents

FACILITY NAME (1) : WWTP, INC. (WPCP) **NPDES :** GA0023752

FACILITY NAME (2) :

No Permit Documents Found.

Permit Tracking

FACILITY NAME (1) : WWTP, INC. (WPCP) **NPDES :** GA0023752

FACILITY NAME (2) :

PERMIT ISSUED BY : S = STATE

PERMIT ISSUED DATE : 05-JUN-2003

ORIGINAL DATE OF ISSUE : 07-NOV-1975

PERMIT EXPIRED DATE : 17-SEP-2007

Permit Tracking Events:

EVENT CODE	EVENT DESCRIPTION	ACTUAL DATE
P5099	PERMIT EXPIRED	17-SEP-2007
P4099	PERMIT ISSUED	05-JUN-2003
P3099	DRAFT PERMIT/PUBLIC NOTICE	03-NOV-1979
P1099	APPLICATION RECEIVED	16-APR-1973

Inspections

FACILITY NAME (1) : WWTP, INC. (WPCP) **NPDES :** GA0023752

FACILITY NAME (2) :

No Inspections Found.

Outfalls/Pipe Schedules

FACILITY NAME (1) :	WWTP, INC. (WPCP)	**NPDES :**	GA0023752
FACILITY NAME (2) :		**OUTFALL TYPE :**	
PIPE NUMBER :	0B0	**ACTIVITY STATUS:**	A = ACTIVE
REPORT DESIGNATOR :	0	**LATITUDE:**	+3316514
PIPE SET QUALIFIER :	9	**LONGITUDE :**	-08416564
INACTIVE DATE :		**LAT/LON ACCURACY :**	1 = NEAREST 10TH OF A SECOND
INIT LIMITS START DATE :		**LAT/LON METHOD :**	B = NAVIGATION-QUALITY GPS
INIT LIMITS END DATE :		**LAT/LON SCALE :**	3 = 24,000
INTERIM LIMITS START DATE :		**LAT/LON DATUM :**	1 = NAD27
INTERIM LIMITS END DATE :		**LAT/LON DESCRIPTION :**	
FINAL LIMITS START DATE :	01-JUL-2003	**USGS HYDRO BASIN CODE :**	03070103

FINAL LIMITS END DATE : 17-SEP-2007
INIT SUBM. DATE(EPA) :
SUBMISSION UNITS (EPA) :
UNITS IN EPA SUBM. PERIOD : 0
INIT SUBM. DATE (STATE) : 15-AUG-2003
SUBMISSION UNITS (STATE) : M = MONTHS
UNITS IN STATE SUBM. PERIOD : 1
INIT REPORTING DATE : 01-JUL-2003
REPORTING UNITS : M = MONTHS
UNITS IN REPORTING PERIOD : 1

PIPE STREAM SEGMENT :
RECEIVING STREAM CLASS CD :
MILEAGE INDICATOR :
PIPE DESCRIPTION :

Limits Report

FACILITY NAME (1) : WWTP, INC. (WPCP) **NPDES :** GA0023752
FACILITY NAME (2) : **PIPE NUMBER :** 0B0
REPORT DESIGNATOR : 0 **PIPE SET QUALIFIER :** 9

LIMIT TYPE	PARAMETER CODE	MONITORING LOCATION	SEASON NUM	MODIFICATION NUM	MOD. PERIOD START DATE	MOD. PERIOD END DATE	CHANGE OF LIMIT STATUS	CONTESTED PARAMETER INDICATOR	DOCKET NUMBER	LONG FORMAT
5 = FINAL	BOD, 5-DAY (20 DEG. C)	1 = EFFLUENT GROSS VALUE	0	0	01-JUL-2003	17-SEP-2007				YES
5 = FINAL	PH	1 = EFFLUENT GROSS VALUE	0	0	01-JUL-2003	17-SEP-2007				YES
5 = FINAL	SOLIDS, TOTAL SUSPENDED	1 = EFFLUENT GROSS VALUE	0	0	01-JUL-2003	17-SEP-2007				YES
5 = FINAL	FLOW, IN CONDUIT OR THRU TREATMENT PLANT	1 = EFFLUENT GROSS VALUE	0	0	01-JUL-2003	17-SEP-2007				YES

5 = FINAL	COLIFORM, FECAL GENERAL	1 = EFFLUENT GROSS VALUE	0	0	01-JUL-2003	17-SEP-2007				YES
5 = FINAL	SOLIDS, SLUDGE, TOT, DRY WEIGHT	S = SEE COMMENTS BELOW	0	0	01-JUL-2003	17-SEP-2007				YES

Compliance Schedules and Violations

FACILITY NAME (1) : WWTP, INC. (WPCP) **NPDES :** GA0023752
FACILITY NAME (2):

No Compliance Schedules Found.

Evidentiary Hearings

FACILITY NAME (1) : WWTP, INC. (WPCP) **NPDES :** GA0023752
FACILITY NAME (2) :

No PCS Evidentiary Hearing Information Found.

Pretreatment Inspections/Audits

FACILITY NAME (1) : WWTP, INC. (WPCP) **NPDES :** GA0023752
FACILITY NAME (2) :

No PCS Pretreatment Inspections Found.

Pretreatment Performance Summary

FACILITY NAME (1) : WWTP, INC. (WPCP) **NPDES :** GA0023752

FACILITY NAME (2) :

No PCS Pretreatment Performance Summary Information Found.

Appendix C

Sludge Management Operation and Maintenance Data

Cabin Creek WWTP Sludge Management O&M Cost Calculation

INPUT

Sludge Solids per Year	352,480	lb	176.2 ton	
Sludge Volume per Year @3% solids	1.4	Mgal		
				Increase 10% for design capacity
Sludge Solids per day	965.7	lb		1062.3 lb
Sludge Volume per day	3859.7	gal		5403.6 gal

Dry weight basis 193.9 dry ton/yr

Determine O&M Cost to Haul Sludge

	Liquid @ 3% solids		Dewatered @ 15% solids	
Annual amount in Tons	193.9	dry ton/yr	193.9	dry ton/yr
@ % solids given	6,462.1	wet ton/yr	1,292.4	wet ton/yr
Convert to gallons	1,549,671.81	gal	309,934.36	gal
@1600 gal/load	968.5	load/yr	193.7	load/yr
	18.6	load/wk	3.7	load/wk
	6.7	ton/load	6.7	ton/load
@ 40 roundtrip miles/load	38,760	miles/yr	7,760	miles/yr
@ $2.10/gal, 6 MPG	$ 13,566.00	Fuel Cost/yr	$ 2,713.20	Fuel Cost/yr
	$ 14.01	Fuel Cost/load		
	$ 2.10	Fuel Cost/ton	$ 2.10	Fuel Cost/ton
@ 7% of Capital Cost/yr	$ 4,200.00	Maintenance Cost/yr	$ 840.00	Maintenance Cost/yr
	$ 4.34	Maint. Cost/load		
	$ 0.65	Maint. Cost/ton	$ 0.65	Maint. Cost/ton
@$18/hr	$ 34,867.62	Labor Cost/yr	$ 6,973.52	Labor Cost/yr
	$ 36.00	Labor Cost/load		
	$ 5.40	Labor Cost/ton	$ 5.40	Labor Cost/ton
Replacement cost (1 new truck every 250,000 miles, neglect inflation)	$ 9,302.40	cost per year	$ 1,862.40	cost per year
	$ 9.60	Replacement Cost/load		
	$ 1.44	Replacement Cost/ton	$ 1.44	Replacement Cost/ton
Total	$ 9.58	cost per ton	$ 9.59	cost/ton
Total	$ 61,936.02	cost/yr	$ 12,389.12	cost/yr
Miles on Truck in 20 years	775,200	miles	155,200	miles

Difference	$ 49,546.89	per year
Difference	620,000	miles less in 20 years

Determine O&M Cost to Dewater Sludge

Electricity Cost (unit+feed systems) @ about 0.5 kWH/ton	$ 0.04	cost per ton	$ 258.49	cost per year
Chemical Cost (feed system @ $1.20/lb, 0.30lb/wet ton)	$ 0.36	cost per ton	$ 2,326.37	cost per year
Service Cost (2% of capital cost)	$ 0.65	cost per ton	$ 4,200.39	cost per year
Operator, 3 hr / day necessary	$ 2.18	cost per ton	$ 14,087.45	cost per year
Total	$ 3.23	cost per ton	$ 20,872.68	cost per year

Total O&M Cost per ton

	Liquid @ 3% solids		Dewatered @ 15% solids	
O&M for Hauling				
Fuel @ $1.25/gal, 6 MPG	$ 2.10	cost per ton	$ 2.10	cost per ton
Maintenance @ 7% of Capital Cost/yr	$ 0.65	cost per ton	$ 0.65	cost per ton
Labor @$18/hr	$ 5.40	cost per ton	$ 5.40	cost per ton
Replacement cost (1 new truck every 250,000 miles, neglect inflation)	$ 1.44	cost per ton	$ 1.44	cost per ton
Total	$ 9.58	cost per ton	$ 9.59	cost per ton
O&M for Dewatering				
Electricity Cost (unit+feed systems) @ about 0.5 kWH/ton	$ -		$ 0.04	cost per 3% ton
Chemical Cost (feed system @ $1.20/lb, 0.16lb/wet ton)	$ -		$ 0.36	cost per 3% ton
Service Cost (2% of capital cost)	$ -		$ 0.65	cost per 3% ton
Operator, 3 hr / day necessary	$ -		$ 2.18	cost per 3% ton
Total	$ -	cost per ton	$ 3.23	cost per 3% ton

Total Annual O&M Cost per year

	Liquid @ 3% solids	Dewatered @ 15% solids
Based on Wet tons produced	$ 61,937.00	$ 33,262.00

Total Capital Cost per year

Add dewatering unit

Pumping system from thickener to blending/conditioning tank:	$75,000
Polymer feed system	$50,000
Dewatering unit (including feed pumps)	$210,000
Building	$175,000
Solids conveyor	$35,000
Truck bay	$40,000
Piping	$35,000
Site work	$50,000
Sub-total	$670,000
Contingency, eng., const. mgmt. @ 20%	$134,000
Estimated total	$804,000

Annualized Capital Cost	$ 70,096.38	cost per yr

Potato Creek WWTP Sludge Management O&M Cost Calculation

INPUT					
Sludge Solids per Year	443,359	lb	221.7 ton		
Sludge Volume per Year @3% solids	1.8	Mgal			
				Increase 10% for design capacity	
Sludge Solids per day	1214.7	lb		1336.2	lb
Sludge Volume per day	4854.8	gal		6796.8	gal

Dry weight basis 243.8 dry ton/yr

Determine O&M Cost to Haul Sludge

	Liquid @ 3% solids			Dewatered @ 15% solids		
Annual amount in Tons		243.8	dry ton/yr		243.8	dry ton/yr
@ % solids given		8,128.3	wet ton/yr		1,625.7	wet ton/yr
Convert to gallons		1,949,221.36	gal		389,844.27	gal
@1600 gal/load		1218.3	load/yr		243.7	load/yr
		23.4	load/wk		4.7	load/wk
		6.7	ton/load		6.7	ton/load
@ 40 roundtrip miles/load		48,760	miles/yr		9,760	miles/yr
@ $2.10/gal, 6 MPG	$	17,066.00	Fuel Cost/yr	$	3,413.20	Fuel Cost/yr
	$	14.01	Fuel Cost/load			
	$	2.10	Fuel Cost/ton	$	2.10	Fuel Cost/ton
@ 7% of Capital Cost/yr	$	4,200.00	Maintenance Cost/yr	$	840.00	Maintenance Cost/yr
	$	3.45	Maint. Cost/load			
	$	0.52	Maint. Cost/ton	$	0.52	Maint. Cost/ton
@$18/hr	$	43,857.48	Labor Cost/yr	$	8,771.50	Labor Cost/yr
	$	36.00	Labor Cost/load			
	$	5.40	Labor Cost/ton	$	5.40	Labor Cost/ton
Replacement cost (1 new truck every 250,000 miles, neglect inflation)	$	11,702.40	cost per year	$	2,342.40	cost per year
	$	9.61	Replacement Cost/load			
	$	1.44	Replacement Cost/ton	$	1.44	Replacement Cost/ton
Total	$	9.45	cost per ton	$	9.45	cost/ton
Total	$	76,825.88	cost/yr	$	15,367.10	cost/yr
Miles on Truck in 20 years		975,200	miles		195,200	miles

Difference	$	61,458.78	per year
Difference		780,000	miles less in 20 years

Determine O&M Cost to Dewater Sludge

Electricity Cost (unit+feed systems) @ about 0.5 kWH/ton	$	0.04	cost per ton	$	325.13	cost per year
Chemical Cost (feed system @ $1.20/lb, 0.30lb/wet ton)	$	0.36	cost per ton	$	2,926.17	cost per year
Service Cost (2% of capital cost)	$	0.52	cost per ton	$	4,226.69	cost per year
Operator, 4 hr / day necessary	$	2.31	cost per ton	$	18,776.26	cost per year
Total	$	3.23	cost per ton	$	26,254.26	cost per year

Total O&M Cost per ton

	Liquid @ 3% solids			Dewatered @ 15% solids		
O&M for Hauling						
Fuel @ $1.25/gal, 6 MPG	$	2.10	cost per ton	$	2.10	cost per ton
Maintenance @ 7% of Capital Cost/yr	$	0.52	cost per ton	$	0.52	cost per ton
Labor @$18/hr	$	5.40	cost per ton	$	5.40	cost per ton
Replacement cost (1 new truck every 250,000 miles, neglect inflation)	$	1.44	cost per ton	$	1.44	cost per ton
Total	$	9.45	cost per ton	$	9.45	cost per ton
O&M for Dewatering						
Electricity Cost (unit+feed systems) @ about 0.5 kWH/ton	$	-		$	0.04	cost per 3% ton
Chemical Cost (feed system @ $1.20/lb, 0.16lb/wet ton)	$	-		$	0.36	cost per 3% ton
Service Cost (2% of capital cost)	$	-		$	0.52	cost per 3% ton
Operator, 3 hr / day necessary	$	-		$	2.31	cost per 3% ton
Total	$	-	cost per ton	$	3.23	cost per 3% ton

Total Annual O&M Cost per year

Based on Wet tons produced	Liquid @ 3% solids	Dewatered @ 15% solids
	$ 76,826.00	$ 41,622.00

Total Capital Cost per year

Add dewatering unit

Pumping system from thickener to blending/conditioning tanks	$75,000
Polymer feed system	$50,000
Dewatering unit (including feed pumps)	$210,000
Building	$175,000
Solids conveyor	$35,000
Truck bay	$40,000
Piping	$35,000
Site work	$50,000
Sub-total	$670,000
Contingency, eng., const. mgmt. @ 20%	$134,000
Estimated total	$804,000

Annualized Capital Cost	$	70,096.38	cost per yr

Shoal Creek WWTP Sludge Management O&M Cost Calculation

INPUT					
Sludge Solids per Year	213,600	lb	106.8 ton		
Sludge Volume per Year @3% solids	0.9	Mgal			
				Increase 10% for design capacity	
Sludge Solids per day	585.2	lb		643.7	lb
Sludge Volume per day	2339.0	gal		3274.5	gal

Dry weight basis 117.5 dry ton/yr

Determine O&M Cost to Haul Sludge

	Liquid @ 3% solids		Dewatered @ 15% solids	
Annual amount in Tons	117.5	dry ton/yr	117.5	dry ton/yr
@ % solids given	3,916.0	wet ton/yr	783.2	wet ton/yr
Convert to gallons	939,088.73	gal	187,817.75	gal
@1600 gal/load	586.9	load/yr	117.4	load/yr
	11.3	load/wk	2.3	load/wk
	6.7	ton/load	6.7	ton/load
@ 40 roundtrip miles/load	23,480	miles/yr	4,720	miles/yr
@ $2.10/gal, 6 MPG	$ 8,218.00	Fuel Cost/yr	$ 1,643.60	Fuel Cost/yr
	$ 14.00	Fuel Cost/load		
	$ 2.10	Fuel Cost/ton	$ 2.10	Fuel Cost/ton
@ 7% of Capital Cost/yr	$ 4,200.00	Maintenance Cost/yr	$ 840.00	Maintenance Cost/yr
	$ 7.16	Maint. Cost/load		
	$ 1.07	Maint. Cost/ton	$ 1.07	Maint. Cost/ton
@$18/hr	$ 21,129.50	Labor Cost/yr	$ 4,225.90	Labor Cost/yr
	$ 36.00	Labor Cost/load		
	$ 5.40	Labor Cost/ton	$ 5.40	Labor Cost/ton
Replacement cost (1 new truck every 250,000 miles, neglect inflation)	$ 5,635.20	cost per year	$ 1,132.80	cost per year
	$ 9.60	Replacement Cost/load		
	$ 1.44	Replacement Cost/ton	$ 1.45	Replacement Cost/ton
Total	$ 10.01	cost per ton	$ 10.01	cost/ton
Total	$ 39,182.70	cost/yr	$ 7,842.30	cost/yr
Miles on Truck in 20 years	469,600	miles	94,400	miles

Difference	$	31,340.40	per year
Difference		375,200	miles less in 20 years

Determine O&M Cost to Dewater Sludge

Electricity Cost (unit+feed systems) @ about 0.5 kWH/ton	$ 0.04	cost per ton	$ 156.64	cost per year
Chemical Cost (feed system @ $1.20/lb, 0.30lb/wet ton)	$ 0.36	cost per ton	$ 1,409.76	cost per year
Service Cost (2% of capital cost)	$ 1.08	cost per ton	$ 4,229.28	cost per year
Operator, 2.5 hr / day necessary	$ 2.99	cost per ton	$ 11,708.84	cost per year
Total	$ 4.47	cost per ton	$ 17,504.52	cost per year

Total O&M Cost per ton

	Liquid @ 3% solids		Dewatered @ 15% solids	
O&M for Hauling				
Fuel @ $1.25/gal, 6 MPG	$ 2.10	cost per ton	$ 2.10	cost per ton
Maintenance @ 7% of Capital Cost/yr	$ 1.07	cost per ton	$ 1.07	cost per ton
Labor @$18/hr	$ 5.40	cost per ton	$ 5.40	cost per ton
Replacement cost (1 new truck every 250,000 miles, neglect inflation)	$ 1.44	cost per ton	$ 1.45	cost per ton
Total	$ 10.01	cost per ton	$ 10.01	cost per ton
O&M for Dewatering				
Electricity Cost (unit+feed systems) @ about 0.5 kWH/ton	$ -		$ 0.04	cost per 3% ton
Chemical Cost (feed system @ $1.20/lb, 0.16lb/wet ton)	$ -		$ 0.36	cost per 3% ton
Service Cost (2% of capital cost)	$ -		$ 1.08	cost per 3% ton
Operator, 3 hr / day necessary	$ -		$ 2.99	cost per 3% ton
Total	$ -	cost per ton	$ 4.47	cost per 3% ton

Total Annual O&M Cost per year

	Liquid @ 3% solids	Dewatered @ 15% solids
Based on Wet tons produced	$ 39,183.00	$ 25,347.00

Total Capital Cost per year

Add dewatering unit

Pumping system from thickener to blending/conditioning tanks	$75,000
Polymer feed system	$50,000
Dewatering unit (including feed pumps)	$210,000
Building	$175,000
Solids conveyor	$35,000
Truck bay	$40,000
Piping	$35,000
Site work	$50,000
Sub-total	$670,000
Contingency, eng., const. mgmt. @ 20%	$134,000
Estimated total	$804,000

Annualized Capital Cost	$ 70,096.38	cost per yr

Net Present Worth

Description of Cost	Option 1				Option 2				Option 3				Option 4			
	Cabin Creek	Potato Creek	Shoal Creek	Total	Cabin Creek	Potato Creek	Shoal Creek	Total	Cabin Creek	Potato Creek	Shoal Creek	Total	Cabin Creek	Potato Creek	Shoal Creek	Total
Capital Cost of Dewatering System	$ 804,000	$ 804,000	$ 804,000	$ 2,412,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 100,000	$ 100,000	$ -	$ 200,000
Capital Cost of Griffin-Owned LAS	$ -	$ -	$ -	$ -	$ 738,300	$ 738,400	$ 738,300	$ 2,215,000	$ -	$ -	$ 800,000	$ 800,000	$ -	$ -	$ 300,000	$ 300,000
Total Capital Cost	$ 804,000	$ 804,000	$ 804,000	$ 2,412,000	$ 738,300	$ 738,400	$ 738,300	$ 2,215,000	$ -	$ -	$ 800,000	$ 800,000	$ 100,000	$ 100,000	$ 300,000	$ 500,000
Annual O&M Cost	$ 33,262	$ 41,622	$ 25,347	$ 100,231	$ 61,937	$ 76,826	$ 39,183	$ 177,946	$ 61,937	$ 76,826	$ 15,000	$ 153,763	$ 61,937	$ 76,826	$ 15,000	$ 153,763
Present Worth of O&M Cost	$ 381,513	$ 477,401	$ 290,728	$ 1,149,642	$ 710,413	$ 881,188	$ 449,426	$ 2,041,027	$ 710,413	$ 881,188	$ 172,049	$ 1,763,649	$ 710,413	$ 881,188	$ 172,049	$ 1,763,649
Total Present Worth	$1,185,513	$1,281,401	$1,094,728	$ 3,561,642	########	$1,619,588	########	$ 4,256,027	$ 710,413	$ 881,188	$ 972,049	$ 2,563,649	$ 810,413	$ 981,188	$ 472,049	$ 2,263,649
Salvage Value	$ -	$ -	$ -	$ -	$ 266,000	$ 267,000	$ 267,000	$ 800,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Net Present Worth	$1,185,513	$1,281,401	$1,094,728	$ 3,561,642	########	$1,352,588	$ 920,726	$ 3,456,027	$ 710,413	$ 881,188	$ 972,049	$ 2,563,649	$ 810,413	$ 981,188	$ 472,049	$ 2,263,649

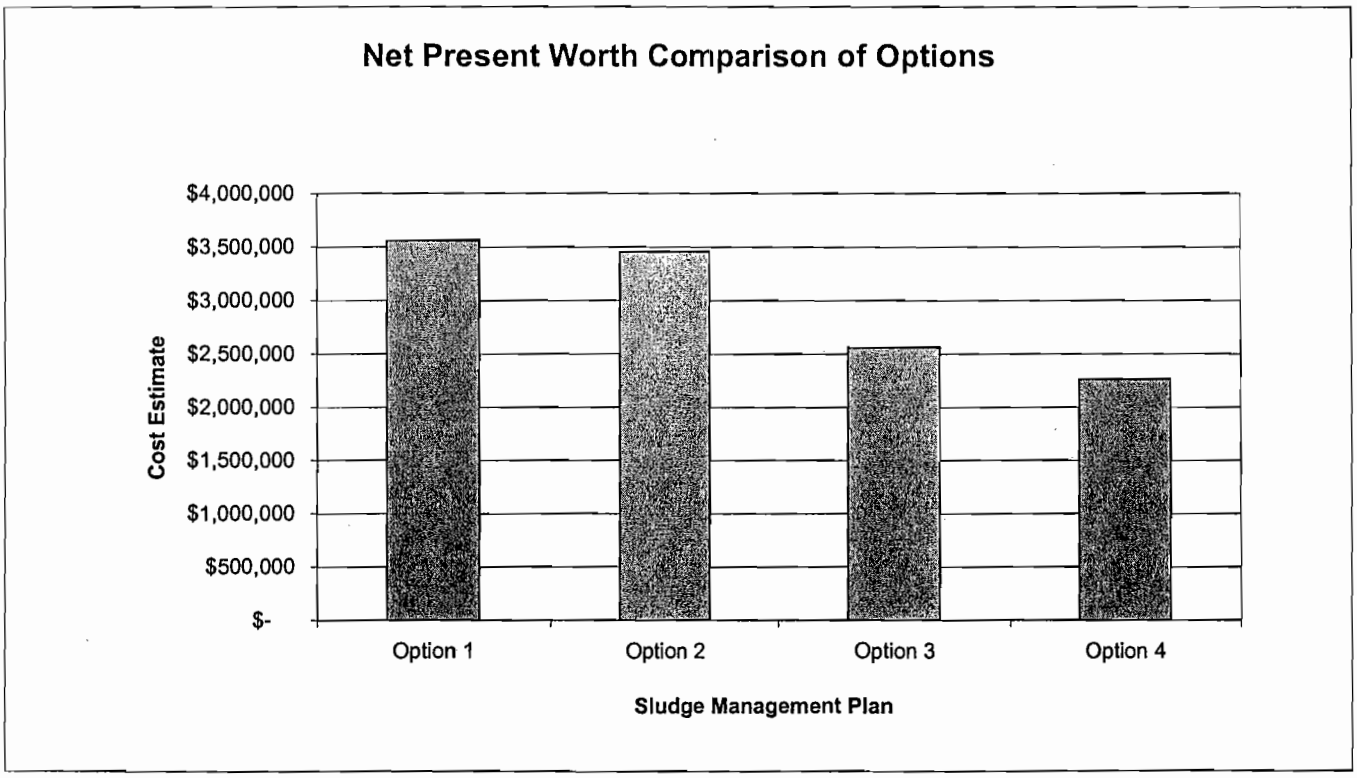
Discount rate = 6%, 20 years

Annual Cost

Description of Cost	Option 1				Option 2				Option 3				Option 4			
	Cabin Creek	Potato Creek	Shoal Creek	Total	Cabin Creek	Potato Creek	Shoal Creek	Total	Cabin Creek	Potato Creek		Total	Cabin Creek	Potato Creek	Shoal Creek	Total
Annualized Capital Cost of Dewatering System	$ 70,096	$ 70,096	$ 70,096	$ 210,289	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,718	$ 8,718		$ 17,437
Annualized Capital Cost of Griffi-Owned LAS	$ -	$ -		$ -	$ -	$ 64,377	$ -	$ 64,377	$ -	$ -	$ -	$ -	$ -	$ -		$ -
Annual O&M Cost	$ 33,262	$ 41,622	$ 25,347	$ 100,231	$ 61,937	$ 76,826	$ 39,183	$ 177,946	$ 61,937	$ 76,826	$ 15,000	$ 153,763	$ 61,937	$ 76,826	$ 39,183	$ 177,946
Total Annual Cost	$ 103,358	$ 111,718	$ 95,443	$ 310,520	$ 61,937	$ 141,203	$ 39,183	$ 242,323	$ 61,937	$ 76,826	$ 15,000	$ 153,763	70,655	85,544	39,183	$ 195,383

Description of Cost	Option 1	Option 2	Option 3	Option 4
Capital Cost of Dewatering System	$ 2,412,000	$ -	$ -	$ 200,000
Capital Cost of Land Application System	$ -	$ 2,215,000	$ 800,000	$ 300,000
Total Capital Cost	$ 2,412,000	$ 2,215,000	$ 800,000	$ 500,000
Annual O&M Cost	$ 100,231	$ 177,946	$ 153,763	$ 153,763
Present Worth of O&M Cost	$ 1,149,642	$ 2,041,027	$ 1,763,649	$ 1,763,649
Total Present Worth	$ 3,561,642	$ 4,256,027	$ 2,563,649	$ 2,263,649
Salvage Value	$ -	$ 800,000	$ -	$ -
Net Present Worth	$ 3,561,642	$ 3,456,027	$ 2,563,649	$ 2,263,649

Discount rate = 6%, 20 years



Appendix D

Georgia Environmental Protection Division Regulations