Total Maximum Daily Loads for Fecal Coliform for Rich Fork Creek and Hamby Creek, North Carolina

[Waterbody ID 12-119-7 and
Waterbody ID 12-119-7-4]

Final Report
April 2004
(Approved April 2004)

Yadkin-Pee Dee River Basin

Prepared by:
NC Department of Environment and Natural Resources
Division of Water Quality
Water Quality Section
1617 Mail Service Center
Raleigh, NC 27699-1617
(919) 733-5083

TABLE OF CONTENTS

SUMMARY SHEET
Total Maximum Daily Load (TMDL)

1. **303(d) Listed Waterbody Information**
   State: North Carolina
   County: Davidson
   Basin: Yadkin-Pee Dee River Basin
   Watershed: Rich Fork and Hamby Creeks Watershed – HUC 03040103

   303(d) Listed Waters

Name of Stream	Description	Class	Index #	8 Digit HU	Miles
Rich Fork Creek	From source to Abbotts Creek	C	12-119-7	03040103	20.7
Hamby Creek	From source to Rich Fork Creek	C	12-119-7-4	03040103	12.5

   Constituent(s) of Concern: Fecal Coliform

   Designated Use: Biological Integrity, Propagation of aquatic life, and Recreation.

   Applicable Water Quality Standards for C Waters:
   Fecal coliforms shall not exceed a geometric mean of 200/100ml (MF count) based upon at least five consecutive samples examined during any 30 day period, nor exceed 400/100 ml in more than 20 percent of the samples examined during such period.

2. **TMDL Development:**

   Analysis/Modeling:

   Load duration curves based on cumulative frequency distribution of flow conditions in the watershed. Allowable load are average loads over the recurrence interval between 90^{th} and 10^{th} percentile of flow. Percent reductions expressed as the average value between existing loads (calculated using an equation to fit a curve through actual water quality violations) and the allowable load at each recurrence interval.

   Critical Conditions:

   Critical conditions are accounted for in the load duration curve analysis by using an extended period of stream flow and water quality data.

Seasonal Variation:

Seasonal variation in hydrology, climatic conditions, and watershed activities are represented through the use of a continuous flow gage and the use of all readily available water quality data collected in the watersheds.

3. Allocation Watershed/Stream Reaches:

Stream Monitoring Locations and Watershed_ID	WLA[1]		LA (counts/day)	MOS[2]	TMDL[3]	Percent Reduction[4]
	Continuous (counts/day)	MS4				
RF02 -Rich Fork (DWQ Station - Q5780000 - SR#1800)	9.39×10^{10}	72.0% reduction	3.21×10^{10}	Implicit Explicit	1.26×10^{11}	72.0%
HA02 - Hamby (DWQ Station Q59060000- SR# 2790)	6.06×10^{10}	71.6% reduction	5.70×10^{9}	Implicit Explicit	6.63×10^{10}	71.6%

Notes:

1 WLA component separated into load from continuous NPDES facilities (WWTP) and load from MS4. WWTPs have loads in units of counts/day based on permit limits and design flow. MS4 load is represented as percent reduction.

2 Explicit (10%) and implicit Margins of Safety are considered

3 TMDL represents the average allowable load between the 90^{th} and 10^{th} percent recurrence interval.

4 Overall reduction is based on the instantaneous standard of 400 cfu/100ml and is assumed to be more stringent than the geometric mean standard.

4 Public Notice Date: 02/25/04

5 Submittal Date:

6 Establishment date:

7 Endangered Species (yes or blank):

8 EPA Lead on TMDL (EPA or Blank):

9 **TMDL Considers Point Source, Nonpoint Sources, or both: both**

1.0 INTRODUCTION

The North Carolina Division of Water Quality (DWQ) has identified a 20.7 mile segment (12-119-7) of Rich Fork Creek and 12.5 mile segment (12-119-7-4) of Hamby Creek in the Yadkin River Basin as impaired by fecal coliform bacteria as reported in the 2002 Integrated Report. Rich Fork Creek is impaired from its source near the city of High Point to its confluence with Abbotts Creek and Hamby Creek is impaired from its source to its confluence with Rich Fork Creek. These sections of the streams are located in subbasin 03-07-07 and are designated as class C waters.[1]

Section 303(d) of the Clean Water Act (CWA) requires states to develop a list of waters not meeting water quality standards or which have impaired uses. This list, contained within Categories 4 through 7 of the Integrated Report, is submitted biennially to the U.S. Environmental Protection Agency (EPA) for review. The 303(d) process requires that a Total Maximum Daily Load (TMDL) be developed for each of the waters appearing on Part 5 of the Integrated Report. The objective of a TMDL is to estimate allowable pollutant loads and allocate to known sources so that actions may be taken to restore the water to its intended uses (USEPA, 1991). Generally, the primary components of a TMDL, as identified by EPA (1991, 2000a) and the Federal Advisory Committee (FACA, 1998) are as follows:

Target identification or selection of pollutant(s) and end-point(s) for consideration. The pollutant and end-point are generally associated with measurable water quality related characteristics that indicate compliance with water quality standards. North Carolina indicates known pollutants on the 303(d) list.

Source assessment. All sources that contribute to the impairment should be identified and loads quantified, where sufficient data exist.

Reduction target. Estimation or level of pollutant reduction needed to achieve water quality goals. The level of pollution should be characterized for the waterbody, highlighting how current conditions deviate from the target end-point. Generally, this component is identified through water quality modeling.

[1] Class C waters are freshwaters that are protected for secondary recreation, fishing, aquatic life including propagation and survival of wildlife.

Allocation of pollutant loads. Allocating pollutant control responsibility to the sources of impairment. The wasteload allocation portion of the TMDL accounts for the loads associated with existing and future point sources. Similarly, the load allocation portion of the TMDL accounts for the loads associated with existing and future non-point sources, stormwater, and natural background.

Margin of Safety. The margin of safety addresses uncertainties associated with pollutant loads, modeling techniques, and data collection. Per EPA (2000a), the margin of safety may be expressed explicitly as unallocated assimilative capacity or implicitly due to conservative assumptions.

Seasonal variation. The TMDL should consider seasonal variation in the pollutant loads and end-point. Variability can arise due to stream flows, temperatures, and exceptional events (e.g., droughts, hurricanes).

Critical Conditions. Critical conditions indicate the combination of environmental factors that result in just meeting the water quality criterion and have an acceptably low frequency of occurrence.

Section 303(d) of the CWA and the Water Quality Planning and Management regulation (USEPA, 2000a) require EPA to review all TMDLs for approval or disapproval. Once EPA approves a TMDL, then the waterbody may be moved to Part 4a of the Integrated Report. Waterbodies remain on Part 4a of the list until compliance with water quality standards is achieved. Where conditions are not appropriate for the development of a TMDL, management strategies may still result in the restoration of water quality.

The goal of the TMDL program is to restore designated uses to water bodies. Thus, the implementation of bacteria controls will be necessary to restore uses in Rich Fork and Hamby Creeks. Although an implementation plan is not included as part of this TMDL, reduction strategies are needed. The involvement of local governments and agencies will be critical in order to develop implementation plans and reduction strategies. DWQ will begin developing the implementation plan during public review of the TMDL.

1.1 Watershed Description

Rich Fork and Hamby Creeks are located in the Yadkin-Pee Dee River Basin. From its origin in High Point to its mouth near Lexington, Rich Fork Creek flows about 20 miles and drains into Abbots Creek. Hamby Creek originates in Davidson County. The headwaters of Hamby Creek flow through Thomasville, NC. The creek flows south approximately 12.5 miles and drains into Rich Fork Creek. Figure 1 depicts the location of Rich Fork and Hamby Creeks in North Carolina. The Rich Fork Creek watershed (including the Hamby Creek watershed) in the TMDLs includes the drainage area above the confluence of Rich Fork Creek and Abbotts Creek. The creeks' watersheds lie entirely within the Abbotts Creek Watersheds (Subbasin # 03-07-07) in Davidson County. The USGS 14-digit hydraulic unit code (HUC) for Rich Fork and Hamby Creeks is 03040103010030. The Rich Fork Creek (48.7 sq. miles (31167.9 acres)) and Hamby Creek (29.6 sq. miles (18943.9 acres)) watersheds comprise a total area of approximately 78.4 square miles. DWQ has an ambient water quality monitoring station (Storet number Q5780000) on Rich Fork Creek at SR# 1800 near Thomasville. The Rich Fork Creek watershed at this point is 27.4 square miles. The ambient monitoring site on Hamby Creek (Storet # Q5906000) is located at SR 2790 near Holly Grove. The Hamby Creek watershed at this point is 20.9 square miles. The ambient monitoring sites will be the evaluation points for both TMDLs since fecal coliform data has been and will continue to be collected at these locations.

The land use/ land cover characteristics of the watershed were determined using 1996 land cover data. The North Carolina Center for Geographic Information and Analysis (NCCGIA), in cooperation with the NC Department of Transportation and USEPA Region IV Wetlands Division, contracted Earth Satellite Corporation (EarthSat) of Rockville, Maryland to generate comprehensive land cover data for the entire state of North Carolina. The majority of the Rich Fork Creek and Hamby Creek watersheds are in mixed upland hardwoods. Managed herbaceous cover comprises the second largest land use group. High intensity development comprises the third largest land use. Developed areas are split into high and low intensity groups. The difference between these developed groups depends upon the concentration of impervious surfaces in a mapped area. Land cover/land use coverage for the Rich Fork Creek and Hamby Creek watersheds are shown in Table 1 and Table 2, respectively.

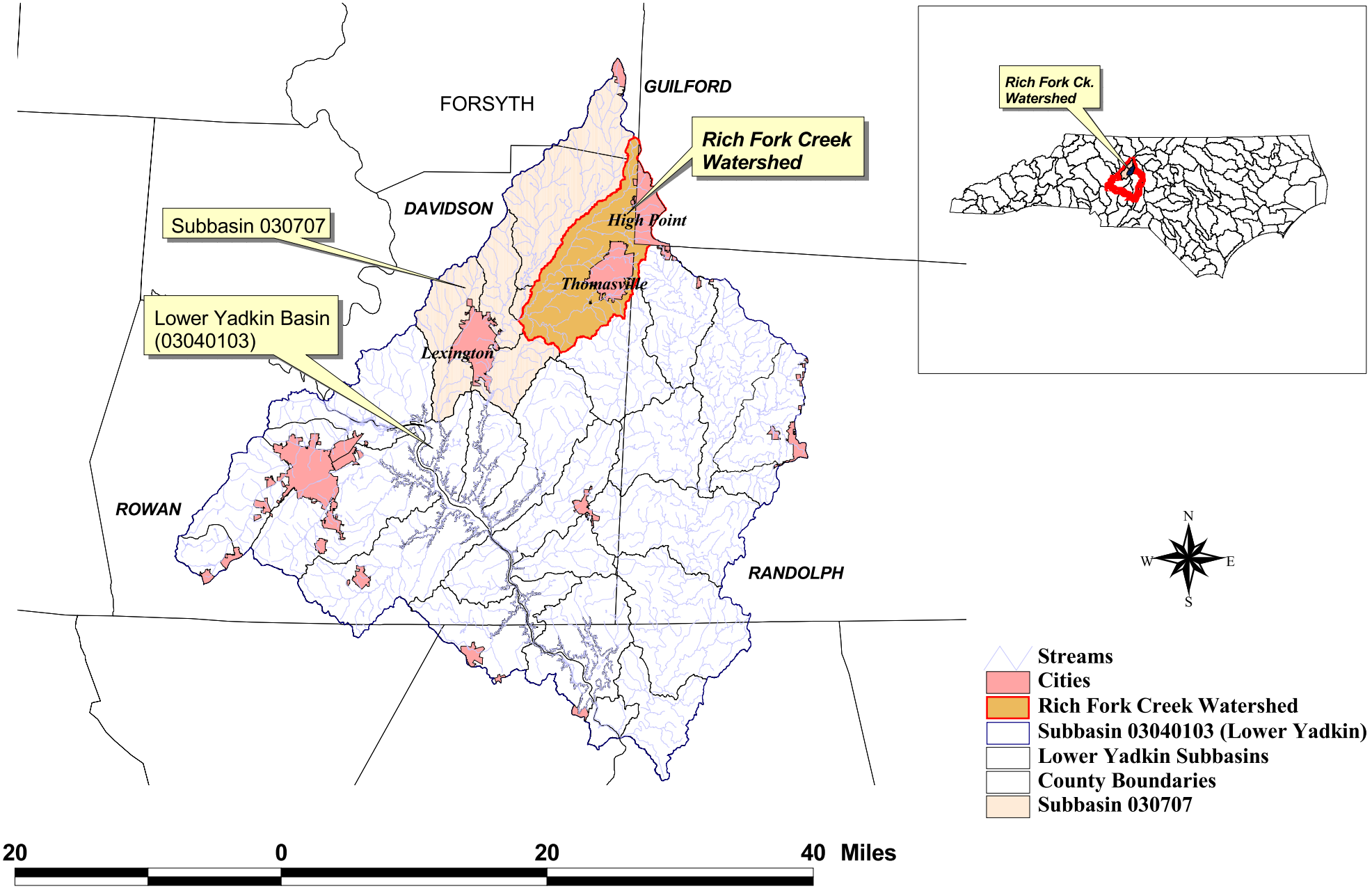
Table 1. Estimated Land Use/Land Cover in the Rich Fork Creek Watershed

Land Use/Land Cover	Description	% Of Watershed	Acres
Forested	Mostly Upland Hardwoods	63.50	19801.33
Managed Herbaceous Cover	Pasture/Uncultivated Fields	21.52	6712.29
Cultivated Lands	Crop lands	0.87	270.77
High Intensity Development	Over 80% Impervious Material	7.85	2448.39
Low Intensity Development	50-80% Impervious	5.61	1749.77
Unmanaged Herbaceous Cover	Pasture/Uncultivated Fields	0.40	125.66
Water Bodies	Water	0.25	76.471
	Total:	**100**	**31184.68**

Table 2. Estimated Land Use/Land Cover in the Hamby Creek Watershed

Land Use/Land Cover	Description	% Of Watershed	Acres
Forested	Mostly Upland Hardwoods	59.49	11276.60
Managed Herbaceous Cover	Pasture/Uncultivated Fields	24.9	4720.63
Cultivated Lands	Crop lands	1.29	243.73
High Intensity Development	Over 80% Impervious Material	6.72	1273.14
Low Intensity Development	50-80% Impervious	5.42	1027.62
Unmanaged Herbaceous Cover	Pasture/Uncultivated Fields	1.87	355.27
Water Bodies	Water	0.31	58.21
	Total:	**100**	**18955.2**

Figure 1. Rich Fork and Hamby Creek Watersheds Location Map



1.2 Water Quality Monitoring Program

Water quality data available from Rich Fork Creek and Hamby Creek monitoring stations show high levels of fecal coliform bacteria in the creeks. Water quality data from fecal coliform monitoring of Rich Fork Creek comes from five primary sources. These include, (1) DWQ's ambient monitoring, (2) Yadkin River Basin Association monitoring, (3) High Point and Thomasville WWTPs upstream/downstream monitoring, (4) DWQ's Special Study monitoring, and (5) Piedmont Triad Council of Governments (PTCOG) monitoring. Figure 2 shows the locations of the monitoring stations in the Rich Fork Creek and Hamby Creek watersheds.

Data from DWQ's ambient monitoring stations (Q5780000 - Rich Fork Creek at SR# 1800 and (Q5906000 - Hamby Creek at SR 2790 Near Holly Grove) were used to determine the impaired status of the creeks. The fecal coliform samples were collected on a monthly interval beginning in April 1995 to the present. The fecal coliform concentrations of the samples collected at the Rich Fork station (Q5780000), and the Hamby Creek Station (Q5906000) ranged from 10 colony-forming-units (cfu)/100ml to 10,000 cfu/100ml (Figure 3), and 10 colony-forming-units (cfu)/100ml to 16,000 cfu/100ml (Figure 4), respectively.

The fecal coliform concentrations of the samples collected by the discharger coalition at stations Q5750000, Q5785000, and Q5790000 ranged from 13 cfu/100ml to 4,800 cfu/100ml, 61 cfu/100ml to 3300 cfu/100ml, and 34 cfu/100ml to 2500 cfu/100ml, respectively, between June 1998 and November 2002 (Appendix A). Samples are collected at the DWQ ambient monitoring station and at the discharger coalition stations on a monthly basis. As a result, the 30-day geometric mean of the samples could not be calculated using the minimum required 5 samples in 30 days.

Yadkin-Pee Dee River Basin Association discharger coalition (YPDRBA) has been monitoring fecal coliform levels in Rich Fork Creek at SR #1755 (Q5750000), at SR #1787 (Q5785000), and at SR #2123 (Q5790000) near High Point since 1998. Data collected at discharger coalition stations are shown in Appendix A. Since these data are also collected on a monthly basis, the 30-day geometric mean of the samples could not be calculated.

The High Point Westside WWTP monitored instream fecal coliform concentrations at upstream and downstream locations in years prior to the discharger coalition monitoring. The 30-day rolling geometric mean calculated using the upstream/downstream fecal coliform concentration data are shown in Figure 5 and the data is given in Appendix A. The city of Thomasville's WWTP also monitors instream fecal coliform concentration at upstream and downstream locations. The 30-day rolling geometric mean calculated using upstream/downstream fecal coliform concentration data collected by Thomasville are shown in Figure 6 and the data is provided in Appendix A.

DWQ's Environmental Sciences Branch (ESB) conducted fecal coliform monitoring in Rich Fork and Hamby Creeks in the spring of 2001 to support the TMDL development. In this study, 60 samples were collected from four sites in Rich Fork Creek over a six and one-half week period. The samples in Rich Fork Creek were collected at the ambient monitoring site (SR 1800) and at the YPDRBA coalition sites (SR 1755, SR 1787, and SR 2123). In Hamby Creek, 45 samples were collected from three sites over a six and one-half week period. The Hamby Creek samples were collected at the ambient monitoring site (SR 2790) and at SR 2025 and SR 2080. The purposes of this study were to evaluate whether the creeks were complying with state fecal coliform standard, and to provide information on potential bacteria sources in the watersheds. The data summaries from this study for Rich Fork and Hamby Creeks are given in Table 3 and Table 4, respectively.

Finally, the most recent fecal coliform monitoring data comes from a special study being conducted by the Piedmont Triad Council of Governments (PTCOG). The PTCOG is monitoring fecal coliform levels at several locations in Rich Fork and Hamby Creeks. The objective of this project is to identify and reduce fecal coliform bacteria sources in the watersheds by identifying point and non-point sources contributing to elevated fecal coliform bacteria levels. The project is funded by the Section 205(j) Grant. The data collected in June and July 2003 is included in Appendix A.

Figure 2. Rich Fork and Hamby Creeks Water Quality Monitoring Locations

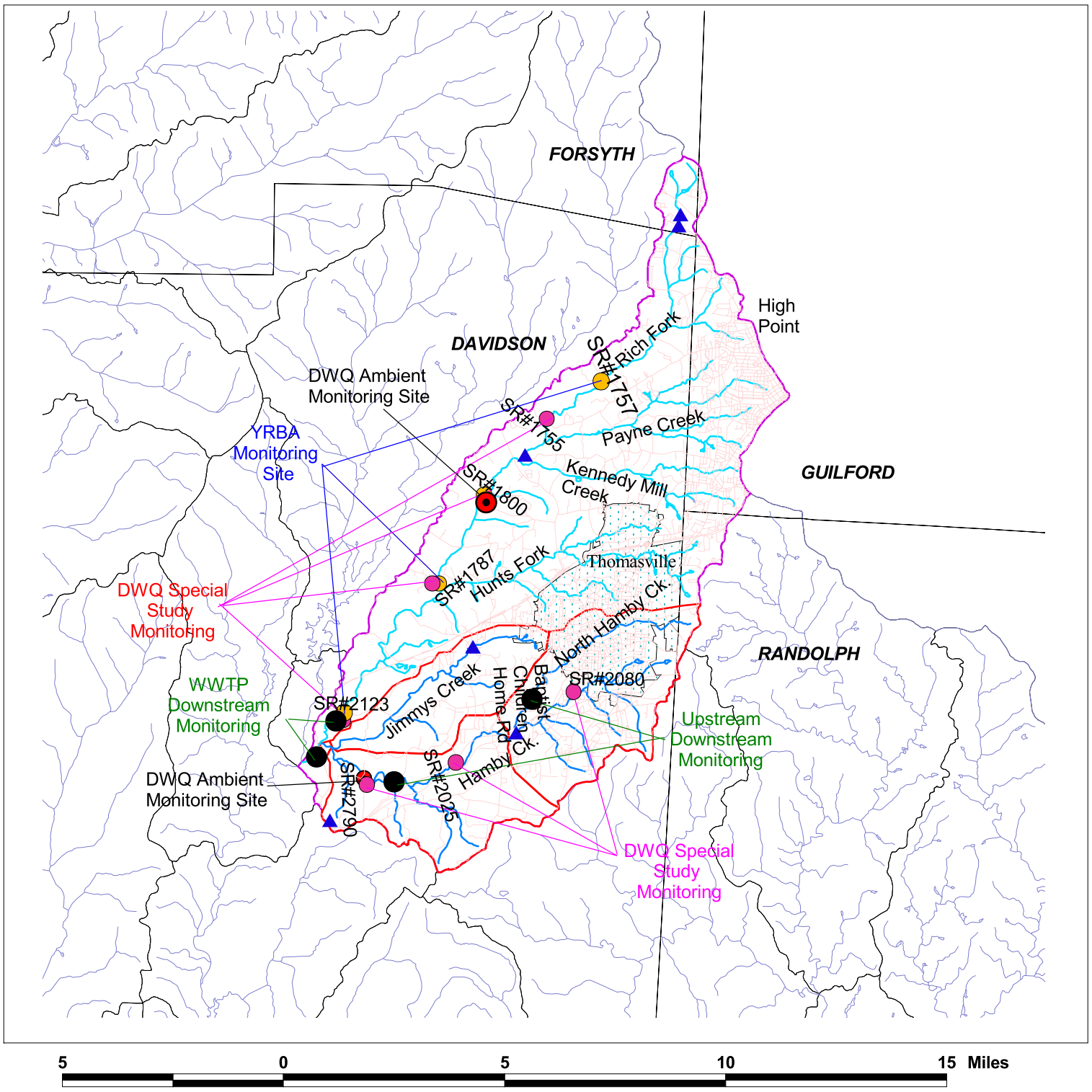


Figure 3. Rich Fork Creek Fecal Coliform Creek at SR# 1800 near Thmoasville (DWQ's Ambient Monitoring Station)

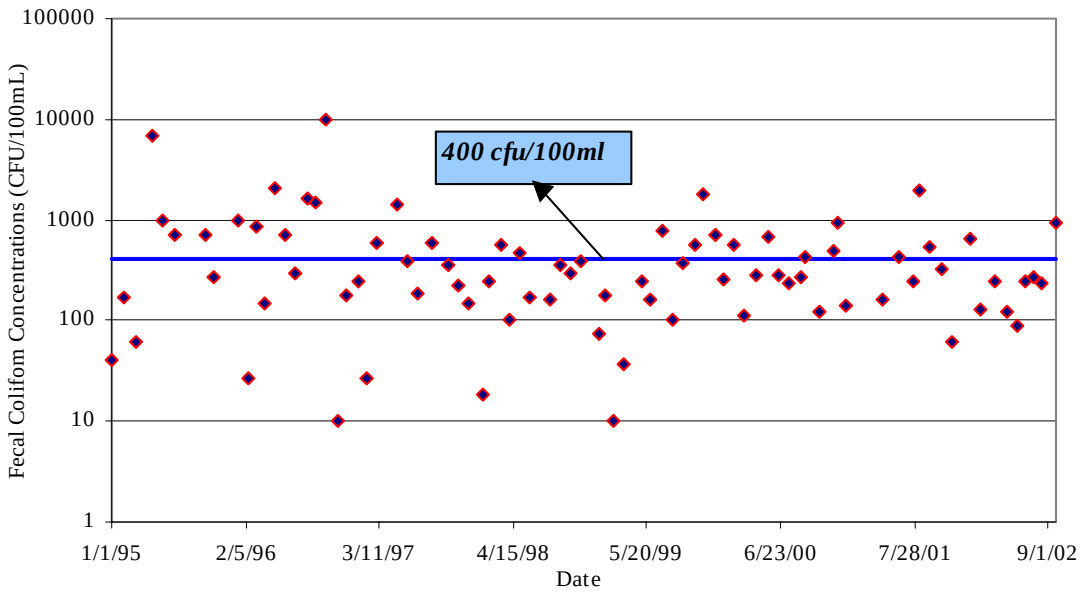
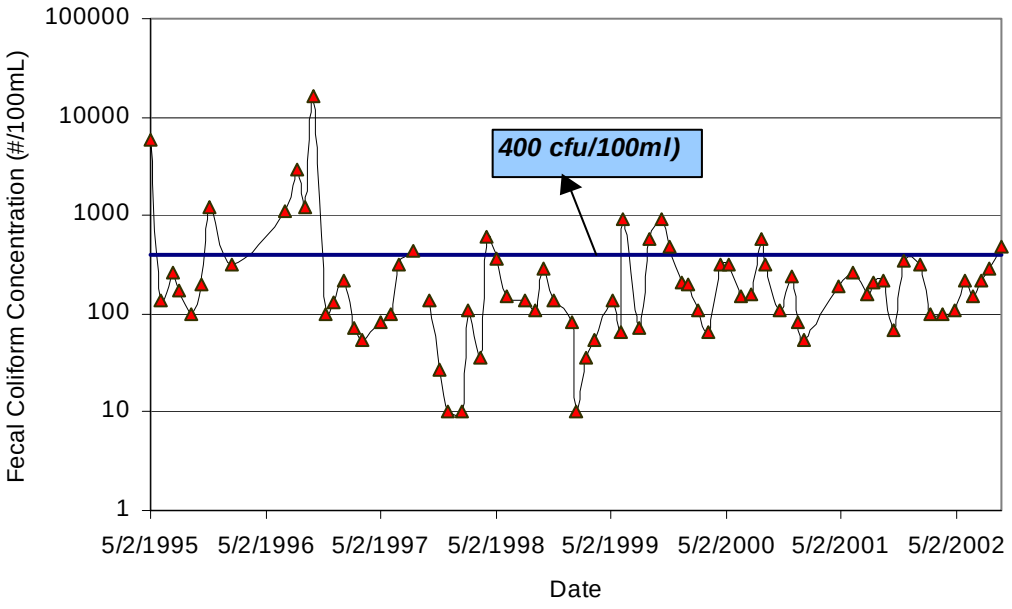
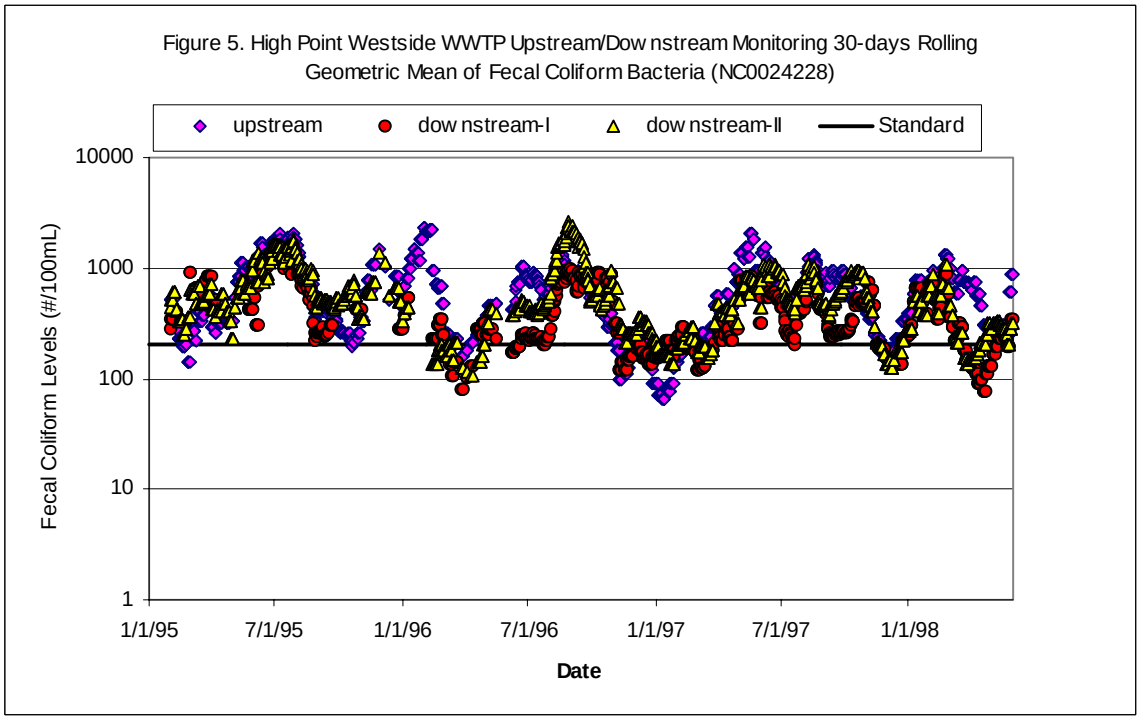
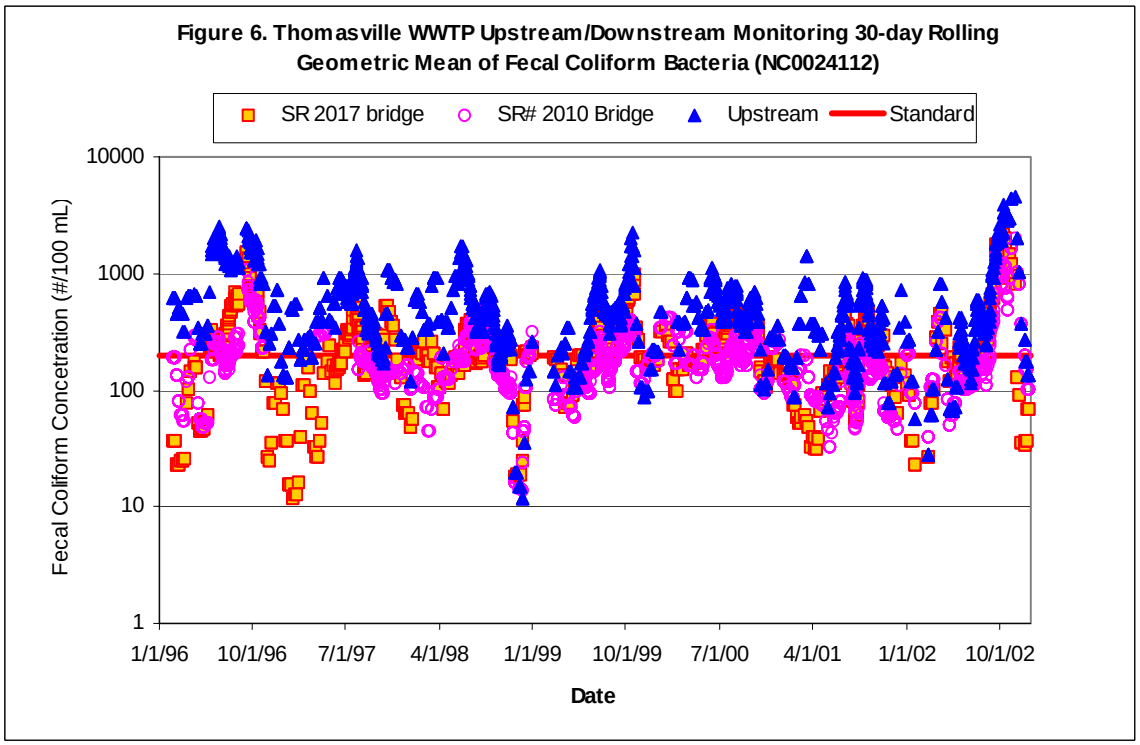


Figure 4. Hamby Creek Fecal Coliform Bacteria Levels at SR 2790, near Holly Grove, DWQ's ambient Data





* ***Upstream*** *- Approximately 100 ft upstream of outfall;* ***Downstream-I*** *- Southern Railroad Bridge above Hamby Creek;* ***Downstream-II*** *- NCSR#2005 (Turner Road) below Hamby Ck.*



* ***Upstream*** *- Culvert on Baptist Children home road;* ***Downstream-I*** *Bridge on SR 2012;* ***Downstream-II*** *- Bridge on SR 2010.*

Table 3. Summary of Rich Fork Creek Fecal Coliform Data from DWQ Special Study[2]

			Fecal Coliform Levels (Geometric Mean)			
Dates	Number of days	Observations	Rich Fork in Davidson Co. at SR 1755	Rich Fork in Davidson Co. at SR 1800	Rich Fork in Davidson Co. at SR 1787	Rich Fork in Davidson Co. at SR 2123
4/10/2001 to 5/8/2001	29	15	260	229	139	71
4/17/2001 to 5/15/2001	29	15	355	227	179	80
4/24/2001 to 5/22/2001	29	15	418	287	228	98
5/1/2001 to 5/29/2001	29	15	482	369	322	142

2 Complete data from the study is given in Appendix A.

Table 4. Summary of Hamby Creek Fecal Coliform Data from DWQ Special Study[3]

			Fecal Coliform Levels (Geometric Mean)		
Dates	Number of days	Observations	Hamby Creek in Davidson Co. at SR 2790	Hamby Creek in Davidson Co. at SR 2025	Hamby Creek in Davidson Co. at SR 2080
4/10/2001 to 5/8/2001	29	15	142	59	134
4/17/2001 to 5/15/2001	29	15	155	65	109
4/24/2001 to 5/22/2001	29	15	161	88	189
5/1/2001 to 5/29/2001	29	15	175	118	255

3 Complete data from the study is given in Appendix A.

1.3 Water Quality Target

The North Carolina fresh water quality standard for Class C waters for fecal coliform (T15A: 02B.0211) states:

> Organisms of the coliform group: fecal coliforms shall not exceed a geometric mean of 200/100ml (MF count) based upon at least five consecutive samples examined during any 30 day period, nor exceed 400/100 ml in more than 20 percent of the samples examined during such period; violations of the fecal coliform standard are expected during rainfall events and, in some cases, this violation is expected to be caused by uncontrollable non-point source pollution; all coliform concentrations are to be analyzed using the membrane filter technique unless high turbidity or other adverse conditions necessitate the tube dilution method; in case of controversy over results, the MPN 5-tube dilution technique will be used as the reference method.

The instream numeric target, or endpoint, is the restoration objective expected to be reached by implementing the specified load reductions in the TMDL. The target allows for the evaluation of progress towards the goal of reaching water quality standards for the impaired stream by comparing the instream data to the target. For Rich Fork Creek and Hamby Creek fecal coliform TMDLs, the water quality target is the instantaneous concentration of 400cfu/100ml. It is assumed that compliance with the instantaneous part of the fecal coliform criterion will lead to compliance with the geometric mean portion of the criterion.

In order to evaluate the fecal coliform model, monitor water quality conditions and assess progress of the TMDL, evaluation locations were established for the Rich Fork Creek and Hamby Creek watersheds. The evaluation location of Rich Fork Creek watershed is located in Rich Fork Creek at SR 1800 and that of Hamby Creek watershed is located in Hamby Creek at SR 2790. The evaluation points in both TMDLs are the ambient monitoring stations.

2.0 SOURCE ASSESSMENT

A source assessment is used to identify and characterize the known and suspected sources of fecal coliform bacteria in the watershed. The source assessment of Rich Fork and Hamby Creeks will be used in the water quality modeling tool and in the development of the TMDL.

2.1 Point Source Assessment

General sources of fecal coliform bacteria are divided between point and non-point sources. Facilities that treat domestic waste which are permitted through the National Pollutant Discharge Elimination System (NPDES) contribute to fecal coliform bacteria loading of streams.

2.1.1 Individually Permitted NPDES Dischargers

There are six NPDES permitted dischargers in the Rich Fork Creek and Hamby Creek watersheds. Table 5 shows individually permitted NPDES wastewater treatment facilities in the watershed. The city of High Point Westside WWTP (NC0024228) and the Thomasville WWTP (NC0024112) are the two major discharges in these watersheds. The other four facilities are minor discharges and their contribution to the fecal coliform loading is not significant.

The city of High Point Westside WWTP discharges into Rich Fork Creek, and the city of Thomasville WWTP discharges into Hamby Creek. The Westside WWTP primarily serves approximately one third of High Point's population. The Thomasville WWTP serves the city of Thomasville and is located approximately 6.0 stream miles upstream of its confluence with Rich Fork Creek. The High Point Westside WWTP operates at 6.2 MGD, and has a maximum permitted effluent fecal coliform concentration of a 30-day geometric mean of 200 cfu/100ml, and a weekly geometric mean of 400 cfu/100ml. The Thomasville WWTP has the same effluent concentration limits and is permitted to discharge 4.0 MGD. Thomasville WWTP applies a percentage of the residuals generated during the wastewater treatment process within Davidson and Randolph counties (Morgan Huffman, December 2003). High Point Westside WWTP incinerates the residuals (Tim Fitzgerald, December 2003).

Discharge monitoring reports (DMRs) submitted by NPDES facilities were reviewed to identify facilities discharging fecal coliform bacteria in excess of permit limits. A review of DMRs from 1998 -2002 indicate High Point Westside WWTP was in noncompliance in some cases (12% of samples exceeded the 200cfu/100ml value and 8% of the samples exceeded 400cfu/100ml). Thomasville WWTP was in compliance with its fecal coliform permit limits and fecal coliform bacteria levels were below permit limits. (Only 3% of samples exceeded 200 cfu/100ml and 2% of the samples exceeded 400 cfu/100ml from 1998 to 2002). The discharge monitoring data for High Point -Westside WWTP and Thomasville Hamby Creek WWTP are included in Appendix C.

The NPDES Phase I rule requires large and medium municipal separate storm sewer systems (MS4s) greater than 100,000 people to obtain an NPDES storm water permit. The NPDES Phase II addressed small municipal separate storm sewer systems (MS4s) serving a population of less than 100,000 people in urbanized areas. This rule applies to a unit of government such as a city or county, which owns or operates an MS4. Each permitted entity is required to develop a Storm Management Program (SWMP). Per 2000 Census data, the estimated population of the City of Thomasville is approximately 19,800, and that of High Point is 85,839. Therefore, both cities are automatically designated into the Phase II program. Both cities applied for permit coverage in March 2003. For Thomasville, the jurisdiction area in Davidson County is approximately 16.4

square miles and for High Point the area in Guilford, Randolph, Forsyth, and Davidson counties is 51.45 square miles. These four counties also fall under the Phase II rule and therefore maintain a storm management program.

A recent EPA mandate (Wayland, 2002) requires NPDES permitted stormwater to be placed in the wastload allocation (WLA), which had previously been reserved for continuous point source wastewater loads. Since Hamby Creek and Rich Fork Creek watersheds are subject to MS4 permits, the WLA in Rich Fork and Hamby TMDLs will include loads from both continuous discharge facilities and wet weather discharges.

Table 5. Permitted NPDES wastewater treatment facilities in Rich Fork Creek and Hamby Creek Watersheds.

Facility Name	Permitted Flow (MGD)	Address	Site	Receiving Stream	Permit #	Ownership
Thomasville City - Hamy Creek WWTP	4.000	110 Optimist Park Rd. Thomasville, NC 27360	Thomasville	Hamby Creek	NC0024112	Municipal
High Point City - Westside WWTP	6.200	1044 West Burton Road, Thomasville NC 27360	Thomasville	Rich Fork Ck.	NC0024228	Municipal
Davidson Co - Extended day School WWTP	0.007	P.O.Box 2057 Lexington, NC 27293	Davidson Co.	Hamby Creek	NC0041629	100% Domestic Minor
Davidson Co - Pilot Elementary School WWTP	0.010	P.O.Box 2057 Lexington, NC 27293	Davidson Co.	Jimmys Ck.	NC0042129	100% Domestic Minor
High Point Care Center	0.010	3830 North Main Street, High Point, NC 27265	High Point	Rich Fork Ck.	NC0046035	100% Domestic Minor
Auman's Mobile Home Park	0.016	3910 North Main Street, High Point, NC 27265	High Point	Rich Fork Ck.	NC0055212	100% Domestic Minor

2.2 Non-point Source Assessment

Non-point sources of fecal coliform bacteria include those sources that can not be identified as entering the waterbody at a specific location (e.g., a pipe). Non-point source pollution can include both urban and agricultural sources. Fecal coliform bacteria may originate from human

and non-human sources. Table 6 lists the potential human and animal non-point sources of fecal coliform bacteria (Center for Watershed Protection, 1999). The non-point sources of fecal coliform bacteria in Rich Fork Creek and Hamby Creek watersheds include wildlife, livestock (land application of agricultural manure and grazing), concentrated animal feed-lots, urban development (stormwater), failing septic systems, and sewer line systems (illicit connections, leaky sewer lines and sewer system overflows).

Table 6. Potential sources of fecal coliform bacteria in urban and rural watersheds (Center for Watershed Protection, 1999).

Source Type		**Source**
Human Sources	Sewered watershed	Combined sewer overflows
		Sanitary sewer overflows
		Illegal sanitary connections to storm drains
		Illegal disposal to storm drains
	Non-sewered watershed	Failing septic systems
		Poorly operated package plant
		Landfills
		Marinas
Non-human Sources	Domestic animals and urban wildlife	Dogs, cats
		Rats, raccoons
		Pigeons, gulls, ducks, geese
	Livestock and rural wildlife	Cattle, horse, poultry
		Beaver, muskrats, deer, waterfowl
		Hobby farms

2.2.1 Livestock

Davidson County, with a total area of 353,278 acres is a limited producer of cattle, beef and milk cows, chickens, and hogs and pigs. According to the North Carolina Department of Agriculture and Consumer Services, there were 19,000 cattle and calves, 1200 hogs and pigs, 4,600,000 broilers, and 1600 equines in Davidson County (NCDACS, 2003). There is one poultry operation that houses approximately 45,000 broilers in the Rich Fork Creek watershed. There are no confined animal operations in the Hamby Creek watershed. There are no permitted concentrated animal feedlot operations (CAFOs) in the watershed. There are several small livestock farms scattered throughout the watersheds. These are small operations with herd sizes varying from 1

cow to as many as 30-40 cows. The number of horses in these watersheds is estimated to be less than 100. (Miller communications, 2003).

2.2.1.1 Livestock Grazing/Horse and Pony Grazing

Cattle, including both dairy and beef cows, and horses graze on pasture land and deposit feces onto the land. During a rainfall runoff event, a portion of the fecal material that contains coliform bacteria is transported to the streams. In addition, when cattle have direct access to streams, feces may be deposited directly into a stream. There are small, scattered animal operations which may have access to streams for their animals in the Rich fork creek and Hamby Creek watersheds. (Miller communication, 2003).

2.2.1.2 Agricultural Manure and Residual Application/Concentrated Animal Feedlot Operations

There is a poultry operation housing approximately 45,000 broilers in the Rich Fork Creek watershed. The litter from this operation is land applied following a waste management plan that was developed by Davidson SWCD personnel. Poultry litter produced by chickens is routinely collected and applied as an alternative to fertilizer and applied predominately to pasture/hayland (Davidson County communications, 2003). There are scattered beef cattle operations in Rich Fork Creek and Hamby Creek watersheds. These are small operations with herd sizes varying from 1 cow to as many as 30-40 cows. The total number of beef cattle is estimated to be 300-400 cows. These operations are pasture operations. Cattle are on pastures year round and generally have access to the streams. There are a few operations that prohibit livestock accessing the creek (Miller communications, 2003). The city of Thomasville is permitted to land apply residuals from its wastewater treatment process. The applications fields are located in Davidson and Randolph Counties (Morgan Huffman, December 2003).

2.2.2 Failed Septic Systems

Failing septic systems have been cited as a potential source of fecal coliform bacteria to water bodies (USEPA, 2000). There is a considerable amount of residential development scattered throughout Rich Fork Creek and Hamby Creek watersheds. The Department of Environmental Health has estimated that Davidson County has approximately 35,612 housing units on septic systems (DEH, 1999). Septic system failure rate data in North Carolina are very limited. A study

conducted in 1981 by the North Carolina Office of State Budget and Management suggested that approximately 11% of systems that were surveyed experienced malfunctions or failures over a year (DEH, 2000).

2.2.3 Urban Development/Sanitary Sewer Overflows

Fecal coliform bacteria can originate from various urban sources. These sources include pet waste, runoff through stormwater sewers, illicit discharges/connections of sanitary waste, leaky sewer systems and sewer systems overflows. Leaky sewer pipes upstream of the Westside WWTP were reported by local resident to be one of the major causes of fecal coliform loading to Rich Fork Creek. The majority of Highpoint's sanitary collection system include pipelines that generally follow the terrain and are often located in close proximity to streams and tributaries. These pipelines transport wastewater to the Westside WWTP. This situation presents an opportunity for raw sewage to reach the streams through broken pipelines and cracked joints. Rich Fork, Little/ Payne, and Ensley Creeks come together just upstream of the Westside WWTP and High Point's sewer collection system follows the drainage systems of these creeks. Sewer System Overflows (SSOs) are often caused by excessive volumes of rainwater entering the collection system which exceeds the systems capacity to transport all the flow to the WWTP. Sewer System Overflows can also be caused when sewer pipes are clogged by debris, grease, tree roots, and other obstructions. High Point owns and operates the Westside WWTP and the sewage collection system. From February 2002 to September 2003, High Point reported at least 16 sanitary sewer overflows (SSOs) ranging from 140 gallons to 36,000 gallons within the Rich Fork Creek watershed (High Point, 2003). The City of Thomasville operates the Hamby Creek WWTP and the sewage collection system. In the last three years (March 2001 - August 2003), Thomasville reported at least 23 sanitary sewer overflows (SSOs) ranging from 150 gallons to 2,100,000 gallons within the Hamby Creek watershed (Thomasville, 2003).

2.2.4 Wildlife

Wildlife can be a source of fecal coliform bacteria in forested, wetland, pasture and cropland areas. Wildlife deposit fecal material in these areas which can be transported to a stream in a rain event. Wildlife in the Davidson county area include deer, raccoons, squirrels, and birds (including waterfowl). The deer population is estimated to be 10-30 per square mile (WRC, 2001).

3.0 ANALYTICAL APPROACH

Establishing the relationship between instream water quality and sources of fecal coliform bacteria is an important component of the TMDL. Load duration curves were developed as a method to relate TMDLs to all hydrologic conditions.

Load duration curves provide a method that is entirely based on observed data to estimate the reductions required to meet water quality standards. Load duration curves are based on a cumulative frequency distribution of stream flow. The method used to develop both the flow and load duration curves are described in this section and is based on work by Stiles in Kansas (2002), Cleland (2002), and Sheely (2002).

3.1 Flow Duration Curves

In order to develop a load duration curve, the first step is to create flow duration curves. A flow duration curve displays the cumulative frequency distribution of daily flow data over the period of record. The duration curve relates flow values measured at a monitoring station to the percent of time the flow values were equaled or exceeded. Flows are ranked from low, which are exceeded nearly 100 percent of the time, to high, which are exceeded less than 1 percent of the time.

Flow duration curves are limited to the period of record available at a monitoring station. The confidence in the duration curve approach in predicting realistic percent load reductions increases when longer periods of record are used to generate the graphs. One of the shortcomings of using this method to develop TMDLs is that most ambient monitoring stations do not monitor flow at the time of water quality sampling. However, a nearby gage in the same watershed or in a watershed of similar topography and landuse in the same eco-region as the ungaged watershed can be used to estimate flow. Flows on an ungaged stream can be extrapolated using a drainage area ratio.

DWQ developed a flow duration curve using daily streamflow data collected at USGS continuous gage on Abbots Creek near Lexington (USGS 02121500) between October 1988 and September, 2002. This USGS gage is located in the Abbots Creek watershed (HUC 03040103 - (Subbasin # 03-07-07)). Both Rich Fork and Hamby Creeks drain into Abbots Creek and are

located in Abbots Creek Watershed. The flow duration curves developed for Rich Fork Creek and Hamby Creek using the flow data collected at this gage (USGS 02121500) on Abbotts Creek are shown in Figures 7, and 8, respectively.

Figure 7. Flow Duration Curve for Rich Fork Creek Based on Abbotts Creek at USGS 02121500

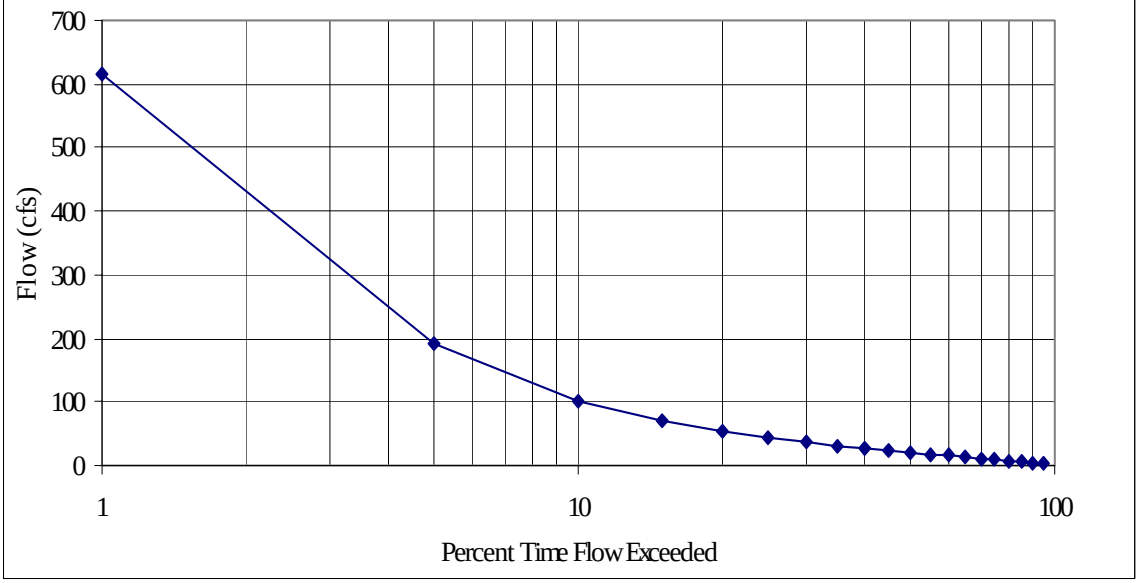
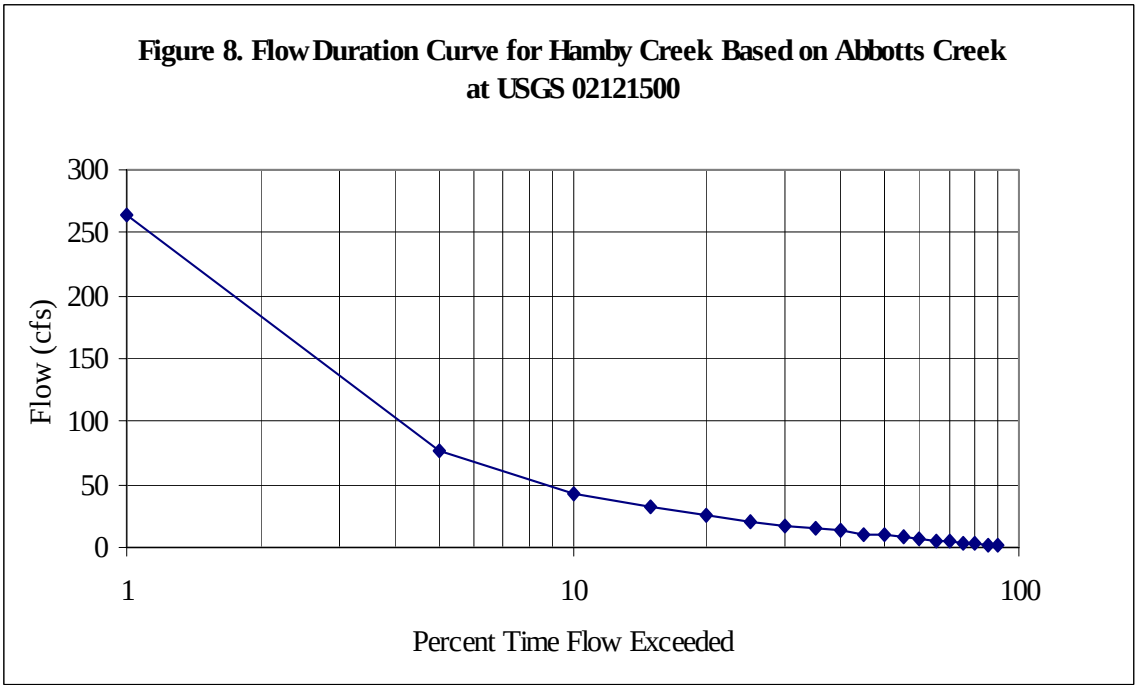


Figure 8. Flow Duration Curve for Hamby Creek Based on Abbotts Creek at USGS 02121500



3.2 Load Duration Curves

Flow duration curves are transformed into load duration curves by multiplying the flow values along the flow duration curves by the pollutant concentrations and the appropriate conversion factors. On the load duration curve, allowable and existing loads are plotted against the flow recurrence interval. The allowable load is based on the water quality numerical criteria for fecal coliform, less the margin of safety, and on flow values from the flow duration curves. The line fit through the allowable load is called the target line.

The instantaneous standard of 400 cfu/100 ml is considered as an end point (or allowable load) for the determination of the fecal coliform TMDL for Rich Fork Creek and Hamby Creek TMDLs. In addition to the instantaneous standard of 400 cfu/100 ml, the geometric mean standard of 200 cfu/100ml was considered at the WWTPs downstream monitoring locations as these stations collected enough samples to calculate the geometric mean. Load duration curves were developed using the 200 cfu/100 ml geometric mean (at least 5 samples within 30 days) and the average flow during this period to ascertain the geometric mean standard has not been exceeded and to determine the most stringent limit.

The positioning of monitoring data on the load duration curve provides an indication of the potential sources and delivery mechanisms of the pollutant. In general, violations occurring on the right side of the curve typically occur during low flow events and are indicative of continuous pollutant sources, such as NPDES permitted discharges, leaking collection lines, or leaking septic systems, and livestock having access to streams. Violations that occur on the left side of the curve occur during high flow events and mainly indicate sources responding to rainfall events. As shown in Figure 9, from 1995 to 2002, water quality violations in Rich Fork Creek occur during high, transitional, typical, and low flow events. In Hamby Creek (Figure 10), violations occur during typical (i.e., flows exceeded between 25 and 75 percent of the time) and low flow (i.e., flows exceeded between 75 and 90 percent of the time) events.

Figure 9. Load Duration Curve - Rich Fork Creek DWQ Ambient Monitoring Location (Q5780000 - SR#1800)

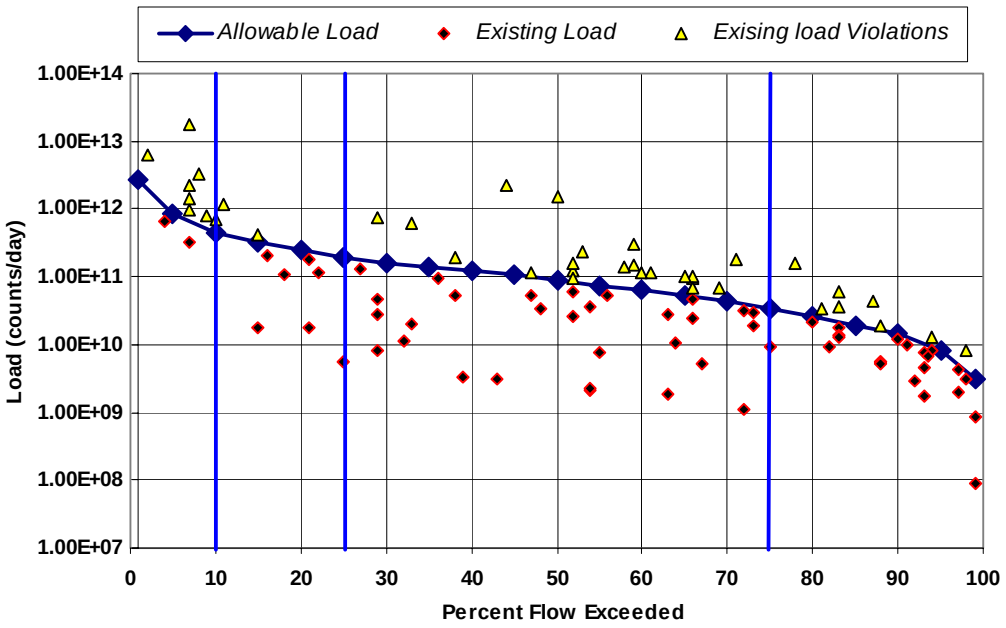
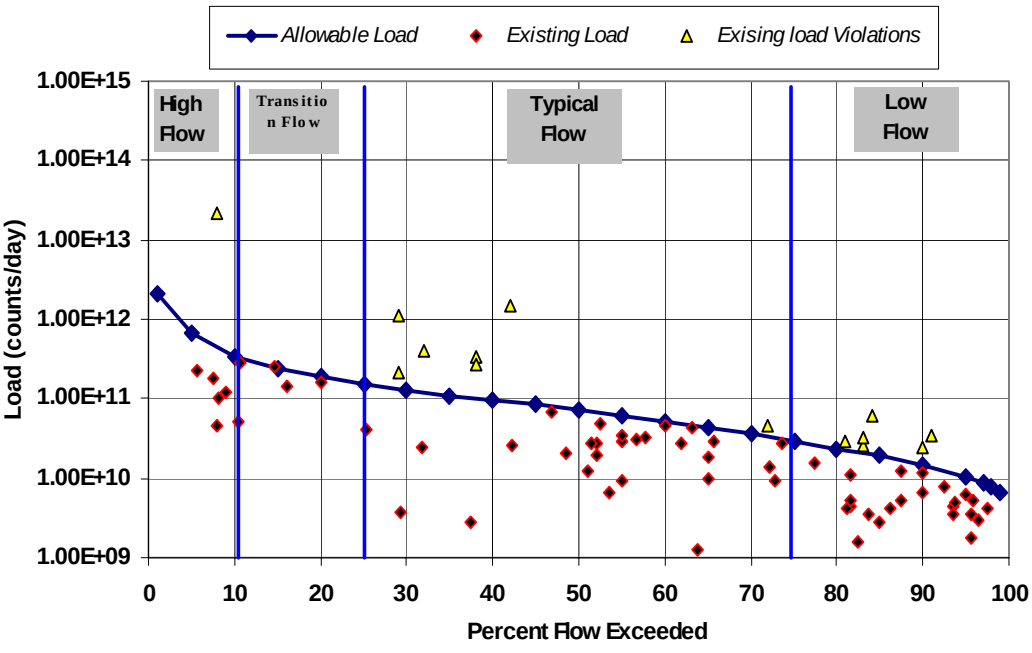


Figure 10. Load Duration Curve - Hamby Creek DWQ Ambient Monitoring Location (Q59060000- SR# 2790)



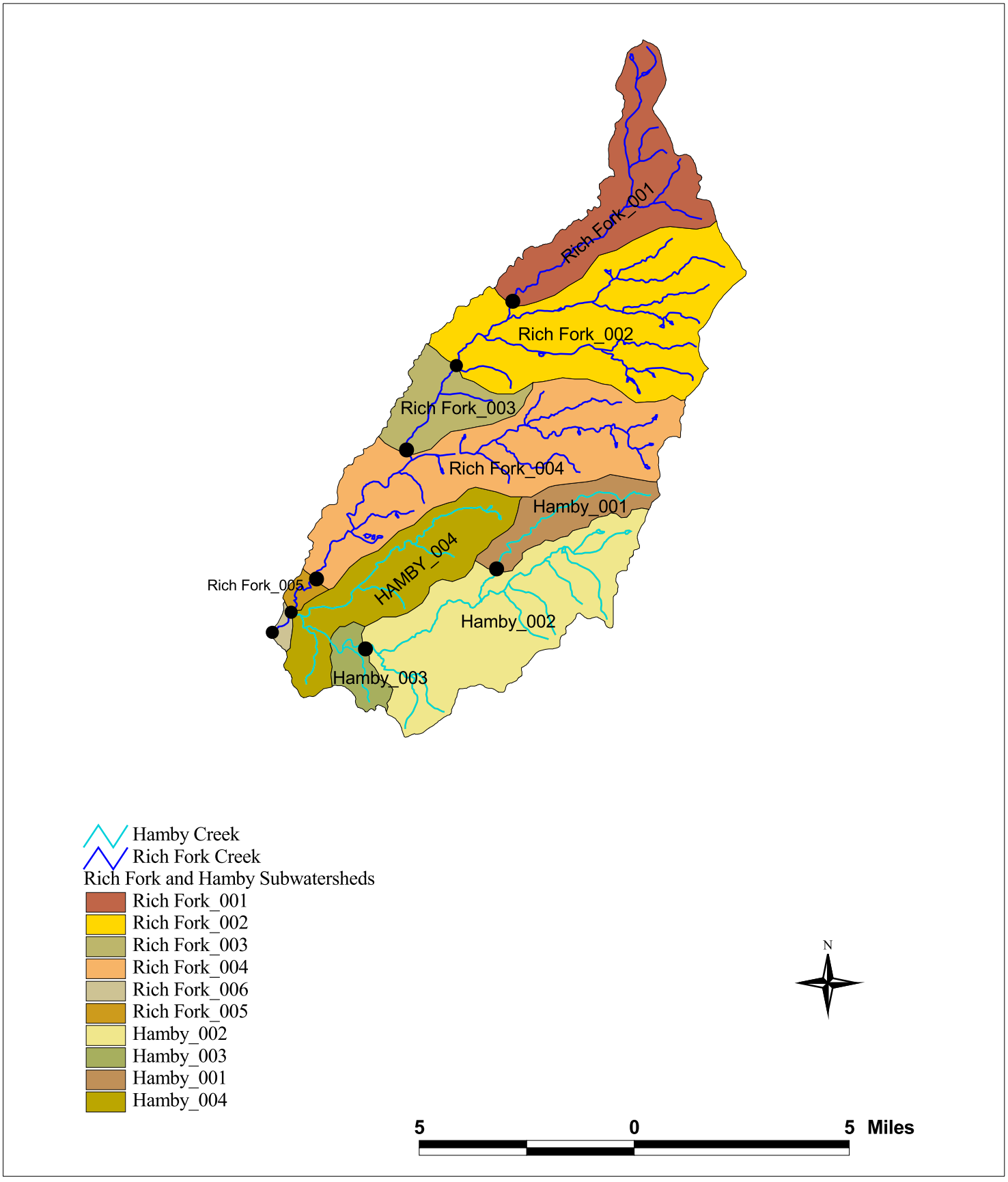
The existing load is based on measured fecal coliform concentration and an estimate of the flow during sampling days. The positioning of the existing load on the plot is based on the recurrence interval of the estimated flow. Existing loads that plot above the target line indicate a violation of water quality criterion, while loads plotting below the line represent compliance.

The Rich Fork Creek watershed was delineated into 6 subwatersheds and the Hamby Creek watershed was delineated into 4 subwatersheds. Figure 7 illustrates the subwatershed delineations for the Rich Fork Creek and Hamby Creek watersheds. The subwatershed delineations were based, on the location of the ambient and discharger coalition monitoring sites, and the location of WWTPs upstream/downstream monitoring locations. Load duration curves were developed for each subwatershed from the extrapolated flow and the water quality data collected at the monitoring locations. The fecal coliform load calculated at each monitoring station takes into account the load coming from the watershed area upstream of the monitoring station. A list of the monitoring stations used to develop the load duration curves for the impaired streams are provided in Table 7.

Table 7. Rich Fork Creek and Hamby Creek Subwatersheds

Subwatershed	Stream	Monitoring Station	Area (sq. mile)
RF01	**Rich Fork**	**DWQ ambient Monitoring (Q5780000 - SR#1800)**	**27.4**
RF02	Rich Fork	YPDRBA Station (Q5750000 - SR#1755)	9.83
RF03	Rich Fork	YPDRBA Station (Q5785000 - SR#1787)	31.6
RF04	Rich Fork	YPDRBA Station Q5790000 - SR#2123)	48.7
HA01	**Hamby**	**DWQ ambient Monitoring (Q59060000- SR# 2790)**	**20.9**
HA02	Hamby	WWTP Upstream Station (Baptist Children' Home Road)	3.9
HA03	Hamby	Thomasville's WWTP downstream Station (SR#2017)	19.2

Figure 11. Rich Fork Creek and Hamby Creek Subwatersheds



4.0 Uncertainty

The lack of agreement between modeled and observed fecal coliform concentrations is due in part to the high degree of uncertainty associated with predicting any water quality variable, especially fecal coliform. The inability to accurately predict specific observed fecal coliform concentrations can be attributed to approximations in the analytical method, lack of sufficient information in source assessment, gaps in our scientific knowledge, natural variability in instream fecal coliform concentrations, field and laboratory measurement error, and lack of current site specific model input parameters (where model is used) including decay rate, flow, rainfall data and landuse information. The available models used to predict fecal coliform concentrations are not adept at characterizing prediction uncertainty. Because uncertainty associated with generalized approach is expected to be large, the results should be interpreted in light of the limitations of the methodology used and prediction uncertainty. Simple methods like Load Duration Curve can be used to guide initial decision making but continued observation of the watershed and stream, as fecal coliform controls are implemented (e.g., exclusion fencing, leaky sanitary sewer repairs), is expected to be our best approach for determining the appropriate level of management.

5.0 Total Maximum Daily Load

A total maximum daily load is the total amount of pollutant that can be assimilated by the receiving water body while achieving water quality standards. A TMDL is comprised of the sum of wasteload allocations (WLA) for point sources, load allocations (LA) for non-point sources and a margin of safety (MOS). This definition is expressed by the equation:

$$TMDL = \sum WLAs + \sum LAs + MOS$$

The objective of the TMDL is to estimate allowable pollutant loads and to allocate to the known pollutant sources in the watershed so the appropriate control measures can be implemented and the water quality standard can be achieved. The Code of Federal Regulations (40 CFR §130.2(1)) states that TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measures. In the Rich Fork Creek and Hamby Creek fecal coliform TMDLs, loads are expressed in terms of counts per day, and represent the maximum one-day load the streams can assimilate and maintain the water quality criterion.

5.1 Reduction target

To determine the amount of fecal coliform load reduction necessary to comply with the water quality criteria, the period of critical conditions and the existing loading must be established.

5.1.1 Critical Conditions

The critical condition for non-point source fecal coliform bacteria loading is an extended dry period followed by a rainfall event. During the dry weather period, fecal coliform bacteria builds up on the land surface, and is washed off by rainfall. The critical condition for point source loading occurs during periods of low stream flow when dilution is minimized. Water quality data has been collected during both time periods. Water quality violations in Rich Fork Creek occur during all flow condition. In Hamby Creek, violations occur during typical and low flow events. The load duration curve approach addresses the load reductions required during all flow regimes. Critical conditions are accounted for in the load duration analysis by using an extended period of stream flow records and water quality data available for the streams. Water quality data used in the Rich Fork Creek include data collected from January 1993 to September 2002, and the water quality data uses for Hamby Creek TMDLs include data collected from May 1995 to September 2002, and the streamflow data bigan in 1988.

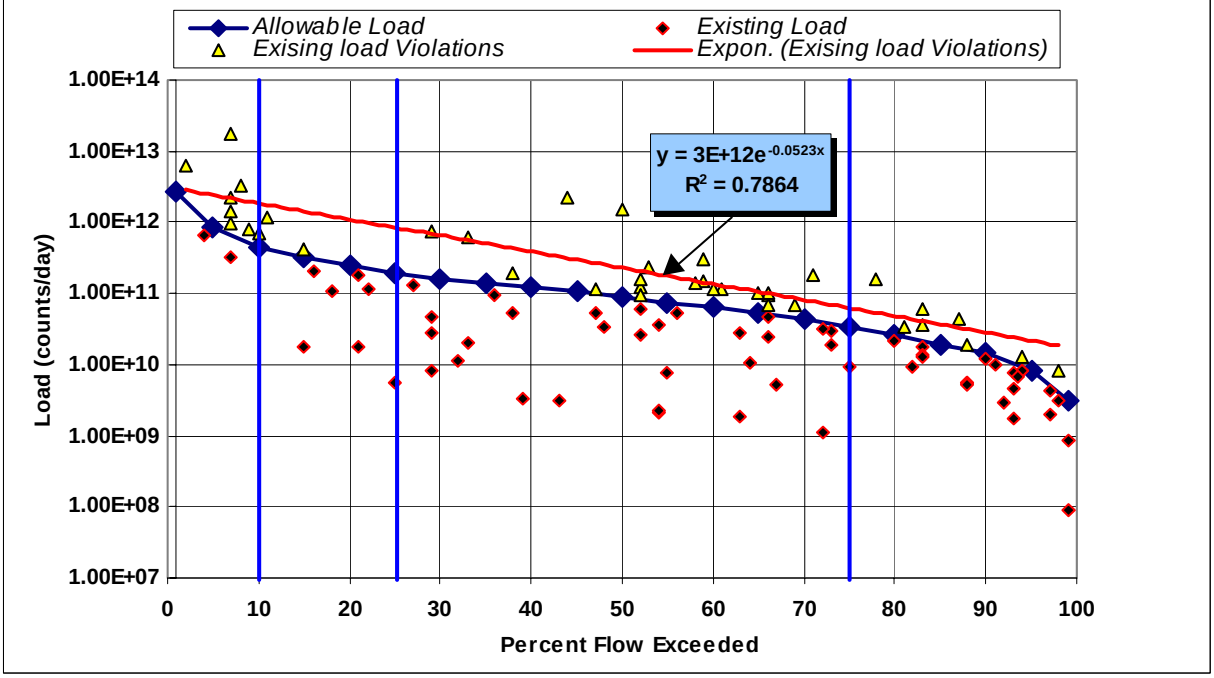
5.1.2 Existing Conditions

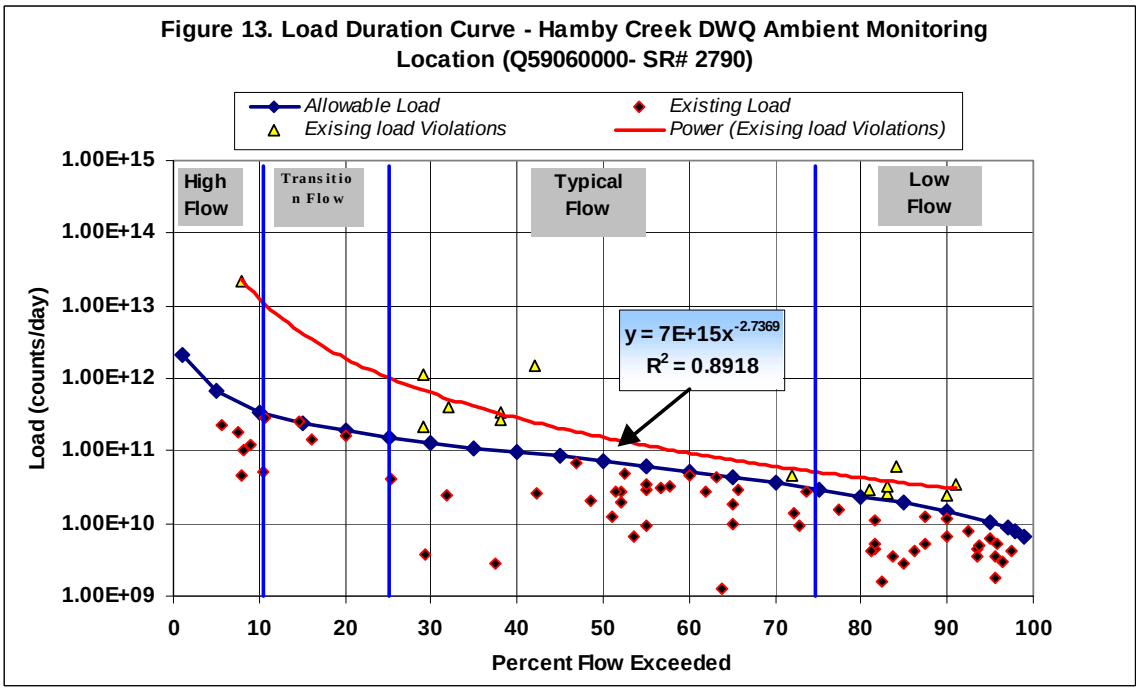
The load duration curves for Rich Fork Creek, and Hamby Creek at their respective DWQ ambient monitoring stations are shown in Figures 9 and 10, respectively. Load duration curves for the streams at the other monitoring stations are provided in Appendix B. Existing conditions are based on the instream water quality violations. The violations in Rich Fork occur at all flow condition, and Hamby Creek violations occur during typical and low flow conditions. The violations indicate that impairment occurs during wet and dry weather conditions in both streams. Superimposed on the graphs is a trend line through the data points violating the water quality criterion. In the load curve approach, the trend line equation is used to calculate the existing load at each duration interval. As shown in Figures 12 and 13. A power curve provided the best fit for the Rich Fork data, and an exponential curve provided the best fit for Hamby Creek data, as determined by the correlation coefficient.

To represent the TMDL as a single value, the existing load was calculated from the trend as the average of the load violations between the 10th and 90th duration interval. Flows occurring less than 10 percent of the time were considered extreme flood conditions while flows occurring greater than 90 percent of the time were considered extreme drought conditions. Extreme flow conditions were not considered in the TMDL analysis.

Using the trend line equation for fecal coliform in Rich Fork Creek, the calculated existing load between the 10th and 90th percentile ranges between 2.71 $x10^{10}$ and 1.78 x 10^{12} counts/day. The average of these values, or 4.49 x 10^{11} counts/day, represents the total existing load in Rich Fork Creek. For Hamby Creek, the calculated existing load between the 25th and 90th percentile ranges between 3.14 x 10^{10} and 1.04 x 10^{12} counts/day. The average of these values, or 2.33 x 10^{11} counts/day, represents the total existing load in Hamby Creek. For Hamby Creek TMDL most violations occur between the 25th and 90th percentile ranges. Therefore, the average load was calculated from the existing load between the 25th and 90th percentile ranges. Calculations of the existing loads for other monitoring stations within these watersheds are provided in Appendix B.

Figure 12. Load Duration Curve - Rich Fork Creek DWQ Ambient Monitoring Location (Q5780000 - SR#1800)





5.1.3 Reduction Target Calculations

The TMDL values represent the maximum daily load the stream can assimilate and maintain water quality standards. The load duration curve methodology can be used to show that water quality standards can be achieved under a range of flow conditions. The target load is based on the instantaneous fecal coliform standard of 400 cfu/100ml less the MOS. The existing load is calculated from the trend curve through all violations. Once the existing load and the target load are calculated, the percent reductions required to achieve the numerical water quality criterion are determined.

The percent reduction is calculated as the difference between the average trend curve load estimates and the average of the allowable load estimates. At each recurrence interval between 10 and 95 (at each 5th percentile) the existing loads were calculated from the trend equation, and the allowable loads were calculated from the TMDL target value, which includes the MOS. The allowable load was exceeded in Rich Fork Creek during all flow conditions. Therefore, loads between the 10th and 90th percentile ranges were used to calculate average load and the percent reduction. For Hamby Creek TMDL most violations occur between the 25th and 90th percentile ranges. Therefore, loads between the 25th and 90th percentile ranges were used to calculate the

average load and the percent reduction. The average of the existing and target loads for Rich Fork Creek were 4.49 x 10^{11} counts/day and 1.26 x 10^{11} counts/day, respectively. This equates to a 72% load reduction. The average of the existing and target loads for Hamby Creek were 2.33 x 10^{11} counts/day and 6.63 x 10^{10} counts/day, respectively. This equates to a 71.6% load reduction. Calculations of the existing loads, target load, and percent reduction for Rich Fork and Hamby Creek at the DWQ monitoring stations are given in Table 8 and 9, respectively. Calculations of the existing loads, target load, and percent reduction for other monitoring stations within these watersheds are provided in Appendix B.

Table 8. Calculations of Percent Reduction using Load Duration Curve Approach in Rich Fork Creek

Interval	Existing Load (cnts/day)	Target load (counts/day)	Reduction (percent)
90	2.7095E+10	1.44E+10	46.9
85	3.5194E+10	1.91E+10	45.8
80	4.5712E+10	2.54E+10	44.4
75	5.9375E+10	3.32E+10	44.1
70	7.7120E+10	4.24E+10	45.0
65	1.0017E+11	5.19E+10	48.2
60	1.3011E+11	6.31E+10	51.5
55	1.6899E+11	7.54E+10	55.4
50	2.1950E+11	8.84E+10	59.7
45	2.8511E+11	1.05E+11	63.2
40	3.7032E+11	1.21E+11	67.4
35	4.8100E+11	1.39E+11	71.1
30	6.2476E+11	1.62E+11	74.1
25	8.1149E+11	1.94E+11	76.1
20	1.0540E+12	2.46E+11	76.6
15	1.3690E+12	3.12E+11	77.2
10	1.7782E+12	4.48E+11	74.8
Average Values between the 90th and 10th percentile			
Existing load:		**4.4925E+11**	
Allowable Load:		**1.26E+11**	
Percent reduction:		**71.97%**	

Table 9. Calculations of Percent Reduction using Load Duration Curve Approach in Hamby Creek

Interval	Existing Load (cnts/day)	Target Load (counts/day)	Reduction (percent)
90	3.1371E+10	1.4768E+10	52.9
85	3.6684E+10	1.8987E+10	48.2
80	4.3304E+10	2.3206E+10	46.4
75	5.1671E+10	2.9535E+10	42.8
70	6.2409E+10	3.6919E+10	40.8
65	7.6443E+10	4.4303E+10	42.0
60	9.5165E+10	5.2742E+10	44.6
55	1.2075E+11	6.2235E+10	48.5
50	1.5674E+11	7.2784E+10	53.6
45	2.0913E+11	8.4387E+10	59.6
40	2.8868E+11	9.5990E+10	66.7
35	4.1604E+11	1.1076E+11	73.4
30	6.3440E+11	1.2869E+11	79.7
25	1.0449E+12	1.5295E+11	85.4
20	1.9245E+12	1.9240E+11	90.0
15	4.2292E+12	2.4261E+11	94.3
10	1.2829E+13	3.4725E+11	97.3
Average Values between the 90th and 25th percentile			
Existing load:		**2.3341E+11**	
Allowable Load:		**6.6304E+10**	
Percent reduction:		**71.59%**	

The percent reductions based on the geometric mean standard of 200 cfu/100ml less the MOS were calculated at the WWTPs downstream monitoring stations (Old Hwy 29 for Rich Fork Creek (Figure RF5a) and SR 2017 for Hamby Creek (Figure H3a)). Percent reductions were also calculated at the same locations based on the instantaneous standard of 400 cfu/100ml less the MOS to determine the most stringent limit (Figure RF5 and Figure H3). The results indicate that reductions based on the instantaneous standard are higher than the reductions based on the geometric mean standard at both sites. For Rich Fork Creek, the reductions were 69% and 61% for the instantaneous and the geometric mean standards, respectively. For Hamby Creek, the reductions were 82% and 64% for the instantaneous and the geometric mean standards, respectively. Based on these results, the instantaneous standard was more stringent than the geometric mean standard and was used to calculate the TMDLs for both streams.

5.2 Margin of Safety

There are two methods for incorporating a MOS in the analysis: a) implicitly incorporate the MOS using conservative model assumptions to develop allocations; or b) explicitly specify a portion of the TMDL as the MOS and use the remainder for allocations. In the Rich Fork Creek and Hamby Creek TMDLs both implicit and explicit MOS were used.

For TMDLs developed using load curves, the assumption that reductions are needed at all flows between the 10^{th} and 90^{th} duration interval results in percent reductions higher than what is required based on observed data violations. To provide an explicit margin of safety, the allowable load curve used 360 cfu/100ml instead of the instantaneous standard of 400 cfu/100ml. This provides a 10% margin of safety.

5.3 TMDL Allocations

The TMDLs determined above must be allocated to a wasteload allocation (WLA) and a load allocation (LA). The TMDL value is reduced by the WLA, if any, to obtain the LA component. TMDL components for Rich Fork Creek and Hamby Creek watersheds and the percent reductions needed to comply with the water quality criteria are provided in Table 10.

5.3.1 Waste Load Allocations (WLA)

There are two major NPDES permitted facilities in the Rich Fork Creek watershed. The City of High Point's Westside WWTP discharges into Rich Fork Creek, and the city of Thomasville's WWTP discharges into Hamby Creek. The WLAs are expressed separately to continuous facilities and MS4 areas. Waste Water Treatment Plants discharge fecal coliform bacteria at all weather conditions while MS4 areas discharge in response to storm events. Both WWTPs discharging in the streams have permit limits that meet instream water quality standards. Both facilities are required to meet their permit limits and no load reductions are needed. The WLAs assigned to the WWTPs are based on the weekly average permit criterion of 400 cfu/100ml. These facilities cannot exceed a monthly geometric mean concentration of 200 cfu/100ml. Any future facility permitted to discharge fecal coliform bacteria in the watersheds will be required to meet permit limits. The city of High Point and the city of Thomasville are automatically

designated into the Phase II program. Both cities have applied for permit coverage in March 2003. Guilford, Randolph, Forsyth, and Davidson Counties are also designated into the Phase II program. The WLA assigned to the MS4 areas is expressed in terms of percent reduction of coliform concentration required to attain standards. Any future MS4 located within the watershed boundaries of the impaired streams will be prescribed a WLA based on the percent reduction required in the TMDL.

Table 10. Fecal Coliform TMDL Components for Rich Fork and and Hamby Creeks
(Evaluation Locations shown in bold)

Stream Monitoring Locations and Watershed_ID	**WLA[1]**		**LA (counts/day)**	**MOS[2]**	**TMDL[3]**	**Percent Reduction[4]**
	Continuous (counts/day)	**MS4**				
RF01 - Rich Fork (YPDRBA Station (Q5750000 - SR#1755)	0	74.7% reduction	8.83×10^{11}	Implicit Explicit	8.83×10^{11}	74.7%
RF02 -Rich Fork (DWQ Station - Q5780000 - SR#1800)	**9.39×10^{10}**	**72.0% reduction**	**3.21×10^{10}**	**Implicit Explicit**	**1.26×10^{11}**	**72.0%**
RF03 Rich Fork (YPDRBA Station (Q5785000 - SR#1787)	9.39×10^{10}	76.1% reduction	3.09×10^{12}	Implicit Explicit	3.18×10^{12}	76.1%
RF04 - Rich Fork (YPDRBA Station Q5790000 - SR#2123)	9.39×10^{10}	55.6% reduction	4.74×10^{12}	Implicit Explicit	4.84×10^{12}	55.6%
RF05 -- Rich Fork (WWTP Upstream)	0	88.2% reduction	8.83×10^{11}	Implicit Explicit	8.83×10^{11}	88.2%
RF06 -- Rich Fork (WWTP Downstream - Old Hwy 29)	9.39×10^{10}	69.0% reduction	1.64×10^{11}	Implicit Explicit	2.57×10^{11}	69.0%
HA01 -Hamby (WWTP Upstream - Baptist Children Home Rd.)	0	86.4% reduction	3.23×10^{11}	Implicit Explicit	3.23×10^{11}	86.4%
HA02 - Hamby (DWQ Station Q59060000- SR# 2790)	**6.06×10^{10}**	**71.6% reduction**	**5.70×10^{9}**	**Implicit Explicit**	**6.63×10^{10}**	**71.6%**
HA03 Hamby (WWTP downstream Station -SR#2017)	6.06×10^{10}	82.6% reduction	1.51×10^{12}	Implicit Explicit	1.57×10^{12}	82.6%

Notes:
1 WLA component separated into load from continuous NPDES facilities (WWTP) and load from MS4. WWTPs have loads in units of counts/day based on permit limits and design flow. MS4 load is represented as percent reduction.
2 Explicit (10%) and implicit Margins of Safety are considered
3 TMDL represents the average allowable load between the 90^{th} and 10^{th} percent recurrence interval.
4 Overall reduction is based on the instantaneous standard of 400 cfu/100ml and is assumed to be more stringent than the geometric mean standard.

5.3.2 Load Allocation

There are two modes of transport for non-point source fecal coliform bacteria loading into the stream. Loading from failing septic systems and animals in the stream are considered direct sources to the stream and are independent of precipitation. The second mode involves loading resulting from fecal coliform accumulation on land surfaces and is transported to the stream during storm events. Runoff from agricultural areas, urban stormwater washoff, and SSO events contribute to the loading during storm events. The positioning of monitoring data on the load duration curve provides an indication of the potential sources and delivery mechanisms of the pollutant. Violations in Rich Fork Creek occur during all weather conditions. In Hamby Creek, violations occur during typical and low flow events. The LA allocation components provided in Table 10 are calculated as the difference between the TMDLs and the WLA components. Calculations of the TMDL, existing, and percent reduction for other monitoring stations within these watersheds are provided in Appendix B.

5.4 Seasonal Variation

Seasonal variation was incorporated in the load duration curves by using the entire period of record flow recorded at the gages. Seasonality was also addresses by using all water quality data between 1995 and 2002 associated with the impaired streams, which was collected during multiple seasons.

6.0 TMDL Implementation

The TMDL analysis was performed using the best data available to specify the percent reductions necessary to achieve water quality criteria to support the designated use classifications in the watersheds.

6.1 Urban Sources of pollutant Loading

The city of High Point and the city Thomasville applied for MS4 permit coverage in March 2003. Each permittee is required to develop a Storm Water Management Program (SWMP). The SWMP covers the duration of the permit (5-year renewable) and comprises a comprehensive

planning process which involves public participation and intergovernmental coordination to reduce the discharge of pollutants to the maximum extent practicable using management practices, control techniques, public education, and other appropriate methods and provisions. With respect to fecal coliform reduction, additional activities and programs conducted by the city, county, and state agencies are recommended to support the SWMP:

- Field screening and monitoring program to identify the types and extent of fecal coliform water quality problems, relative degradation or improvement over time, areas of concern, and source identification.

- Requirements that all new and replacement sanitary sewage systems are designed to minimize discharges from the system into the storm sewer system.

- Mechanisms for reporting and correcting illicit connections, breaks, surcharges, and general sanitary sewer system problems with potential to release to the municipal separate storm sewer system.

6.2 Stream Monitoring

The continued monitoring of fecal coliform concentrations at multiple water quality sampling points in the watersheds will allow for the evaluation of progress towards the goal of reaching water quality standards by comparing the instream data to the TMDL target. It is also critical in characterizing sources of fecal coliform contamination and documenting future reduction of loading. Fecal coliform monitoring will continue on a monthly interval at the ambient monitoring sites (Q5780000 - at SR#1800 for Rich Fork, and Q59060000- at SR# 2790 for Hamby Creek) and at the three discharger coalition monitoring sites in Rich Fork Creek watershed (Q5785000 - at SR#1787, Q5750000 - at SR#1755, and Q5790000 - at SR#2123). In addition to this data collection, further fecal coliform monitoring may be considered. Additional monitoring beyond the ambient and discharger stations' monitoring could aid in a fecal coliform source assessment in the watershed and further aid in the evaluation of the progress towards meeting the water quality target and the water quality standard. Future monitoring efforts should be refined and enhanced in order to characterize dry and wet season base flow conditions and storm responses. The Storm Water Management Program (SWMP) required in the MS4 permit is a good means of achieving the continued and enhanced monitoring. The Piedmont Triad Council of Governments (PTCOG) is also conducting fecal coliform bacteria monitoring at several locations within the Rich Fork Creek watershed to assess fecal coliform impairment and to identify potential sources. The PTCOG working in conjunction with the City of High Point, City of Thomasville, and

Davidson County have received a 205(j) grant to help identify and cleanup fecal coliform bacteria sources in the Rich Fork and Hamby Creek watersheds. The overall goal of the project is to improve water quality in the Rich Fork and Hamby Creek watersheds of the Yadkin-Pee Dee River Basin. This will be accomplished through sampling efforts throughout the watershed to identify and clean up fecal coliform bacteria sources. Upstream and downstream samples will be taken at potential problem areas until the source or source areas are identified. Also, this project will help increase public awareness about fecal coliform bacteria water quality issues as the results of the study will be shared with area media, environmental groups and educational institutions (PTCOG, 2003). This project would provide the first step in an implementation plan of identifying contributing sources in the watershed. The study will also provide significant insight into specific areas within the watersheds for further investigations.

7.0 Future Efforts

This TMDL represents an early phase of a long-term restoration project to reduce fecal coliform loading to acceptable levels in Rich Fork Creek and Hamby Creek watersheds. DWQ in cooperation with the City of High Point, City of Thomasville, and the counties involved (Davidson, Forsyth, Guilford, and Randolph Counties) should evaluate the progress of implementation strategies and refine the TMDL as necessary, in the next phase (five-year cycle). This will include recommending specific implementation plans for identified problem areas. Potential mechanisms of reduction of fecal coliform loading should be explored. These include, BMP implementation, local regulations or ordinances related to zoning, landuse, or storm water runoff controls. 319 nonpoint source grants may be a good source of funding for BMP implementation. The involvement of local governments and agencies will be needed in order to develop implementation plans.

8.0 Public participation

The counties, extension service and soil and water conservation districts have supplied septic data and agricultural information to aid in the source assessment portion of the TMDL. The City of High Point and the City of Thomasville have supplied information on WWTPs. A draft of the TMDL was publicly noticed through various means, including notification in the local

newspapers, *High Point Enterprise and Thomasville Times* on February 26, 2004. DWQ electronically distributed the draft TMDL and public comment information to known interested parties. The TMDL was also available from the Division of Water Quality's website at http://h2o.enr.state.nc.us/tmdl/ during the comment period. A public meeting was held on March 18, 2004 as a part of the public comment period. The public comment period ended on March 25, 2004. Two written comments were received from the public and responses are provided in this document.

9.0 Further Information

Further information concerning North Carolina's TMDL program can be found on the Internet at the Division of Water Quality website:

http://h2o.enr.state.nc.us/tmdl/

Technical questions regarding this TMDL should be directed to the following members of the DWQ Modeling/TMDL Development Unit:

Adugna Kebede, Modeler
e-mail: Adugna.Kebede@ncmail.net

Michelle Woolfolk, Supervisor
e-mail: Michelle.Woolfolk@ncmail.net

REFERENCES

Center for Watershed Protection. 1999. Microbes and Urban Watersheds: Concentrations, Sources and Pathways. Watershed Protection Techniques 3(1): 554:565.

City of Thomasville. 2003. Personal communication with Morgan Huffman. November 2003.

City of High Point. 2003. City of Salisbury Collection System Overflows (July 1999- June 2000). City of Salisbury Utility Management Department.

City of High Point. 2003. Personal communication with Tim Fitzgerald, December 2003.

Cleland, B.R. 2002. TMDL Development from the "Bottom Up" – Part II: Using load duration curves to connect the pieces. Proceedings from the WEF National TMDL Science and Policy 2002 Conference.

Division of Environmental Health (DEH). NCDENR. 1999. North Carolina On-Site Wastewater Non-Point Source (NPS) Pollution Program. www.deh.enr.state.nc.us/oww/non-pointsource/NPS.htm June 24, 1999.

Division of Environmental Health (DEH). NCDENR. 2000. Report on the Proper Maintenance of Septic Tank Systems in Accordance with Section 13.5 of HB 1160 (Clean Water Act of 1999). March 15, 2000.

Mecklenburg County Department of Environmental Protection. 2001. Public Review Draft Fecal Coliform Total Maximum Daily Load for Irwin, McAlpine, Little Sugar and Sugar Creek Watersheds.

North Carolina Department of Agriculture. 2001. Agricultural Statistics Division-County Statistics. www.ncagr.com/stats/cntysumm/ and http://govinfo.library.orst.edu/cgi-bin/ag-state?North+Carolina.

North Carolina Wildlife Resource Commission (NCWRC), 2003. 2000- Whilte –Tail Dear Population Distribution in North Carolina. www.ncwildlife.com

Miller, A. 2003. Davidson County Soil & Water Conservation District. Personal communication with Andy Miller. 2003.

Sheely, L.H. July 2002. Load Duration Curve: Development and Application to Data Analysis for Streams in the Yazoo River Basin, MS. Special Report – Summer 2002. Jackson Engineering Gradutae Program.

Stiles, T.C. 2002. Incorporating hydrology in determining TMDL endpoints and allocations. Proceedings from the WEF National TMDL Science and Policy 2002 Conference.

Tad, H. S. 2002. Davidson County Health Department. 2002. Personal communication with Tad H. Stetler. February 2002.

Davidson County Extension Service. 2001. Personal communication with Jim Cowden. January 2002.

Schueler, Thomas R. 1994. The importance of imperviousness. Watershed Protection Techniques, Vol. 1, no. 3. Center for Watershed Protection, Silver Spring, MD.

U.S. Environmental Protection Agency (USEPA). 1991. Guidance for Water Quality-Based Decisions: The TMDL Process. Assessment and Watershed Protection Division, Washington, DC.

U.S. Environmental Protection Agency, Federal Advisory Committee (FACA). Draft final TMDL Federal Advisory Committee Report. 4/28/98.

U.S. Environmental Protection Agency (USEPA) 2000a. Revisions to the Water Quality Planning and Management Regulation and Revisions to the National Pollutant Discharge Elimination System Program in Support of Revisions to the Water Quality Planning and management Regulation; Final Rule. Fed. Reg. 65:43586-43670 (July 13, 2000).

U.S. Environmental Protection Agency (USEPA) 2000c. Implementation Guidance for Ambient Water Quality Criteria for Bacteria – 1986. DRAFT. Office of Water. EPA-823-D-00-001.

U.S. Environmental Protection Agency (USEPA) 1985. Rates, constants, and kinetics formulations in surface water quality modeling (II ed.). Athens, GA: EPA-600-3-85-040.

Wayland, R. 2002. November 22, 2003 Memo from Robert Wayland of the U.S. Environmental Protection Agency to Water Division Directors. Subject: Establishing TMDL Waste Load Allocations for stormwater sources and NPDES permit requirements based on those allocations.

APPENDIX A WATER QUALITY DATA

List of Tables

List of Figures

Table A-1. Rich Fork Creek Ambient Monitoring Station at SR 1800 (Q5780000) Fecal Coliform Concentration Monitoring Data

Date	Instream Fecal Coliform Concentration (cfu/100ml)	Date	Instream Fecal Coliform Concentration (cfu/100ml)
01/04/95	40	12/30/98	73
02/07/95	170	01/14/99	180
03/15/95	60	02/11/99	10
05/02/95	7000	03/11/99	36
06/05/95	1000	05/06/99	250
07/11/95	710	06/01/99	160
10/11/95	710	07/06/99	780
11/02/95	270	08/03/99	100
01/16/96	1000	09/01/99	380
02/14/96	27	10/13/99	560
03/07/96	870	11/02/99	1800
04/03/96	150	12/13/99	710
05/01/96	2100	01/04/00	260
06/04/96	720	02/02/00	560
07/01/96	290	03/06/00	110
08/08/96	1600	04/10/00	280
09/03/96	1500	05/15/00	680
10/01/96	10000	06/19/00	280
11/06/96	10	07/15/00	230
12/03/96	180	08/21/00	270
01/06/97	250	09/05/00	420
02/04/97	27	10/19/00	120
03/03/97	590	11/27/00	500
05/01/97	1400	12/13/00	920
06/02/97	390	01/04/01	140
07/01/97	190	04/24/01	160
08/13/97	600	06/11/01	420
09/03/97		07/23/01	240
10/02/97	360	08/13/01	2000
11/04/97	220	09/12/01	540
12/02/97	150	10/16/01	330
01/13/98	18	11/14/01	62
02/04/98	240	01/08/02	650
03/11/98	570	02/12/02	130
04/01/98	100	03/21/02	250
05/05/98	470	04/30/02	120
06/03/98	170	05/30/02	87
08/06/98	160	06/25/02	240
09/03/98	350	07/18/02	270
10/01/98	300	08/14/02	230
11/03/98	390	09/23/02	930

*L= Actual value is known to be greater than value given.
J= Estimated value.
A= Value reported is the mean of two or more determination

Table A- 2. Hamby Creek Ambient Monitoring Station at SR 2790 (Q5906000) Fecal Coliform Concentration Monitoring Data

Date	Instream Fecal Coliform Concentration (cfu/100ml)	Date	Instream Fecal Coliform Concentration (cfu/100ml)
05/02/95	6000	03/11/99	54
06/05/95	140	05/06/99	140
07/11/95	260	06/01/99	64
08/01/95	170	06/07/99	910
09/07/95	100	08/03/99	70
10/11/95	200	09/01/99	570
11/02/95	1200	10/13/99	920
01/16/96	310	11/02/99	490
07/01/96	1100	12/13/99	210
08/08/96	3000	01/04/00	200
09/03/96	1200	02/02/00	110
10/01/96	16000	03/06/00	64
11/07/96	100	04/15/00	310
12/03/96	130	05/13/00	320
01/06/97	220	06/19/00	150
02/04/97	73	07/18/00	160
03/03/97	54	08/21/00	590
05/01/97	82	09/05/00	310
06/02/97	100	10/19/00	110
07/01/97	320	11/27/00	240
08/13/97	440	12/13/00	82
09/03/97		01/04/01	54
10/02/97	140	04/24/01	190
11/04/97	27	06/11/01	260
12/02/97	10	07/23/01	160
01/13/98	10	08/13/01	210
02/04/98	110	09/12/01	220
03/11/98	36	10/16/01	68
04/01/98	600	11/14/01	340
05/05/98	360	01/08/02	320
06/03/98	150	02/12/02	100
08/06/98	140	03/21/02	99
09/03/98	110	04/30/02	110
10/01/98	290	05/30/02	220
11/03/98	140	06/25/02	150
12/30/98	82	07/18/02	220
01/14/99	10	08/14/02	290
02/11/99	36	09/23/02	480

*L= Actual value is known to be greater than value given.
J= Estimated value.
A= Value reported is the mean of two or more determination.

Table A- 3. Rich Fork Creek DWQ Special Study Monitoring Data

Rich Fork in Davidson Co. at SR 1755

Dates	Number of days	Observations	Geometric Mean
4/10/2001 to 5/8/2001	29	15	260
4/17/2001 to 5/15/2001	29	15	355
4/24/2001 to 5/22/2001	29	15	418
5/1/2001 to 5/29/2001	29	15	482

Rich Fork in Davidson Co. at SR 1800

Dates	Number of days	Observations	Geometric Mean
4/10/2001 to 5/8/2001	29	15	229
4/17/2001 to 5/15/2001	29	15	227
4/24/2001 to 5/22/2001	29	15	287
5/1/2001 to 5/29/2001	29	15	369

Rich Fork in Davidson Co. at SR 1787

Dates	Number of days	Observations	Geometric Mean
4/10/2001 to 5/8/2001	29	15	139
4/17/2001 to 5/15/2001	29	15	179
4/24/2001 to 5/22/2001	29	15	228
5/1/2001 to 5/29/2001	29	15	322

Rich Fork in Davidson Co. at SR 2123

Dates	Number of days	Observations	Geometric Mean
4/10/2001 to 5/8/2001	29	15	71
4/17/2001 to 5/15/2001	29	15	80
4/24/2001 to 5/22/2001	29	15	98
5/1/2001 to 5/29/2001	29	15	142

All Stations

Dates	Number of days	Observations	Geometric Mean
4/10/2001 to 5/8/2001	29	60	156
4/17/2001 to 5/15/2001	29	60	184
4/24/2001 to 5/22/2001	29	60	228
5/1/2001 to 5/29/2001	29	60	300

Table A -4. Hamby Creek DWQ Special Study Monitoring Data

Hamby Creek in Davidson Co. at SR 2790

Dates	Number of days	Observations	Geometric Mean
4/10/2001 to 5/8/2001	29	15	142
4/17/2001 to 5/15/2001	29	15	155
4/24/2001 to 5/22/2001	29	15	161
5/1/2001 to 5/29/2001	29	15	175

Hamby Creek in Davidson Co. at SR 2025

Dates	Number of days	Observations	Geometric Mean
4/10/2001 to 5/8/2001	29	15	59
4/17/2001 to 5/15/2001	29	15	65
4/24/2001 to 5/22/2001	29	15	88
5/1/2001 to 5/29/2001	29	15	118

Hamby Creek in Davidson Co. at SR 2080

Dates	Number of days	Observations	Geometric Mean
4/10/2001 to 5/8/2001	29	15	134
4/17/2001 to 5/15/2001	29	15	109
4/24/2001 to 5/22/2001	29	15	189
5/1/2001 to 5/29/2001	29	15	255

All Stations

Dates	Number of days	Observations	Geometric Mean
4/10/2001 to 5/8/2001	29	45	104
4/17/2001 to 5/15/2001	29	45	103
4/24/2001 to 5/22/2001	29	45	139
5/1/2001 to 5/29/2001	29	45	174

Table A- 5. Yadkin Pee-Dee River Basin Association Discharger Coalition Fecal Coliform Concentration Monitoring Data

Rich Fork Creek at SR 1755 near High Point (Q5750000)			
Date	Instream Fecal Coliform Concentration (cfu/100ml)	Date	Instream Fecal Coliform Concentration (cfu/100ml)
6/18/1998	290	3/6/2001	57
7/28/1998	170	4/4/2001	230
8/19/1998	100	5/1/2001	36
10/8/1998	640	5/7/2001	140
12/1/1998	300	5/24/2001	260
1/5/1999	125	6/21/2001	360
2/2/1999	120	7/30/2001	490
3/12/1999	760	8/21/2001	640
4/9/1999	2100	9/25/2001	620
5/5/1999	13	12/4/2001	130
5/14/1999	100	1/15/2002	140
5/18/1999	280	2/12/2002	80
6/21/1999	1300	3/5/2002	73
7/26/1999	4800	4/9/2002	130
8/16/1999	630	5/7/2002	110
9/29/1999	750	5/7/2002	110
12/3/1999	740	5/14/2002	280
1/14/2000	160	5/21/2002	730
2/16/2000	1000	6/27/2002	370
3/21/2000	2400	07/09/02	430
4/18/2000	26	8/6/2002	270
5/5/2000	2200	9/24/2002	230
5/12/2000	310	10/8/2002	1100
5/18/2000	110	11/5/2002	280
6/22/2000	3600		

Table A- 6. Yadkin Pee-Dee River Basin Association Discharger Coalition Fecal Coliform Concentration Monitoring Data

Rich Fork Creek at SR 1787 near High Point (Q57850000)			
Date	Instream Fecal Coliform Concentration (cfu/100ml)	Date	Instream Fecal Coliform Concentration (cfu/100ml)
6/3/1998	66	6/9/2000	350
7/14/1998	210	1/4/2001	140
8/6/1998	200	2/13/2001	290
9/8/1998	1300	3/6/2001	120
10/16/1998	200	4/4/2001	190
11/18/1998	215	5/7/2001	200
12/1/1998	275	6/4/2001	150
1/5/1999	800	7/17/2001	120
2/2/1999	3300	8/7/2001	170
3/12/1999	61	9/11/2001	220
4/9/1999	120	10/9/2001	310
5/5/1999	90	11/13/2001	68
6/10/1999	180	12/4/2001	63
7/13/1999	1100	1/15/2002	63
8/5/1999	180	2/12/2002	190
9/14/1999	200	3/5/2002	63
10/15/1999	410	4/9/2002	73
11/5/1999	290	5/7/2002	250
12/3/1999	1100	6/11/2002	140
1/14/2000	250	07/09/02	140
2/16/2000	100	8/6/2002	182
3/21/2000	2700	9/24/2002	125
4/18/2000	160	10/8/2002	67
5/5/2000	240	11/5/2002	64

Table A- 7. Yadkin Pee-Dee River Basin Association Discharger Coalition Fecal Coliform Concentration Monitoring Data

Rich Fork Creek at SR 2123 near High Point (Q5790000)			
Date	Instream Fecal Coliform Concentration (cfu/100ml)	Date	Instream Fecal Coliform Concentration (cfu/100ml)
6/3/1998	66	6/9/2000	100
7/14/1998	40	1/4/2001	44
8/6/1998	300	2/13/2001	600
9/8/1998	300	3/6/2001	91
10/16/1998	125	4/4/2001	240
11/18/1998	130	5/7/2001	130
12/1/1998	71	6/4/2001	200
1/5/1999	560	7/17/2001	520
2/2/1999	2000	8/7/2001	53
3/12/1999	68	9/11/2001	42
4/9/1999	65	10/9/2001	63
5/5/1999	130	11/13/2001	52
6/10/1999	68	12/4/2001	90
7/13/1999	450	1/15/2002	110
8/5/1999	71	2/12/2002	120
9/14/1999	220	3/5/2002	230
10/15/1999	280	4/9/2002	80
11/5/1999	430	5/7/2002	130
12/3/1999	370	6/11/2002	46
1/14/2000	220	07/09/02	53
2/16/2000	160	8/6/2002	145
3/21/2000	2500	9/24/2002	210
4/18/2000	240	10/8/2002	164
5/5/2000	100	11/5/2002	34

Table A- 8. High Point Westside WWTP Upstream/ Downstream Fecal Coliform Bacteria Monitoring Data (NC0024228)

1995

Date	UC-11[1]	DC-9C[1]	DC-9D[1]	Date	UC-11	DC-9C	DC-9D
1/4/1995	400	200	260	**7/21/1995**	380	140	150
1/10/1995				**7/26/1995**	60000	60000	60000
1/11/1995	600	680	1100	**7/27/1995**	4500	3600	4500
1/18/1995	400	500	1400	**7/28/1995**	550	1400	7400
1/25/1995	800	100	100	**8/2/1995**	440	250	400
2/1/1995	450	760	900	**8/3/1995**	240	150	240
2/8/1995	20		100	**8/4/1995**	300		650
2/15/1995	200	300	400	**8/9/1995**	310	170	330
2/22/1995	220	540	480	**8/10/1995**	300	1800	350
3/1/1995	6000	6000	6000	**8/11/1995**	270	130	310
3/8/1995	100	200	200	**8/16/1995**	340	160	360
3/15/1995	150	350	100	**8/17/1995**	430	330	500
3/22/1995	1200	1200	1000	**8/18/1995**	390	130	430
3/29/1995	400	800	1600	**8/23/1995**	2300	2000	2300
4/5/1995	150		200	**8/24/1995**	580	57	580
4/12/1995	280		340	**8/25/1995**	57	50	280
4/19/1995	620		240	**8/30/1995**	1400	730	450
4/26/1995	440		160	**8/31/1995**	770	600	3400
5/3/1995	4000	4900	6900	**9/1/1995**	440		330
5/10/1995	1400	600	1300	**9/6/1995**	400		460
5/17/1995	460	40	180	**9/7/1995**	240		270
5/24/1995	400	250	530	**9/8/1995**	310		230
5/31/1995	1300	1400	2600	**9/13/1995**	440		480
6/7/1995	9000	17000	16000	**9/14/1995**	170		620
6/8/1995	1800	1200	1300	**9/15/1995**	210		150
6/9/1995	6400	900	600	**9/20/1995**	420		260
6/14/1995	780	1600	800	**9/21/1995**	130		230
6/15/1995	440	300	240	**9/22/1995**	220		1400
6/16/1995	180	480	120	**9/27/1995**	420		2300
6/21/1995	2000	1600	360	**9/28/1995**	130		1100
6/22/1995	550	1200	840	**10/4/1995**	480	1200	570
6/23/1995	16000	2300	35000	**10/11/1995**	220	440	520
6/28/1995	2000	550	5200	**10/18/1995**	75	200	230
6/29/1995	2400	2000	5500	**10/25/1995**	590	300	200
6/30/1995	2100	14000	3000	**11/1/1995**	1300		550
7/5/1995	1400	600	1300	**11/8/1995**	6000		6000
7/6/1995	500	250	550	**11/15/1995**	270		480
7/7/1995	60000	13000	4800	**11/30/1995**	2200		2300
7/12/1995	1100	540	580	**12/6/1995**	300	83	250
7/13/1995	460	300	370	**12/13/1995**	400	380	340
7/14/1995	320	280	310	**12/20/1995**	2000	920	1000
7/19/1995	3000	2600	3000	**12/27/1995**	170	230	150
7/20/1995	1200	400	560	**12/27/1995**	170	230	150

[1]**Upstream** - Approximately 100 ft upstream of outfall; **Downstream-I** - Southern Railroad Bridge above Hamby Creek; **Downstream-II** - NCSR#2005 (Turner Road) below Hamby Ck.

Table A- 8 (continued) - 1996

Date	UC-11	DC-9C	DC-9D	Date	UC-11	DC-9C	DC-9D
1/3/1996	3400	1100	680	**7/25/1996**	1180	300	510
1/10/1996	2000			**7/26/1996**	600	600	600
1/17/1996	3000			**7/31/1996**	414	360	1040
1/24/1996	580	180	100	**8/1/1996**	2860	1200	1200
1/31/1996	6000	1500	330	**8/2/1996**	1850	7600	9500
2/8/1996	2200	330	330	**8/7/1996**	6500	1360	3500
2/14/1996	33	33	33	**8/8/1996**	2800	6420	9550
2/21/1996	500	900	480	**8/9/1996**	940	867	1550
2/28/1996	120	67	120	**8/14/1996**	2500	1400	2400
3/6/1996	220	180	520	**8/15/1996**	1100	1800	4150
3/13/1996	200	36	64	**8/16/1996**	350	317	933
3/27/1996	130	100	57	**8/21/1996**	208	133	450
4/3/1996	183	167	100	**8/22/1996**	340	560	1500
4/10/1996	420	475	350	**8/23/1996**	220	220	5100
4/17/1996	390	840	200	**8/28/1996**	1200	1200	12800
4/24/1996	370	147	240	**8/29/1996**	2000	1200	1000
5/1/1996	700	100	1950	**8/30/1996**	300	600	390
5/15/1996	500	210	240	**9/11/1996**	8600	1800	467
6/5/1996	560	288	580	**9/12/1996**	5000	18400	17000
6/6/1996	300	200	420	**9/13/1996**	600	667	833
6/7/1996	383	70	310	**9/18/1996**	415	400	450
6/12/1996	860	280	670	**9/19/1996**	410	215	250
6/13/1996	2360	203	570	**9/20/1996**	185	240	132
6/14/1996	1180	243	230	**9/25/1996**	208	263	220
6/19/1996	660	205	410	**9/26/1996**	223	510	500
6/20/1996	7820	600	1980	**9/27/1996**	193	360	210
6/21/1996	1580	580	300	**10/2/1996**	1200	3000	1200
6/26/1996	230	310	210	**10/9/1996**	1900	6000	2600
6/27/1996	520	80	554	**10/16/1996**	186	294	971
7/1/1996	430	200	435	**10/23/1996**	54	120	250
7/2/1996	270	130	100	**10/30/1996**	109	49	310
7/3/1996	1200	600	460	**11/6/1996**	86	120	120
7/10/1996	560	187	765	**11/13/1996**	295	275	200
7/11/1996	1000	77	200	**11/20/1996**	216	390	590
7/12/1996	530	200	310	**11/27/1996**	350	168	286
7/17/1996	220	258	1540	**12/4/1996**	210	97	460
7/18/1996	470	140	487	**12/11/1996**	136	91	164
7/19/1996	530	590	1420	**12/18/1996**	88	224	218
7/24/1996	1200	175	880	**12/27/1996**	27	321	136

[1]***Upstream*** *- Approximately 100 ft upstream of outfall;* ***Downstream-I*** *- Southern Railroad Bridge above Hamby Creek;* ***Downstream-II*** *- NCSR#2005 (Turner Road) below Hamby Ck.*

Table A- 8 (continued) -1997

Date	UC-11	DC-9C	DC-9D	Date	UC-11	DC-9C	DC-9D
1/2/1997	82	140	132	**7/23/1997**	21800	12600	16800
1/8/1997	88	128	188	**7/28/1997**	550	200	1000
1/15/1997	180	410	180	**7/29/1997**	430	580	440
1/22/1997	185	84	78	**7/30/1997**	490	600	500
1/29/1997	237	780	640	**8/4/1997**	400	280	390
2/5/1997	182	290	220	**8/5/1997**	7250	6000	2450
2/12/1997	340	63	490	**8/6/1997**	3350	1000	2200
2/19/1997	112	206	112	**8/11/1997**	200	238	371
2/26/1997	204	58	73	**8/12/1997**	1000	288	114
3/5/1997	600	330	360	**8/13/1997**	380	370	560
3/12/1997	97	150	180	**8/18/1997**	1000	200	188
3/19/1997	600	340	226	**8/19/1997**	420	159	250
3/26/1997	2840	455	3300	**8/20/1997**	600	820	480
4/2/1997	136	108	194	**8/25/1997**	505	270	300
4/9/1997	470	370	280	**8/26/1997**	280	395	1040
4/16/1997	194	136	164	**8/27/1997**	475	270	250
4/23/1997	25600	1200	1200	**9/2/1997**	5500	188	980
4/30/1997	1550	6000	3700	**9/3/1997**	1150	360	440
5/7/1997	760	450	680	**9/4/1997**	1540	200	340
5/14/1997	560	163	144	**9/8/1997**	540	84	246
5/21/1997	1200	480	620	**9/9/1997**	620	80	530
5/28/1997	960	280	580	**9/10/1997**	9400	555	3300
6/3/1997	9550	4200	8600	**9/15/1997**	350	250	686
6/4/1997	2400	5400	4550	**9/16/1997**	410	400	780
6/5/1997	900	1040	520	**9/17/1997**	605	340	740
6/9/1997	375	180	1100	**9/22/1997**	450	280	360
6/10/1997	620	440	640	**9/23/1997**	279	560	640
6/11/1997	557	80	320	**9/24/1997**	1350	430	1110
6/16/1997	950	370	880	**9/29/1997**	1150	338	3800
6/17/1997	280	520	855	**9/30/1997**	400	300	629
6/18/1997	405	760	880	**10/1/1997**	560	164	1100
6/23/1997	430	330	735	**10/8/1997**	330	460	760
6/24/1997	380	210	343	**10/15/1997**	280	12500	1133
6/25/1997	300	600	605	**10/22/1997**	555	143	229
6/30/1997	176	180	320	**10/29/1997**	450	380	410
7/1/1997	100	80	980	**11/5/1997**	220	225	271
7/2/1997	3310	2520	1210	**11/12/1997**	62	144	78
7/7/1997	167	38	63	**11/19/1997**	148	120	172
7/8/1997	176	99	255	**11/26/1997**	290	148	88
7/9/1997	164	152	435	**12/3/1997**	390	120	224
7/14/1997	184	148	340	**12/10/1997**	170	168	287
7/15/1997	565	260	230	**12/17/1997**	155	120	168
7/16/1997	285	157	430	**12/23/1997**	1290	1400	500
7/21/1997	2670	1200	1200	**12/31/1997**	673	310	270
7/22/1997	5000	10900	6000				

[1]***Upstream*** *- Approximately 100 ft upstream of outfall;* ***Downstream-I*** *- Southern Railroad Bridge above Hamby Creek;* ***Downstream-II*** *- NCSR#2005 (Turner Road) below Hamby Ck.*

Table A- 8 (continued) - 1998

Date	UC-11	DC-9C	DC-9D	Date	UC-11	DC-9C	DC-9D
1/7/1998	2850	3400	4650	**3/25/1998**	800	65	88
1/14/1998	153	135	100	**4/1/1998**	400	50	192
1/21/1998	330	153	153	**4/8/1998**	189	88	250
1/28/1998	2600	3650	2900	**4/15/1998**	152	132	420
2/4/1998	2267	950	2350	**4/22/1998**	260	460	530
2/11/1998	189	65	88	**4/29/1998**	153	141	176
2/18/1998	2550	2425	2100	**5/6/1998**	475	365	300
2/25/1998	840	113	100	**5/13/1998**	465	206	222
3/4/1998	360	141	171	**5/20/1998**	121	136	152
3/11/1998	470	260	135	**5/27/1998**	22000	1370	940
3/18/1998	2083	238	238				
7/21/1997	2670	1200	1200				
7/22/1997	5000	10900	6000				

[1]***Upstream*** *- Approximately 100 ft upstream of outfall;* ***Downstream-I*** *- Southern Railroad Bridge above Hamby Creek;* ***Downstream-II*** *- NCSR#2005 (Turner Road) below Hamby Ck.*

Table A- 9. Thomasville Hamby Creek WWTP Upstream/ Downstream Fecal Coliform Bacteria Monitoring Data (NC0024112)

Date	Upstream	DS-I[1]	DS-II[1]	Date	upstream	DS-I	DS-II	Date	upstream	DS-I	DS-II
01/03/96	4100	290	227	**07/31/96**	383	117	100	**05/20/97**	340	10	
01/18/96	1066	100	333	**09/04/96**	6300	6000	5800	**05/28/97**	320	250	
01/24/96	416	20	383	**09/05/96**	7200	4300	3600	**06/02/97**	500	800	
01/29/96	682	20	200	**09/09/96**	500	267	217	**06/03/97**	6000	450	
02/08/96	1800	164	170	**09/10/96**	583	883	233	**06/04/97**	2100	200	
02/12/96	160	10	60	**09/12/96**	6300	1266	1333	**06/09/97**	880	110	
02/19/96	254	10	60	**09/16/96**	683	233	233	**06/10/97**	587	167	
02/26/96	636	20	27	**09/17/96**	6500	4300	517	**06/11/97**	1220	240	
03/05/96	430	30	50	**09/18/96**	1017	283	500	**06/16/97**	350	210	
03/12/96	300	191	91	**09/23/96**	750	400	283	**06/17/97**	440	120	
03/20/96	4500	2500	3300	**09/24/96**	567	400	250	**06/18/97**	900	175	
03/25/96	291	40	90	**09/26/96**	533	216	417	**06/23/97**	600	180	
04/03/96	654	110	409	**10/03/96**	8000	783	617	**06/24/97**	380	170	
04/11/96	534	80	173	**10/09/96**	7200	6500	6300	**06/25/97**	400	260	
04/15/96	245	109	110	**10/16/96**	250	60	50	**06/30/97**	620	160	
04/23/96	210	10	4	**10/22/96**	80	40	40	**07/01/97**	100	6000	
04/28/96	55	20	20	**10/28/96**	300	36	80	**07/02/97**	6500	6200	
05/08/96	1600	138	162	**11/06/96**	76	40		**07/07/97**	210	240	
05/13/96	645	209	272	**11/12/96**	104	4		**07/08/97**	600	180	
05/20/96	464	155	118	**11/19/96**	5800	44		**07/09/97**	2700	150	
05/28/96	6500	6000	336	**11/25/96**	184	208		**07/14/97**	370	160	
06/03/96	4700	155	127	**12/02/96**	5000	1900		**07/15/97**	450	340	
06/04/96	616	55	163	**12/10/96**	328	300		**07/16/97**	400	150	
06/05/96	2500	91	191	**12/18/96**	4	4		**07/21/97**	5900	6000	
06/10/96	3600	327	645	**12/23/96**	140	16		**07/22/97**	6000	3400	
06/11/96	5000	491	634	**12/30/96**	44	44		**07/23/97**	6000	6000	
06/12/96	733	110	236	**01/06/97**	4500	77		**07/28/97**	680	200	370
06/17/96	4000	518	327	**01/14/97**	6000	4		**07/29/97**	3400	120	200
06/18/96	683	236	245	**01/22/97**	208	4		**07/30/97**	6000	160	160
06/24/96	4400	218	100	**01/28/97**	120	4		**08/04/97**	340	340	170
06/25/96	4500	273	127	**02/04/97**	80	68		**08/05/97**	2700	400	550
06/26/96	1083	190	200	**02/12/97**	132	240		**08/06/97**	10	10	10
07/01/96	933	255	155	**02/18/97**	800	350		**08/11/97**	160	160	1500
07/02/96	700	200	218	**02/24/97**	600	675		**08/12/97**	250	180	140
07/03/96	617	327	100	**03/03/97**	288	60		**08/13/97**	260	150	150
07/08/96	517	182	100	**03/12/97**	108	28		**08/18/97**	130	120	170
07/09/96	800	191	100	**03/18/97**	160	24	52	**08/19/97**	2000	80	270
07/10/96	5000	2100	70	**03/24/97**	92	36	1700	**08/20/97**	430	160	60
07/15/96	200	382	145	**03/31/97**	2000	28	48	**08/25/97**	490	200	140
07/16/96	2000	2200	3000	**04/07/97**	2500	20	84	**08/26/97**	600	170	260
07/17/96	4700	445	118	**04/14/97**	450	130	6000	**08/27/97**	600	220	270
07/22/96	516	218	73	**04/21/97**	50	140	50	**09/02/97**	2500	3800	200
07/23/96	6000	682	591	**04/28/97**	6000	4800	168	**09/03/97**	200	210	240
07/24/96	1267	1433	433	**05/01/97**			600	**09/04/97**	230	270	200
07/29/96	2000	2000	216	**05/06/97**	320	90		**09/08/97**	320	130	230
07/30/96	583	583	500	**05/12/97**	260	110		**09/09/97**	430	300	220

[1] ***Upstream*** = *Baptist Children's Home Road;* **DS-I** = *SR 2017 bridge*; **DS-II** = *SR 2010 bridge*

Table A- 9 (continued)

Date	Upstream	DS-I[1]	DS-II[1]	Date	upstream	DS-I	DS-II	Date	upstream	DS-I	DS-II
09/11/97	200	210	120	**06/09/98**	220	210	200	**09/23/98**	160	220	200
09/15/97	480	370	180	**06/10/98**	300	250	210	**09/28/98**	300	140	50
09/16/97	170	250	100	**06/15/98**	6000	5000	650	**09/29/98**	600	320	40
09/18/97	300	160	30	**06/16/98**	6000	4900	3700	**09/30/98**	340	400	240
09/22/97	230	530	200	**06/17/98**	760	560	300	**10/05/98**	590	270	140
09/23/97	60	260	120	**06/22/98**	360	200	170	**10/12/98**	200	130	70
09/24/97	180	150	90	**06/23/98**	250	180	200	**10/19/98**	80	150	200
10/01/97	90	270	150	**06/24/98**	480	190	250	**10/26/98**	190	100	80
10/06/97	500	240	60	**06/29/98**	280	180	260	**11/02/98**	1	1	1
10/14/97	200	320	120	**06/30/98**	230	150	180	**11/09/98**	1	1	1
10/21/97	460	490	440	**07/01/98**	900	600	3800	**11/16/98**	200	176	104
10/27/97	4700	4000	220	**07/07/98**	170	70	80	**11/23/98**	20	130	80
11/01/97	6000	160	70	**07/08/98**	400	120	120	**11/30/98**	60	420	60
11/10/97	240	80	70	**07/09/98**	320	136	232	**12/01/98**		250	350
11/19/97	140	240	140	**07/13/98**	220	130	150	**12/07/98**	223	205	80
11/24/97	510	110	120	**07/14/98**	320	230	90	**12/15/98**	600	108	2000
12/01/97	3400	600	800	**07/15/98**	220	150	290	**12/22/98**	375	190	220
12/08/97	40	30	60	**07/20/98**	590	360	430	**12/28/98**	390	380	260
12/15/97	150	5	90	**07/21/98**	600	320	2100	**02/01/99**	115	125	100
12/22/97	150	110	140	**07/22/98**	250	200	210	**02/08/99**	173	187	90
12/29/97	210	110	200	**07/27/98**	320	190	400	**02/15/99**	280	320	55
01/05/98	140	160	70	**07/28/98**	210	260	410	**02/22/99**	118	105	75
01/12/98	2700	60	70	**07/29/98**	450	220	210	**03/01/99**	105	323	110
01/20/98	6000	2300	500	**08/03/98**	300	150	160	**03/09/99**	25	95	60
01/26/98	260	80	110	**08/04/98**	510	130	150	**03/16/99**	3800	220	166
02/01/98	100	250	70	**08/05/98**	200	190	180	**03/23/99**	550	120	210
02/09/98	60	130	60	**08/10/98**	7100	5400	6200	**03/30/99**	70	55	154
02/16/98	450	210	60	**08/11/98**	2000	490	5500	**04/05/99**	300	15	20
02/24/98	6000	590	73	**08/12/98**	620	260	500	**04/12/99**	120	130	50
03/02/98	400	40	10	**08/17/98**	6300	610	260	**04/20/99**	45	210	60
03/10/98	4500	2000	600	**08/18/98**	390	330	220	**04/26/99**	115	273	100
03/16/98	140	40	200	**08/19/98**	500	240	210	**05/04/99**	210	200	110
03/24/98	410	50	60	**08/24/98**	150	300	170	**05/11/99**	100	140	250
03/30/98	90	90	154	**08/25/98**	2600	230	200	**05/18/99**	316	193	135
04/06/98	490	150	210	**08/26/98**	100	110	30	**05/24/99**	185	193	100
04/13/98	160	60	100	**08/31/98**	200	190	180	**06/01/99**	260	140	150
04/21/98	3100	600	200	**09/01/98**	70	60	80	**06/02/99**	247	183	100
04/27/98	230	40	50	**09/02/98**	40	170	100	**06/03/99**	300	180	100
05/05/98	610	200	400	**09/08/98**	100	150	120	**06/07/99**	217	110	40
05/12/98	3100	500	400	**09/09/98**	4800	410	2000	**06/08/99**	323	145	100
05/19/98	610	110	170	**09/10/98**	170	420	130	**06/09/99**	237	105	71
05/26/98	1300	130	140	**09/14/98**	100	150	100	**06/14/99**	333	280	125
06/01/98	2900	200	230	**09/15/98**	30	170	180	**06/15/99**	400	193	100
06/02/98	1800	80	150	**09/16/98**	105	125	50	**06/16/99**	1217	100	87
06/03/98	2200	190	90	**09/21/98**	400	240	110	**06/21/99**	6000	6000	1700
06/08/98	600	200	300	**09/22/98**	550	160	150	**06/22/99**	3200	500	2233

[1] ***Upstream*** = *Baptist Children's Home Road;* **DS-I** = *SR 2017 bridge*; **DS-II** = *SR 2010 bridge*

Table A- 9 (continued)

Date	Upstream	DS-I[1]	DS-II[1]	Date	upstream	DS-I	DS-II	Date	upstream	DS-I	DS-II
06/23/99	950	453	160	**10/25/99**	100	510	100	**07/06/00**	830	400	210
06/28/99	4600	900	200	**11/01/99**	110	150	100	**07/10/00**	360	400	125
06/29/99	450	190	110	**11/08/99**	40	206	100	**07/11/00**	300	340	290
06/30/99	280	305	55	**11/15/99**	47	125	140	**07/12/00**	600	240	100
07/06/99	297	175	105	**11/23/99**	223	100	203	**07/17/00**	500	320	165
07/07/99	307	213	300	**12/01/99**	200	250	350	**07/18/00**	420	200	110
07/08/99	310	230	6000	**12/06/99**	115	306	135	**07/19/00**	320	400	100
07/12/99	340	350	100	**12/13/99**	340	150	203	**07/24/00**	3700	250	320
07/13/99	5000	433	203	**12/20/99**	300	100	210	**07/25/00**	5200	2100	3200
07/14/99	3400	390	320	**12/29/99**	203	206	160	**07/26/00**	2400	223	203
07/19/99	320	200	100	**01/04/00**	180	200	205	**07/31/00**	125	320	100
07/20/99	300	35	75	**01/11/00**	6000	4800	3500	**08/01/00**	>6000	500	110
07/21/99	200	52	42	**01/21/00**	727	500	600	**08/02/00**	4000	2000	2700
07/26/99	380	300	207	**01/28/00**		50	140	**08/07/00**	360	500	150
07/27/99	600	600	203	**02/03/00**	3800	100	220	**08/08/00**	290	400	145
07/28/99	300	720	400	**02/07/00**	450	100	210	**08/09/00**	200	190	320
08/02/99	120	283	100	**02/15/00**	303	116	226	**08/14/00**	200	350	223
08/03/99	653	330	35	**02/21/00**	183	150	105	**08/15/00**	2400	590	226
08/04/99	300	400	62	**03/01/00**	100	450	3000	**08/16/00**	300	500	180
08/09/99	480	210	300	**03/07/00**	206	110	100	**08/21/00**	360	220	200
08/10/99	180	280	70	**03/15/00**	6000	100	50	**08/22/00**	300	330	100
08/11/99	200	280	100	**03/20/00**	400	210	2000	**08/23/00**	450	400	100
08/16/99	6000	1100	2600	**03/28/00**	2000	340	110	**08/28/00**	200	200	100
08/17/99	2000	780	400	**04/03/00**	590	145	100	**08/29/00**	590	500	300
08/18/99	300	600	210	**04/12/00**	200	105	110	**08/30/00**	250	370	100
08/23/99	440	430	192	**04/17/00**	450	150	125	**09/05/00**	520	400	350
08/24/99	590	343	204	**04/26/00**	600	225	220	**09/06/00**	500	450	170
08/25/99	390	420	263	**05/01/00**	440	260	250	**09/07/00**	590	330	550
08/30/99	600	300	149	**05/09/00**	200	193	100	**09/11/00**	130	213	266
08/31/99	350	290	163	**05/15/00**	175	320	200	**09/12/00**	210	410	140
09/02/99	300	125	217	**05/23/00**	2700	609	636	**09/13/00**	200	350	100
09/07/99	350	400	250	**05/31/00**	720	420	330	**09/18/00**	233	203	100
09/08/99	360	330	300	**06/05/00**	2300	490	450	**09/20/00**	4000	300	3300
09/09/99	340	750	610	**06/06/00**	4200	226	250	**09/21/00**	560	400	110
09/13/99	207	247	150	**06/07/00**	563	290	260	**09/25/00**	360	350	100
09/14/99	250	380	210	**06/12/00**	400	100	100	**09/26/00**	5900	6000	5800
09/15/99	610	320	115	**06/13/00**	580	300	100	**09/27/00**	3300	200	400
09/20/99	227	257	227	**06/14/00**	400	360	240	**10/02/00**	217	257	183
09/21/99	60000	310	1250	**06/19/00**	500	100	110	**10/12/00**	60	170	65
09/22/99	430	400	135	**06/20/00**	500	250	100	**10/16/00**	100	105	95
09/27/99	135	470	203	**06/21/00**	230	110	100	**10/23/00**	125	100	105
09/28/99	60000	5900	600	**06/26/00**	400	300	100	**10/30/00**	105	140	100
09/29/99	4100	4900	3300	**06/27/00**	150	135	145	**11/08/00**	140	100	105
10/04/99	253	650	105	**06/29/00**	>60000	>60000	280	**11/13/00**	110	100	203
10/11/99	4700	700	400	**07/03/00**	490	480	180	**11/21/00**	420	400	105
10/18/99	590	125	150	**07/05/00**	370	330	55	**11/27/00**	2800	420	2800

[1] ***Upstream*** = *Baptist Children's Home Road;* **DS-I** = *SR 2017 bridge*; **DS-II** = *SR 2010 bridge*

Table A- 9 (continued)

Date	Upstream	DS-I[1]	DS-II[1]	Date	upstream	DS-I	DS-II	Date	upstream	DS-I	DS-II
12/05/00	100	125	110	**07/18/01**	140	150	72	**01/15/02**	60	24	59
12/11/00	125	100	173	**07/23/01**	150	100	105	**01/24/02**	58	24	84
12/18/00	420	100	190	**07/24/01**	300	115	215	**02/07/02**	12	9	11
12/27/00	110	100	145	**07/25/01**	200	100	125	**02/15/02**	10	19	59
01/04/01	430	400	50	**07/30/01**	6000	160	170	**02/20/02**	100	22	20
01/08/01	125	100	105	**07/31/01**	330	210	200	**03/01/02**	200	145	70
01/16/01	100	100	100	**08/01/01**	440	273	240	**03/06/02**	7	26	103
01/24/01	200	60	110	**08/06/01**	100	100	105	**03/14/02**	666	1750	1550
01/29/01	88	80	96	**08/07/01**	2500	200	216	**03/19/02**	108	80	132
02/05/01	25	45	160	**08/08/01**	135	270	100	**03/27/02**	6000	3250	900
02/13/01	6300	36	340	**08/13/01**	1433	680	400	**04/03/02**	1000	750	500
02/20/01	2500	50	140	**08/14/01**	12000	6000	880	**04/10/02**	840	60	150
02/26/01	3000	105	450	**08/15/01**	440	480	3000	**04/17/02**	120	90	46
03/07/01	400	100	95	**08/20/01**	447	380	100	**04/25/02**	20	296	40
03/13/01	300	25	100	**08/21/01**	260	500	100	**05/01/02**	16	130	30
03/19/01	400	21	56	**08/22/01**	800	240	110	**05/08/02**	50	120	40
03/27/01	46	7	25	**08/27/01**	6000	173	175	**05/15/02**	650	570	420
04/02/01	3100	300	410	**08/28/01**	2800	500	100	**05/22/02**	175	50	130
04/09/01	200	27	60	**08/29/01**	440	572	185	**05/28/02**	138	115	245
04/16/01	203	73	150	**09/05/01**	340	300	290	**06/03/02**	900	370	130
04/24/01	100	300	28	**09/06/01**	160	540	480	**06/05/02**	480	205	30
04/30/01	230	40	22	**09/07/01**	110	410	100	**06/07/02**	800	600	175
05/08/01	22	250	80	**09/10/01**	30	210	50	**06/10/02**	220	100	60
05/14/01	20	80	31	**09/11/01**	140	175	110	**06/12/02**	110	150	80
05/22/01	727	250	23	**09/12/01**	110	160	85	**06/14/02**	155	135	100
05/30/01	250	110	120	**09/17/01**	100	200	75	**06/17/02**	105	90	170
06/04/01	213	100	67	**09/18/01**	135	180	195	**06/19/02**	25	120	150
06/05/01	500	95	100	**09/19/01**	130	165	100	**06/21/02**	50	135	75
06/06/01	135	100	110	**09/24/01**	280	240	220	**06/24/02**	185	250	140
06/11/01	390	304	60	**09/25/01**	6000	5500	2700	**06/26/02**	185	90	155
06/12/01	320	185	92	**09/26/01**	2300	260	200	**07/01/02**	295	230	225
06/13/01	370	110	60	**10/01/01**	350	110	80	**07/05/02**	320	200	100
06/18/01	350	158	50	**10/09/01**	50	100	55	**07/08/02**	70	75	60
06/19/01	213	125	125	**10/16/01**	330	180	30	**07/10/02**	95	90	60
06/20/01	170	110	64	**10/23/01**	75	220	100	**07/12/02**	2440	680	760
06/25/01	5900	6000	4900	**10/29/01**	50	240	100	**07/15/02**	2060	140	40
06/26/01	6200	4200	2500	**11/06/01**	42	60	44	**07/17/02**	960	180	40
06/27/01	220	200	210	**11/12/01**	50	60	58	**07/19/02**	980	200	160
07/02/01	4500	600	3000	**11/19/01**	2790	80	32	**07/22/02**	540	380	340
07/03/01	1100	300	500	**11/27/01**	155	75	60	**07/24/02**	4000	600	4120
07/05/01	5800	6100	4500	**12/04/01**	57	48	42	**07/26/02**	tntc	tntc	tntc
07/09/01	280	167	100	**12/12/01**	3800	2000	3400	**07/29/02**	280	220	240
07/10/01	100	95	90	**12/19/01**	2200	240	200	**08/02/02**	296	100	240
07/11/01	20	24	6	**12/27/01**	112	24	276	**08/05/02**	25	200	106
07/16/01	1	1	1	**01/02/02**	25	33	38	**08/07/02**	200	160	60
07/17/01	1	1	1	**01/09/02**	60	15	58	**08/08/02**	60	300	160

[1] ***Upstream*** = *Baptist Children's Home Road;* **DS-I** = *SR 2017 bridge*; **DS-II** = *SR 2010 bridge*

Table A- 9 (continued)

Date	Upstream	DS-I[1]	DS-II[1]	Date	upstream	DS-I	DS-II	Date	upstream	DS-I	DS-II
08/12/02	180	240	40	**09/09/02**	1850	1100	700	**10/16/02**	14600	9850	10550
08/14/02	760	280	80	**09/11/02**	450	700	200	**10/23/02**	2200	300	250
08/15/02	800	340	140	**09/13/02**	100	200	150	**10/30/02**	10450	8700	5350
08/19/02	420	160	120	**09/16/02**	11500	10150	13900	**11/06/02**	9300	430	5700
08/21/02	540	140	60	**09/18/02**	4250	750	1600	**11/15/02**	600	33	433
08/22/02	440	220	180	**09/20/02**	4700	12600	11100	**11/21/02**	233	1	367
08/26/02	160	440	640	**09/23/02**	3800	5600	2950	**11/27/02**	85	50	77
08/27/02	22000	3560	2580	**09/25/02**	2200	500	150	**12/04/02**	62	85	100
08/28/02	3250	1900	1450	**09/27/02**	11900	1450	800	**12/13/02**	2000	300	270
09/03/02	100	350	450	**10/02/02**	1200	1000	300	**12/18/02**	69	54	110
09/04/02	10150	10000	3750	**10/09/02**	550	250	150	**12/23/02**	62	23	50
09/06/02	3950	1750	1400								

[1] ***Upstream*** = *Baptist Children's Home Road;* **DS-I** = *SR 2017 bridge*; **DS-II** = *SR 2010 bridge*

Table A- 10. Piedmont Triad Council of Governments (PTCOG) 303(d) Rich Fork Creek Fecal Coliform TMDL Project Monitoring Data Summary

Date	Previous Rainfall	Lexington Ave (RF1)		Midway School (RF2)		DS Westside (RF2a)		Kanoy Rd RF3		Old Hwy 29 (RF4)	
6/5/2003	<48	2670		5900				5400		6200	
6/23/2003	48	940		5700				665		386	
6/24/2003	72	1060		860				520		410	
7/1/2003	72+	520		540				860		162	
7/9/2003	48	476		670				530		370	
7/16/2003	48+	1014	negative	5900	positive			1300	negative	420	negative
7/17/2003	72+	300	negative	900	positive			540	positive	345	positive
7/25/2003	48	493	negative	1160	negative	820	1090	650	positive	680	negative
Geometric Means:											
1st 5/30		**518**		**1174**				**730**		**358**	
2nd 5/30											
Total		**749**		**1683**		**820**	**1090**	**888**		**525**	

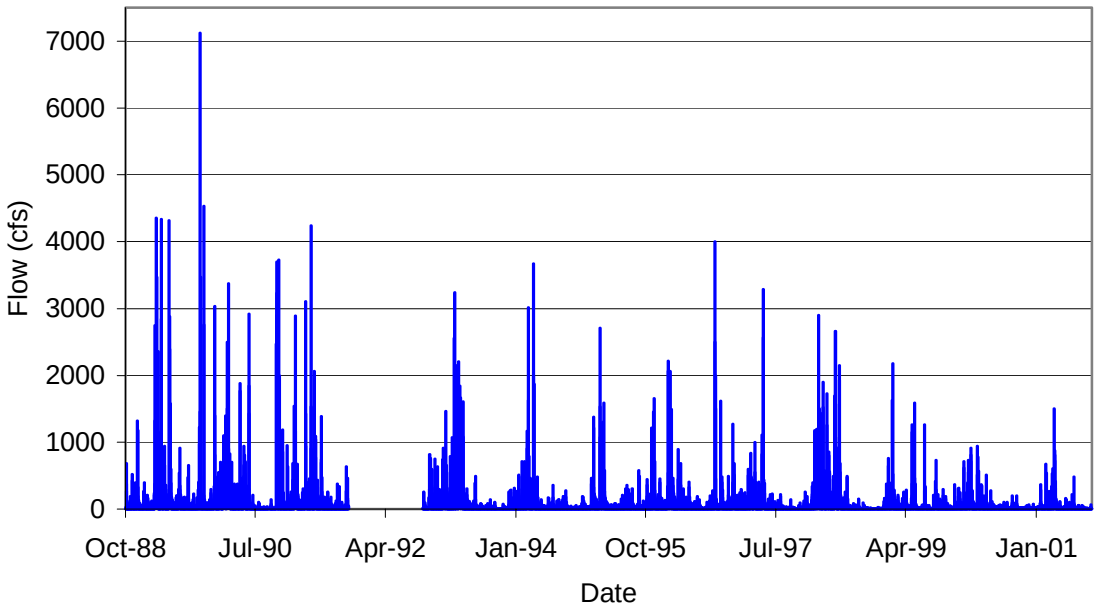
Note: All data reported in cfu/100ml.
State Limit 200cfu/100mL
Shading designates 5/30 sampling

Appendix VIII-a. Piedmont Triad Council of Governments (PTCOG) 303(d) Hamby Creek Fecal Coliform TMDL Project Monitoring Data Summary

Date	Previous Rainfall	Lake Rd				Squire Bowers Rd				
		Lake Rd H1		Baptist Child. Home Rd H1a		Squire Bowers Rd H2		Hilltop Rd H2a		DNA Human
6/5/2003	<48	19200				4300			5800	
6/23/2003	48	1538				585			7	
6/24/2003	72	2200				420			600	
7/1/2003	72+	553				300			500	
7/9/2003	48	903				220			390	
7/16/2003	48+	1242	positive			570	positive		330	negative
7/17/2003	72+	980	negative			230	positive		335	negative
7/25/2003	48	455	positive	430	440	360	negative	31	320	negative
Geometric Means:										
1st 5/30		**773**				**315**			**370**	
2nd 5/30										
Total		**1435**		**430**	**440**	**489**		**31**	**337**	

Note: All data reported in cfu/100ml.
State Limit 200cfu/100mL
Shading designates 5/30 sampling

Figure A- 1. Flow at USGS gage on Abbots Creek near Lexington (USGS2121500)



APPENDIX B LOAD DURATION CALCULATIONS FOR RICH FORK AND HAMBY CREEKS

List of Tables

List of Figures

Table RF1. Calculations of Percent Reduction using Load Duration Curve Approach in Rich Fork Creek, upstream of Westside WWTP

Interval	Existing Load (counts/day)	Target load (counts/day)	Reduction (percent)
95	7.99E+09	3.67E+09	54.1
90	1.09E+10	6.39E+09	41.5
85	1.49E+10	9.40E+09	37.0
80	2.04E+10	1.24E+10	39.3
75	2.78E+10	1.57E+10	43.4
70	3.80E+10	1.92E+10	49.4
65	5.20E+10	2.34E+10	54.9
60	7.10E+10	2.79E+10	60.6
55	9.70E+10	3.22E+10	66.7
50	1.32E+11	3.80E+10	71.3
45	1.81E+11	4.33E+10	76.1
40	2.47E+11	4.94E+10	80.0
35	3.38E+11	5.67E+10	83.2
30	4.61E+11	6.69E+10	85.5
25	6.30E+11	7.93E+10	87.4
20	8.61E+11	9.78E+10	88.6
15	1.18E+12	1.25E+11	89.4
10	1.61E+12	1.81E+11	88.8
5	2.20E+12	3.38E+11	84.6
Average Values between the 90th and 10th percentile			
Existing load:		**3.18E+12**	
Allowable load:		**5.78E+11**	
Percent reduction:		**81.84%**	

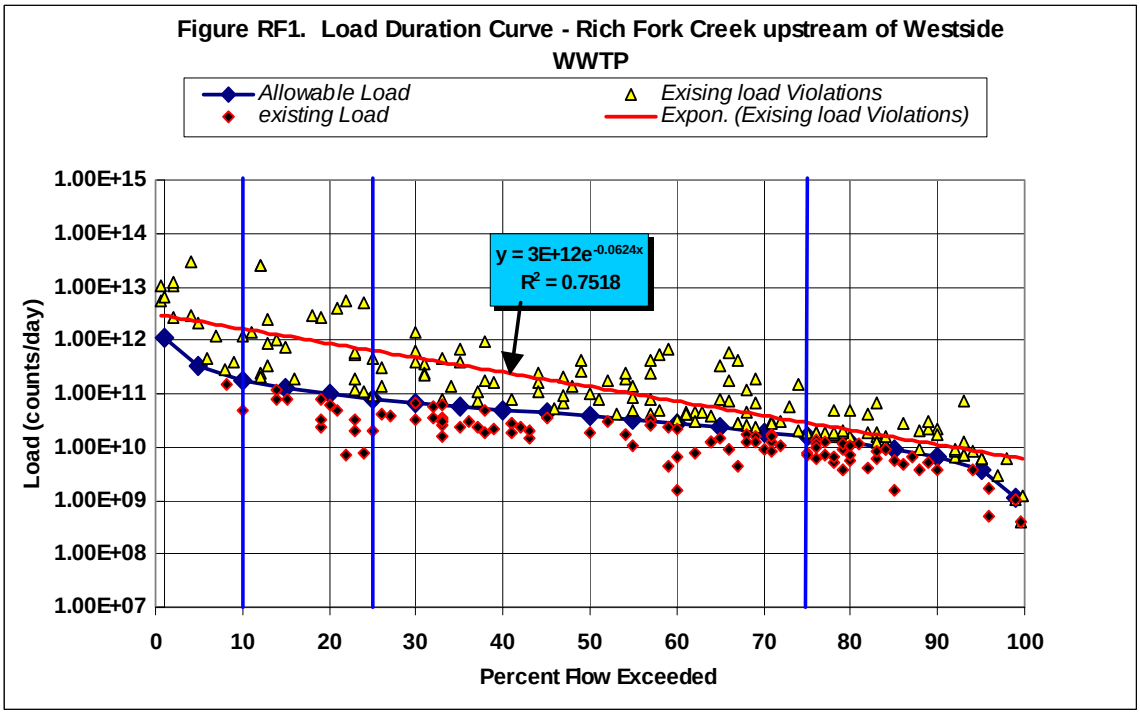


Table RF2. Calculations of Percent Reduction using Load Duration Curve Approach in Rich Fork Creek, YPDRBA data at SR 1755 near High Point YPDRBA Monitoring

Interval	Existing Load (cnts/day)	Target load (cnts/day)	Reduction (%) (percent)
95	2.07E+10	3.67E+09	82.3
90	2.54E+10	6.39E+09	74.9
85	3.12E+10	9.40E+09	69.9
80	3.82E+10	1.24E+10	67.6
75	4.69E+10	1.57E+10	66.4
70	5.75E+10	1.92E+10	66.5
65	7.05E+10	2.34E+10	66.8
60	8.65E+10	2.79E+10	67.7
55	1.06E+11	3.22E+10	69.6
50	1.30E+11	3.80E+10	70.8
45	1.59E+11	4.33E+10	72.9
40	1.96E+11	4.94E+10	74.7
35	2.40E+11	5.67E+10	76.4
30	2.94E+11	6.69E+10	77.3
25	3.61E+11	7.93E+10	78.0
20	4.42E+11	9.78E+10	77.9
15	5.42E+11	1.25E+11	77.0
10	6.65E+11	1.81E+11	72.8
5	8.15E+11	3.38E+11	58.5
Average Values between the 90th and 10th percentile			
Existing load:		**3.49E+12**	
Allowable load:		**8.83E+11**	
Percent reduction:		**74.70%**	

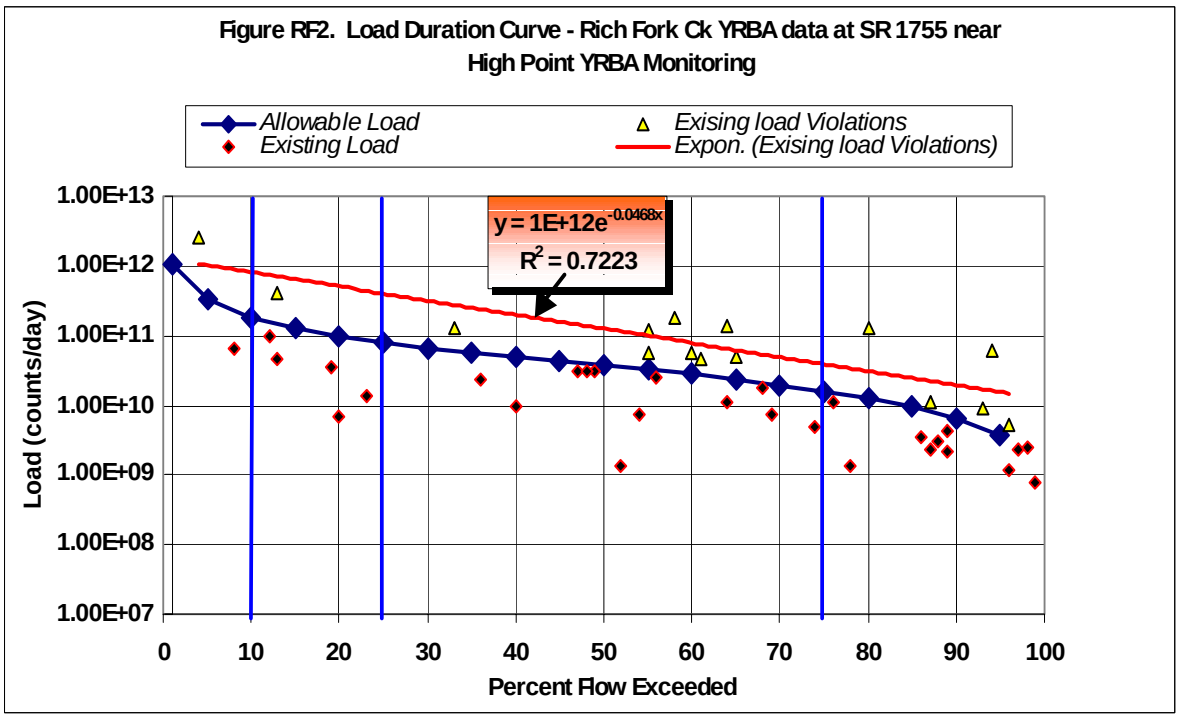


Table RF2a. Calculations of Percent Reduction using Load Duration Curve Approach in Rich Fork Creek, DWQ Ambient Monitoring Location (Q5780000 - SR#1800)

Interval	Existing Load (cnts/day)	Target load (counts/day)	Reduction (Percent)
95	2.0861E+10	8.07E+09	61.3
90	2.7095E+10	1.44E+10	46.9
85	3.5194E+10	1.91E+10	45.8
80	4.5712E+10	2.54E+10	44.4
75	5.9375E+10	3.32E+10	44.1
70	7.7120E+10	4.24E+10	45.0
65	1.0017E+11	5.19E+10	48.2
60	1.3011E+11	6.31E+10	51.5
55	1.6899E+11	7.54E+10	55.4
50	2.1950E+11	8.84E+10	59.7
45	2.8511E+11	1.05E+11	63.2
40	3.7032E+11	1.21E+11	67.4
35	4.8100E+11	1.39E+11	71.1
30	6.2476E+11	1.62E+11	74.1
25	8.1149E+11	1.94E+11	76.1
20	1.0540E+12	2.46E+11	76.6
15	1.3690E+12	3.12E+11	77.2
10	1.7782E+12	4.48E+11	74.8
5	2.3097E+12	8.50E+11	63.2
Average Values between the 90th and 10th percentile			
Existing load:		**4.4925E+11**	
Allowable load:		**1.26E+11**	
Percent reduction:		**71.97%**	

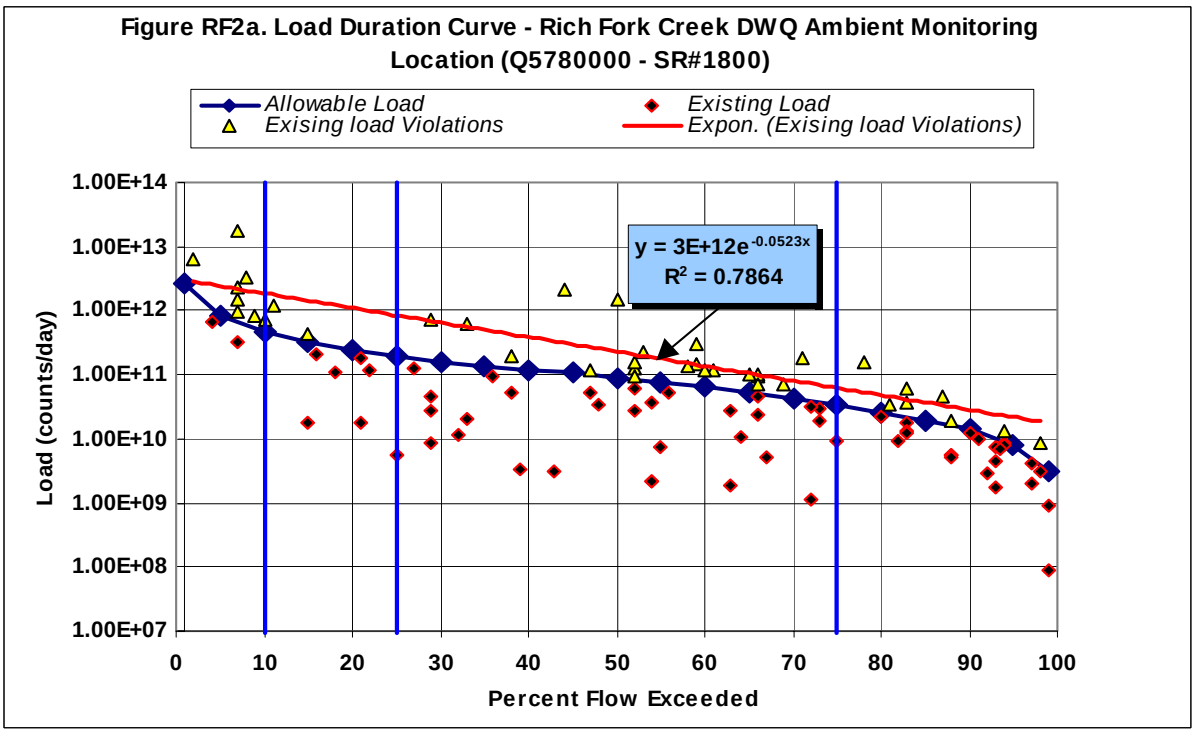


Table RF3. Calculations of Percent Reduction using Load Duration Curve Approach in Rich Fork Creek, YPDRBA data at SR 1787 near High Point

Interval	Existing Load (counts/day)	Target load (counts/day)	Reduction (perecent)
95	1.1186E+11	1.6232E+10	85.5
90	1.2226E+11	2.7705E+10	77.3
85	1.3431E+11	3.7222E+10	72.3
80	1.4839E+11	4.9713E+10	66.5
75	1.6500E+11	6.0783E+10	63.2
70	1.8483E+11	7.5258E+10	59.3
65	2.0878E+11	9.0661E+10	56.6
60	2.3816E+11	1.0457E+11	56.1
55	2.7479E+11	1.2253E+11	55.4
50	3.2142E+11	1.3749E+11	57.2
45	3.8223E+11	1.5589E+11	59.2
40	4.6392E+11	1.7576E+11	62.1
35	5.7784E+11	2.0304E+11	64.9
30	7.4457E+11	2.3648E+11	68.2
25	1.0049E+12	2.8915E+11	71.2
20	1.4504E+12	3.4125E+11	76.5
15	2.3278E+12	4.4106E+11	81.1
10	4.5345E+12	6.3250E+11	86.1
5	1.4177E+13	1.1980E+12	91.5
Average Values between the 90th and 10th percentile			
Existing load:		**1.3284E+13**	
Allowable load:		**3.1811E+12**	
Percent reduction:		**76.05%**	

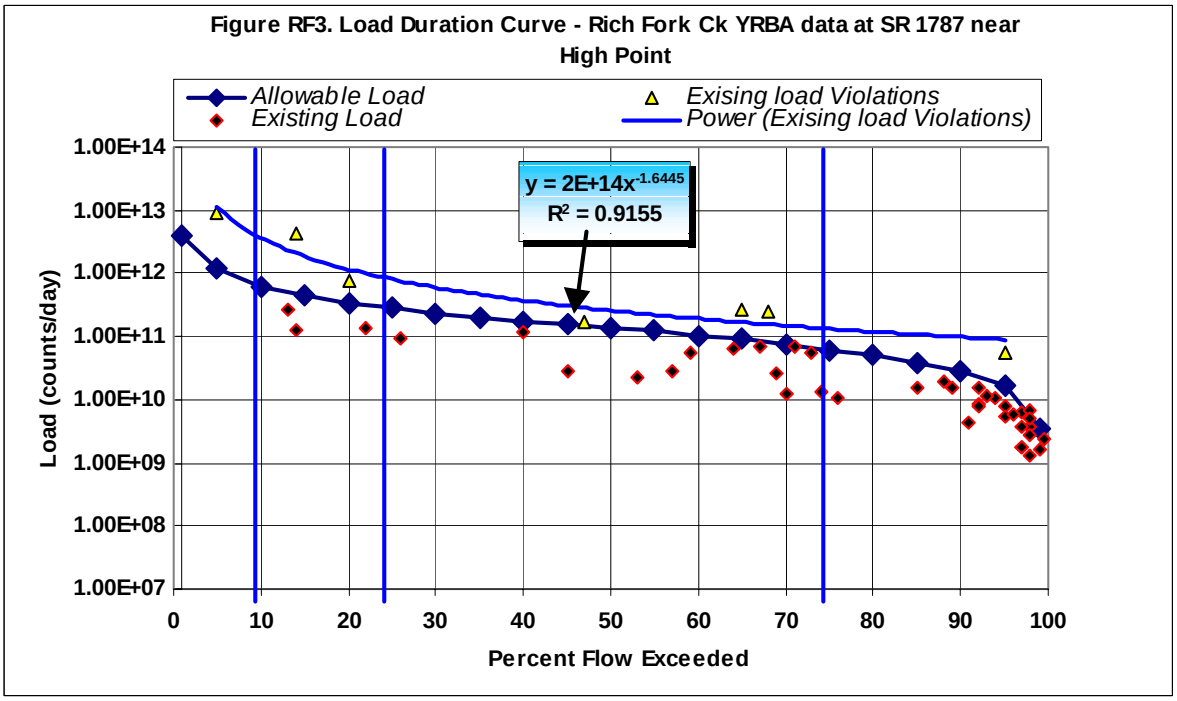


Table RF4. Calculations of Percent Reduction using Load Duration Curve Approach in Rich Fork Creek, YPDRBA data at SR 2123 near High Point

Interval	Existing Load (counts/day)	Target load (counts/day)	Reduction (percent)
95	6.5816E+10	2.47E+10	62.5
90	7.2740E+10	4.21E+10	42.1
85	8.0853E+10	5.66E+10	30.0
80	9.0449E+10	7.56E+10	16.4
75	1.0192E+11	9.24E+10	9.3
70	1.1580E+11	1.14E+11	1.2
65	1.3281E+11	1.38E+11	
60	1.5401E+11	1.59E+11	
55	1.8090E+11	1.86E+11	
50	2.1579E+11	2.09E+11	3.1
45	2.6223E+11	2.37E+11	9.6
40	3.2607E+11	2.67E+11	18.0
35	4.1744E+11	3.09E+11	26.0
30	5.5520E+11	3.60E+11	35.2
25	7.7792E+11	4.40E+11	43.5
20	1.1755E+12	5.19E+11	55.9
15	2.0015E+12	6.71E+11	66.5
10	4.2376E+12	9.62E+11	77.3
5	1.5277E+13	1.82E+12	88.1
Average Values between the 90th and 10th percentile			
Existing load:		**6.4110E+11**	
Allowable load:		**2.85E+11**	
Percent reduction:		**55.62%**	

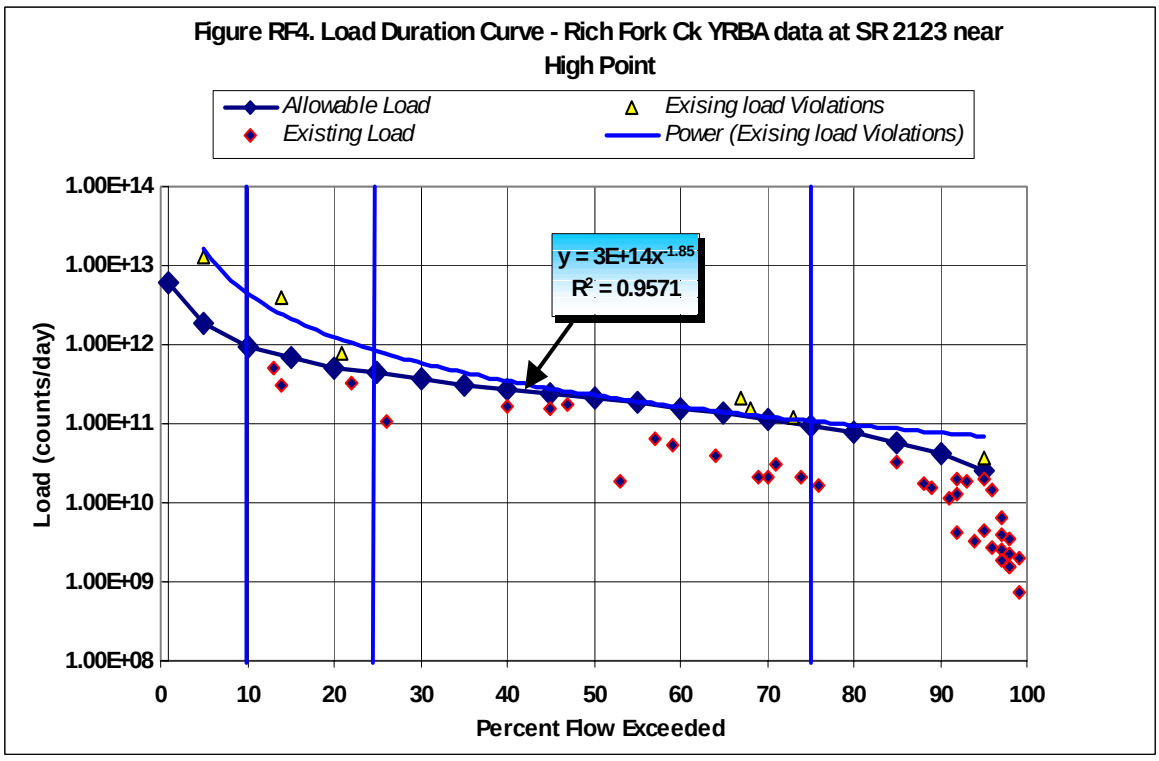


Table RF5. Calculations of Percent Reduction using Load Duration Curve Approach in Rich Fork Creek, Westside WWTP monitoring data at Old Hwy 29

Interval	Existing Load (counts/day)	Target load (counts/day)	Reduction (percent)
95	1.74E+11	1.82E+10	89.5
90	1.87E+11	3.17E+10	83.1
85	2.03E+11	4.66E+10	77.0
80	2.21E+11	6.13E+10	72.2
75	2.42E+11	7.80E+10	67.7
70	2.66E+11	9.53E+10	64.2
65	2.95E+11	1.16E+11	60.7
60	3.30E+11	1.38E+11	58.0
55	3.73E+11	1.60E+11	57.1
50	4.26E+11	1.88E+11	55.8
45	4.93E+11	2.15E+11	56.5
40	5.81E+11	2.45E+11	57.9
35	7.00E+11	2.81E+11	59.9
30	8.68E+11	3.32E+11	61.8
25	1.12E+12	3.93E+11	64.9
20	1.53E+12	4.85E+11	68.3
15	2.28E+12	6.17E+11	73.0
10	4.02E+12	8.96E+11	77.7
5	1.06E+13	1.68E+12	84.2
Average Values between the 90th and 10th percentile			
Existing load:		**8.32E+11**	
Allowable load:		**2.57E+11**	
Percent reduction:		**69.04%**	

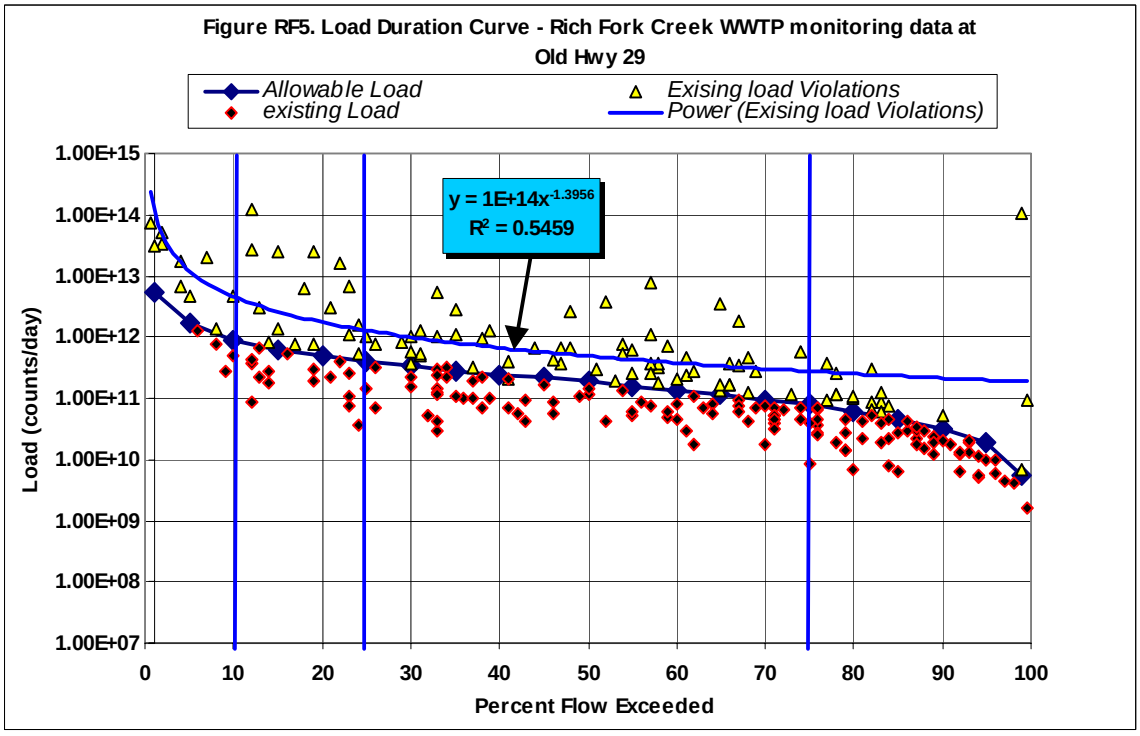


Table RF5a. Calculations of Percent Reduction using Load Duration Curve Approach in Rich Fork Creek, Westside WWTP Geometric mean data at Old Hwy 29

Interval	Existing Load (counts/day)	Target load (counts/day)	Reduction (percent)
95	4.60E+10	1.56E+10	66.2
90	5.61E+10	2.24E+10	60.0
85	6.85E+10	2.81E+10	59.0
80	8.35E+10	3.77E+10	54.9
75	1.02E+11	4.77E+10	53.1
70	1.24E+11	6.10E+10	50.9
65	1.51E+11	7.12E+10	53.0
60	1.85E+11	8.43E+10	54.4
55	2.25E+11	9.93E+10	55.9
50	2.75E+11	1.13E+11	58.8
45	3.35E+11	1.30E+11	61.1
40	4.09E+11	1.60E+11	60.9
35	4.98E+11	1.97E+11	60.5
30	6.08E+11	2.31E+11	62.0
25	7.41E+11	2.79E+11	62.4
20	9.04E+11	3.42E+11	62.2
15	1.10E+12	4.15E+11	62.4
10	1.34E+12	5.05E+11	62.5
5	1.64E+12	6.60E+11	59.8
Average Values between the 90th and 10th percentile			
Existing load:		**7.21E+12**	
Allowable load:		**2.82E+12**	
Percent reduction:		**60.86%**	

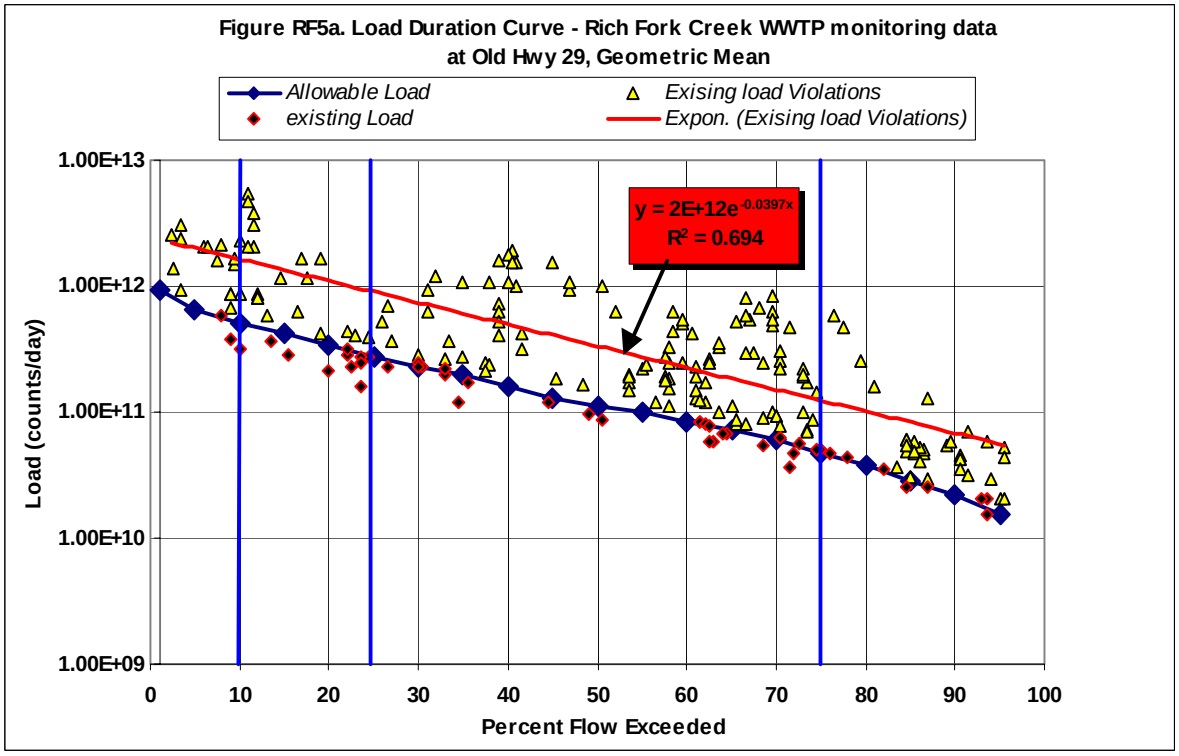


Table H1. Calculations of Percent Reduction using Load Duration Curve Approach in Hamby Creek, @ Baptist Children Home Rd. WWTP Upstream Monitoring Site

Interval	Existing Load (counts/day)	Target Load (counts/day)	Reduction (percent)
95	5.2791E+09	1.9497E+09	63.1
90	6.9570E+09	2.7853E+09	60.0
85	9.1683E+09	3.5811E+09	60.9
80	1.2082E+10	4.3769E+09	63.8
75	1.5923E+10	5.5706E+09	65.0
70	2.0984E+10	6.9632E+09	66.8
65	2.7654E+10	8.3559E+09	69.8
60	3.6443E+10	9.9475E+09	72.7
55	4.8027E+10	1.1738E+10	75.6
50	6.3292E+10	1.3728E+10	78.3
45	8.3409E+10	1.5916E+10	80.9
40	1.0992E+11	1.8104E+10	83.5
35	1.4486E+11	2.0890E+10	85.6
30	1.9090E+11	2.4272E+10	87.3
25	2.5158E+11	2.8848E+10	88.5
20	3.3154E+11	3.6288E+10	89.1
15	4.3692E+11	4.5758E+10	89.5
10	5.7580E+11	6.5494E+10	88.6
5	7.5881E+11	1.2313E+11	83.8
Average Values between the 90th and 25th percentile			
Existing load:		**2.3655E+12**	
Allowable load:		**3.2262E+11**	
Percent reduction:		**86.4%**	

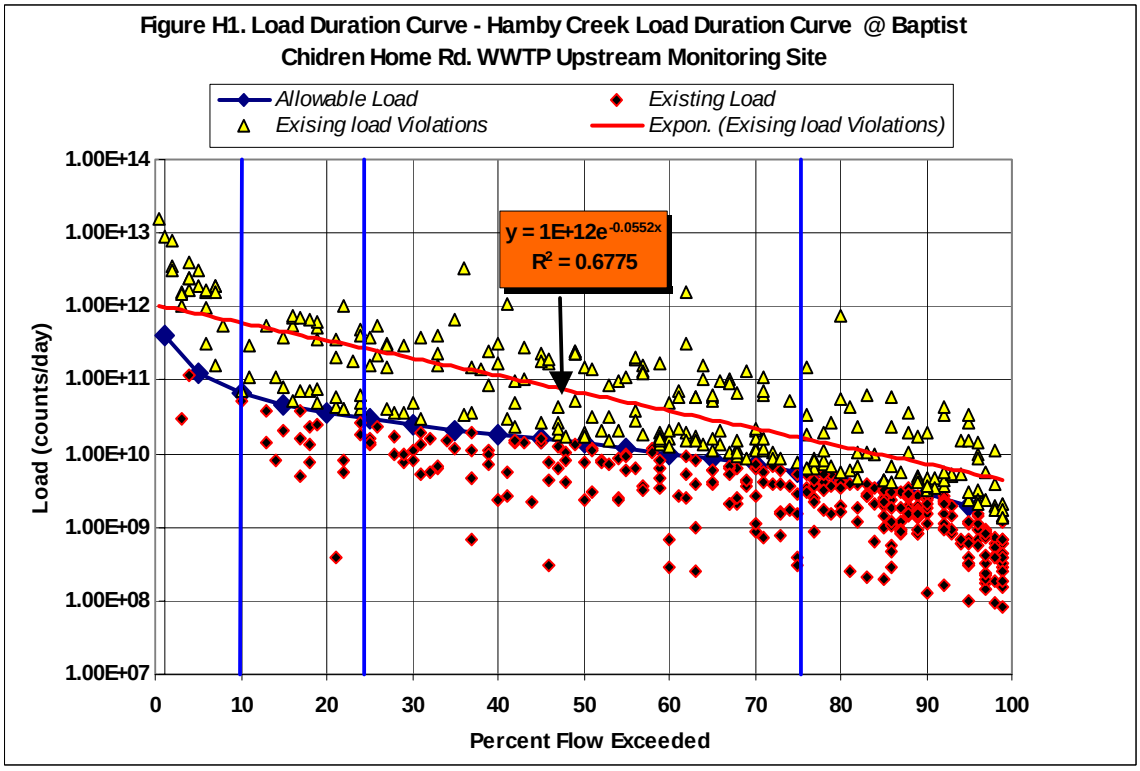


Table H2. Calculations of Percent Reduction using Load Duration Curve Approach in Hamby Creek, DWQ Ambient Monitoring Location (Q59060000- SR# 2790)

Interval	Existing Load (counts/day)	Target Load (counts/day)	Reduction (percent)
95	2.7056E+10	1.0337E+10	61.8
90	3.1371E+10	1.4768E+10	52.9
85	3.6684E+10	1.8987E+10	48.2
80	4.3304E+10	2.3206E+10	46.4
75	5.1671E+10	2.9535E+10	42.8
70	6.2409E+10	3.6919E+10	40.8
65	7.6443E+10	4.4303E+10	42.0
60	9.5165E+10	5.2742E+10	44.6
55	1.2075E+11	6.2235E+10	48.5
50	1.5674E+11	7.2784E+10	53.6
45	2.0913E+11	8.4387E+10	59.6
40	2.8868E+11	9.5990E+10	66.7
35	4.1604E+11	1.1076E+11	73.4
30	6.3440E+11	1.2869E+11	79.7
25	1.0449E+12	1.5295E+11	85.4
20	1.9245E+12	1.9240E+11	90.0
15	4.2292E+12	2.4261E+11	94.3
10	1.2829E+13	3.4725E+11	97.3
5	8.5524E+13	6.5284E+11	99.2
Average Values between the 90th and 25th percentile			
Existing load:		**2.3341E+11**	
Allowable load:		**6.6304E+10**	
Percent reduction:		**71.59%**	

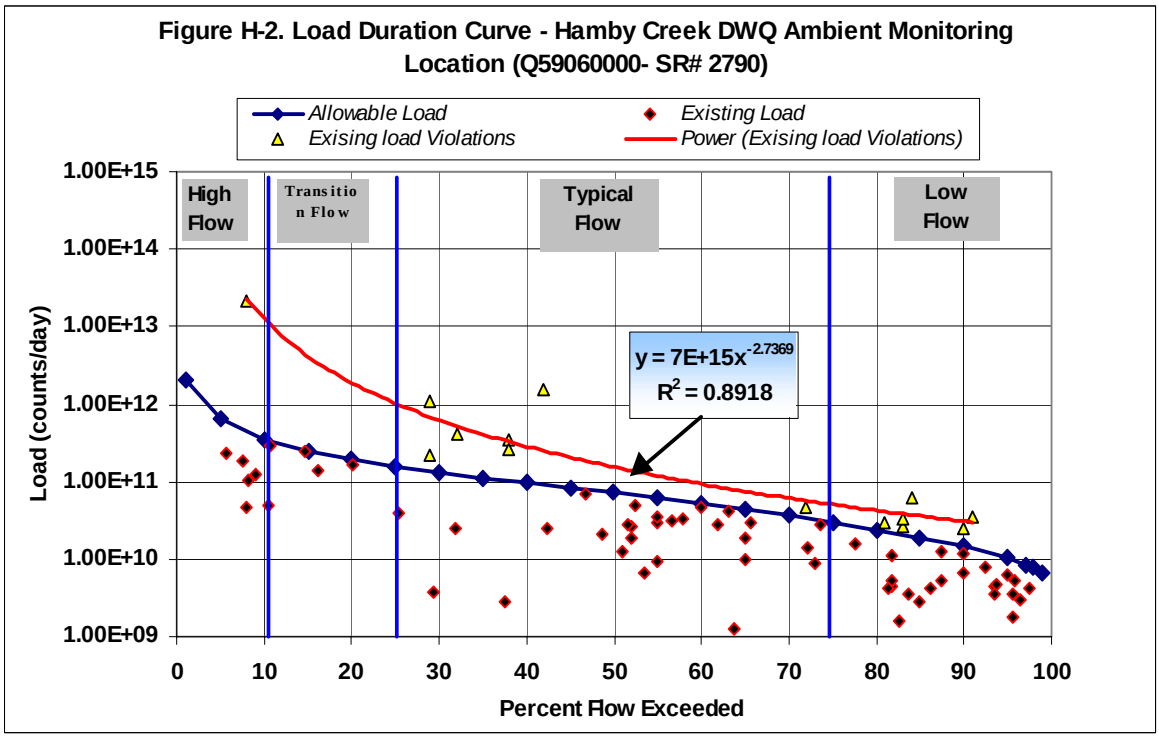


Figure H-2. Load Duration Curve - Hamby Creek DWQ Ambient Monitoring Location (Q59060000- SR# 2790)

Table H3. Calculations of Percent Reduction using Load Duration Curve Approach in Hamby Creek, WWTP Monitoring @ SR2017 Bridge

Interval	Existing Load (counts/day)	Target Load (counts/day)	Reduction (percent)
95	1.7797E+10	9.5011E+09	46.6
90	2.3666E+10	1.3573E+10	42.6
85	3.1470E+10	1.7451E+10	44.5
80	4.1848E+10	2.1329E+10	49.0
75	5.5648E+10	2.7146E+10	51.2
70	7.3999E+10	3.3933E+10	54.1
65	9.8401E+10	4.0719E+10	58.6
60	1.3085E+11	4.8475E+10	63.0
55	1.7400E+11	5.7201E+10	67.1
50	2.3138E+11	6.6896E+10	71.1
45	3.0768E+11	7.7560E+10	74.8
40	4.0914E+11	8.8225E+10	78.4
35	5.4405E+11	1.0180E+11	81.3
30	7.2346E+11	1.1828E+11	83.7
25	9.6203E+11	1.4058E+11	85.4
20	1.2793E+12	1.7684E+11	86.2
15	1.7011E+12	2.2299E+11	86.9
10	2.2621E+12	3.1916E+11	85.9
5	3.0081E+12	6.0003E+11	80.1
Average values between the 90th and 25th percentile			
Existing load:		**9.0501E+12**	
Allowable load:		**1.5721E+12**	
Percent reduction:		**82.63%**	

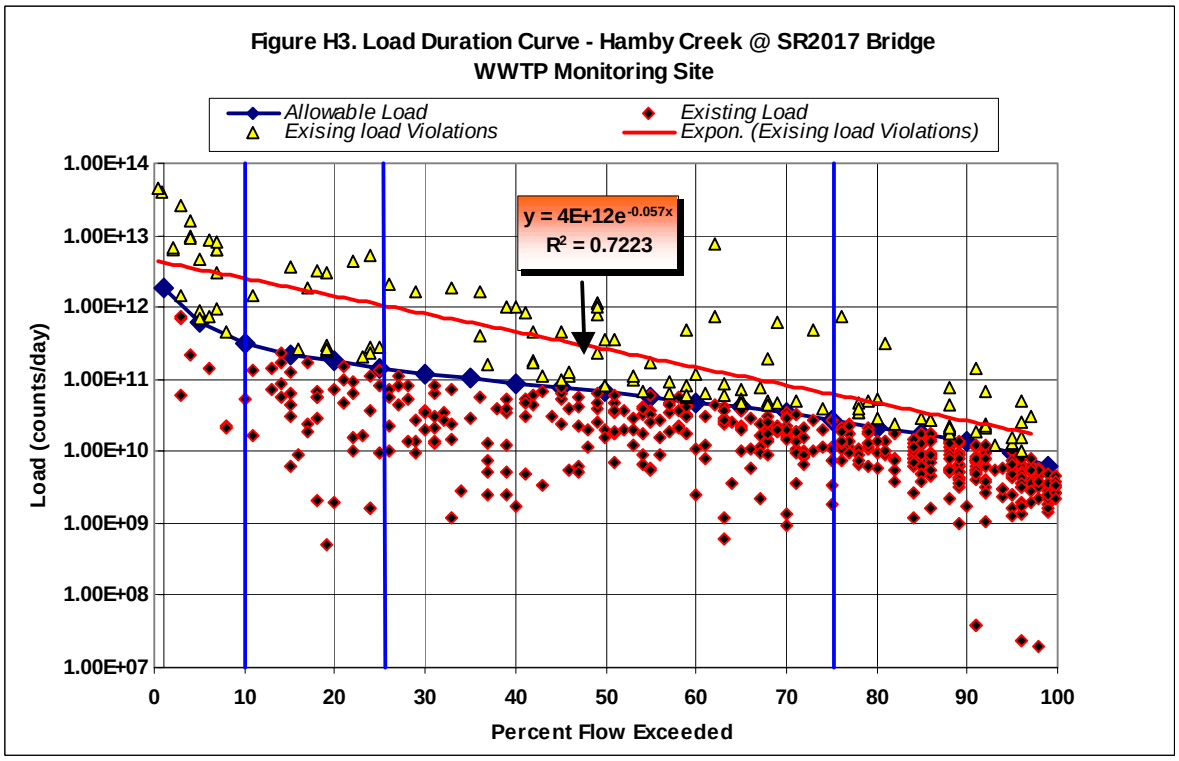
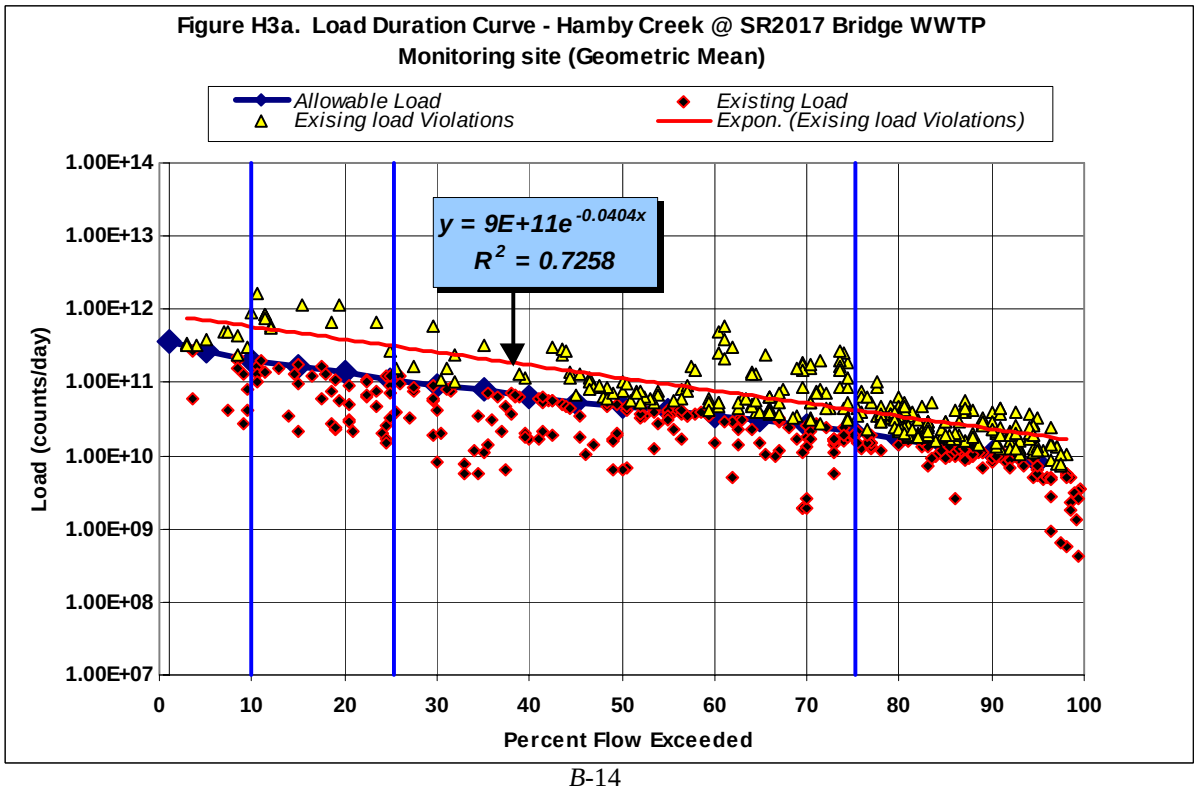


Table H3a. Calculations of Percent Reduction using Load Duration Curve Approach in Hamby Creek, @ SR2017 Bridge WWTP Monitoring site (Geometric Mean)

Interval	Existing Load (counts/day)	Target Load (counts/day)	Reduction (%) (percent)
95	1.9383E+10	8.0141E+09	58.7
90	2.3722E+10	1.0809E+10	54.4
85	2.9032E+10	1.3007E+10	55.2
80	3.5531E+10	1.6937E+10	52.3
75	4.3484E+10	2.0731E+10	52.3
70	5.3218E+10	2.5979E+10	51.2
65	6.5131E+10	2.9974E+10	54.0
60	7.9710E+10	3.5416E+10	55.6
55	9.7553E+10	4.1222E+10	57.7
50	1.1939E+11	4.6682E+10	60.9
45	1.4612E+11	5.3465E+10	63.4
40	1.7882E+11	6.5079E+10	63.6
35	2.1885E+11	7.9845E+10	63.5
30	2.6784E+11	9.3509E+10	65.1
25	3.2780E+11	1.1222E+11	65.8
20	4.0117E+11	1.3702E+11	65.8
15	4.9098E+11	1.6598E+11	66.2
10	6.0088E+11	2.0162E+11	66.4
5	7.3539E+11	2.6218E+11	64.3
Average Values between the 90th and 10th percentile			
Existing load:		**1.8701E+11**	
Allowable load:		**6.7618E+10**	
Percent reduction:		**63.84%**	



APPENDIX C WWTP EFFLUENT FLOW AND FECAL COLIFORM BACTERIA CONCENTRATION

Tables

Table C- 1. High Point Westside (Rich Fork Creek) WWTP Effluent Flow and Fecal Coliform Bacteria Concentration

Date	Flow (cfs)	FC Conc.	Date	Flow (cfs)	FC Conc.	Date	Flow (cfs)	FC Conc.
1/1/1996	5.15		**2/21/1996**	6.66	7000.	**4/12/1996**	5.2	3.
1/2/1996	5.96	160.	**2/22/1996**	5.78	54.	**4/13/1996**	4.78	
1/3/1996	5.45	2.	**2/23/1996**	5.49	230.	**4/14/1996**	4.79	
1/4/1996	4.95	2.	**2/24/1996**	5.19		**4/15/1996**	6.38	18.
1/5/1996	4.85	36.	**2/25/1996**	5.		**4/16/1996**	6.23	15.
1/6/1996	4.55		**2/26/1996**	5.49	20.	**4/17/1996**	5.79	2140.
1/7/1996	4.6		**2/27/1996**	5.33	16.	**4/18/1996**	5.74	600.
1/8/1996	4.7	10.	**2/28/1996**	5.78	11.	**4/19/1996**	5.7	1500.
1/9/1996	5.15	5.	**2/29/1996**	5.04	7.	**4/20/1996**	5.54	
1/10/1996	5.36	2200.	**3/1/1996**	5.24	1900.	**4/21/1996**	5.16	
1/11/1996	5.2	1600.	**3/2/1996**	5.		**4/22/1996**	5.5	120.
1/12/1996	5.2		**3/3/1996**	4.61		**4/23/1996**	5.31	1280.
1/13/1996	5.6		**3/4/1996**	4.9	25.	**4/24/1996**	4.93	940.
1/14/1996	6.2		**3/5/1996**	4.95	1000.	**4/25/1996**	4.93	68.
1/15/1996	7.		**3/6/1996**	6.6	1200.	**4/26/1996**	5.56	60.
1/16/1996	7.33	7.	**3/7/1996**	9.5	820.	**4/27/1996**	4.38	
1/17/1996	7.72	10.	**3/8/1996**	7.7	100.	**4/28/1996**	4.16	
1/18/1996	9.31	60.	**3/9/1996**	6.1		**4/29/1996**	6.14	23.
1/19/1996	9.21	18.	**3/10/1996**	5.6		**4/30/1996**	7.87	6000.
1/20/1996	7.23		**3/11/1996**	6.	2.	**5/1/1996**	5.26	
1/21/1996	6.5		**3/12/1996**	6.04		**5/2/1996**	5.1	3.
1/22/1996	6.2	7.	**3/13/1996**	5.74	2.	**5/3/1996**	4.89	3.
1/23/1996	5.96	5.	**3/14/1996**	5.74	3.	**5/4/1996**	4.57	
1/24/1996	7.37	4000.	**3/15/1996**	5.74		**5/5/1996**	4.37	
1/25/1996	6.5	140.	**3/16/1996**	5.45		**5/6/1996**	5.31	3.
1/26/1996	6.7	49000.	**3/17/1996**	5.3		**5/7/1996**	5.28	2.
1/27/1996	10.7		**3/18/1996**	5.79	2.	**5/8/1996**	4.94	2040.
1/28/1996	7.4		**3/19/1996**	9.58	25.	**5/9/1996**	4.77	2060.
1/29/1996	7.2	15.	**3/20/1996**	6.89	18.	**5/10/1996**	4.81	8.
1/30/1996	7.32	3.	**3/21/1996**	6.59	3.	**5/11/1996**	4.9	
1/31/1996	7.52	10.	**3/22/1996**	6.39	13.	**5/12/1996**	4.21	
2/1/1996	6.34	11.	**3/23/1996**	5.99		**5/13/1996**	4.98	4.
2/2/1996	9.5		**3/24/1996**	5.59		**5/14/1996**	4.92	2.
2/3/1996	7.52		**3/25/1996**	5.38	5.	**5/15/1996**	5.31	10.
2/4/1996	6.83		**3/26/1996**	5.19	16.	**5/16/1996**	5.18	13.
2/5/1996	5.98	94.	**3/27/1996**	5.67	470.	**5/17/1996**	4.92	25.
2/6/1996	6.27	7.	**3/28/1996**	7.07	600.	**5/18/1996**	4.41	
2/7/1996	7.35	18.	**3/29/1996**	5.81	27.	**5/19/1996**	4.25	
2/8/1996	8.04	170.	**3/30/1996**	5.24		**5/20/1996**	4.19	23.
2/9/1996	7.06	120.	**3/31/1996**	5.53		**5/21/1996**	4.11	5.
2/10/1996	6.17		**4/1/1996**	7.43	20.	**5/22/1996**	4.04	20.
2/11/1996	5.68		**4/2/1996**	6.29	15.	**5/23/1996**	4.19	8.
2/12/1996	5.51	26.	**4/3/1996**	6.	19.	**5/24/1996**	4.19	5.
2/13/1996	5.53	34.	**4/4/1996**	5.75		**5/25/1996**	3.8	
2/14/1996	5.61	19.	**4/5/1996**	5.19		**5/26/1996**	3.77	
2/15/1996	5.61	5700.	**4/6/1996**	4.78		**5/27/1996**	5.43	13.
2/16/1996	5.6	710.	**4/7/1996**	4.78		**5/28/1996**	4.34	47.
2/17/1996	5.13		**4/8/1996**	5.66	8.	**5/29/1996**	4.17	39.
2/18/1996	4.85		**4/9/1996**	6.04	5.	**5/30/1996**	3.89	7.
2/19/1996	5.78	2000.	**4/10/1996**	5.27	9.	**5/31/1996**	4.1	
2/20/1996	7.35	2100.	**4/11/1996**	5.2	8.	**6/1/1996**	3.66	

Table C- 1 (Continued…)

6/2/1996	3.66		**7/23/1996**	4.7	210.	**9/12/1996**	5.71	135.
6/3/1996	4.4	6.	**7/24/1996**	4.29	48.	**9/13/1996**	5.19	80.
6/4/1996	4.3		**7/25/1996**	5.97	42.	**9/14/1996**	3.23	
6/5/1996	4.2		**7/26/1996**	4.25	220.	**9/15/1996**	2.94	
6/6/1996	4.58		**7/27/1996**	3.47		**9/16/1996**	3.49	55.
6/7/1996	4.25	33.	**7/28/1996**	5.66		**9/17/1996**	3.49	1080.
6/8/1996	4.4		**7/29/1996**	4.54	21.	**9/18/1996**	4.02	230.
6/9/1996	4.43		**7/30/1996**	4.61	24.	**9/19/1996**	4.07	39.
6/10/1996	4.52	3.	**7/31/1996**	5.09	51.	**9/20/1996**	4.	69.
6/11/1996	4.25	3.	**8/1/1996**	5.42	16.	**9/21/1996**	3.66	
6/12/1996	4.56	10.	**8/2/1996**	4.5	2.	**9/22/1996**	3.47	
6/13/1996	4.32	3.	**8/3/1996**	4.05		**9/23/1996**	3.84	7.
6/14/1996	4.26		**8/4/1996**	3.9		**9/24/1996**	3.5	6.
6/15/1996	3.86		**8/5/1996**	4.63	10.	**9/25/1996**	3.33	6.
6/16/1996	3.72		**8/6/1996**	4.66	23.	**9/26/1996**	3.43	2.
6/17/1996	4.57	15.	**8/7/1996**	5.57	90.	**9/27/1996**	3.2	16.
6/18/1996	4.37	170.	**8/8/1996**	4.78	27.	**9/28/1996**	3.06	
6/19/1996	5.62	480.	**8/9/1996**	4.71	7.	**9/29/1996**	2.93	
6/20/1996	4.42	60.	**8/10/1996**	3.95		**9/30/1996**	3.11	5.
6/21/1996	4.38	130.	**8/11/1996**	4.01		**10/1/1996**	5.58	900.
6/22/1996	3.91		**8/12/1996**	6.34	23.	**10/2/1996**	4.	48.
6/23/1996	3.77		**8/13/1996**	5.	20.	**10/3/1996**	3.86	92.
6/24/1996	4.35	2.	**8/14/1996**	4.22	5.	**10/4/1996**	4.55	26.
6/25/1996	4.18	5.	**8/15/1996**	3.76	9.	**10/5/1996**	3.92	
6/26/1996	4.16	9.	**8/16/1996**	3.72	8.	**10/6/1996**	2.93	
6/27/1996	4.16	24.	**8/17/1996**	3.15		**10/7/1996**	3.79	6.
6/28/1996	4.14	23.	**8/18/1996**	3.18		**10/8/1996**	5.2	
6/29/1996	3.75		**8/19/1996**	3.36		**10/9/1996**	4.87	21.
6/30/1996	3.41		**8/20/1996**	3.35	1.	**10/10/1996**	4.08	5.
7/1/1996	3.64	1.	**8/21/1996**	3.55	5.	**10/11/1996**	3.78	5.
7/2/1996	3.82		**8/22/1996**	3.47	40.	**10/12/1996**	3.57	
7/3/1996	3.59	4.	**8/23/1996**	3.55	260.	**10/13/1996**	3.58	
7/4/1996	3.2		**8/24/1996**	7.44		**10/14/1996**	3.75	4.
7/5/1996	3.17	3.	**8/25/1996**	4.02		**10/15/1996**	3.95	21.
7/6/1996	3.03		**8/26/1996**	4.09	5.	**10/16/1996**	3.63	1.
7/7/1996	3.06		**8/27/1996**	4.64	6.	**10/17/1996**	3.66	1.
7/8/1996	3.68		**8/28/1996**	4.41	56.	**10/18/1996**	3.79	3.
7/9/1996	4.18	25.	**8/29/1996**	4.52	5910.	**10/19/1996**	3.11	
7/10/1996	3.89	1440.	**8/30/1996**	4.45	1020.	**10/20/1996**	3.08	
7/11/1996	3.94	7.	**8/31/1996**	4.53		**10/21/1996**	3.43	
7/12/1996	4.41	6.	**9/1/1996**	3.23		**10/22/1996**	3.44	2.
7/13/1996	3.22		**9/2/1996**	2.64		**10/23/1996**	3.44	
7/14/1996	3.41		**9/3/1996**	11.8	20.	**10/24/1996**	3.42	82.
7/15/1996	5.04		**9/4/1996**			**10/25/1996**	3.23	36.
7/16/1996	4.7	2.	**9/5/1996**			**10/26/1996**	2.91	
7/17/1996	3.89	55.	**9/6/1996**	8.55		**10/27/1996**	2.86	
7/18/1996	3.93	35.	**9/7/1996**	9.07		**10/28/1996**	3.26	250.
7/19/1996	4.31	1.	**9/8/1996**	7.61		**10/29/1996**	3.28	102.
7/20/1996	3.99		**9/9/1996**	5.41	25.	**10/30/1996**	3.19	21.
7/21/1996	3.67		**9/10/1996**	7.62	140.	**10/31/1996**	3.1	600.
7/22/1996	4.44	55.	**9/11/1996**	6.79	210.	**11/1/1996**	3.5	4.

Table C- 1 (Continued…)

11/2/1996	3.22		**12/23/1996**	3.7	1.	**2/12/1997**	3.93	46.
11/3/1996	2.66		**12/24/1996**	4.16		**2/13/1997**	5.06	53.
11/4/1996	3.23	7.	**12/25/1996**	3.49		**2/14/1997**	7.27	450.
11/5/1996	3.18	4.	**12/26/1996**	3.8		**2/15/1997**	7.25	
11/6/1996	3.35	33.	**12/27/1996**	3.82		**2/16/1997**	5.83	
11/7/1996	3.52	8.	**12/28/1996**	3.6		**2/17/1997**	5.57	4.
11/8/1996	4.77	4.	**12/29/1996**	3.53		**2/18/1997**	5.06	48.
11/9/1996	3.32		**12/30/1996**	4.85		**2/19/1997**	4.89	42.
11/10/1996	3.		**12/31/1996**	4.06		**2/20/1997**	4.49	30.
11/11/1996	3.37	3.	**1/1/1997**	3.34	1.	**2/21/1997**	4.84	30.
11/12/1996	3.55	11.	**1/2/1997**	3.74	9.	**2/22/1997**	4.18	
11/13/1996	3.36	12.	**1/3/1997**	3.62		**2/23/1997**	3.85	
11/14/1996	3.49	13.	**1/4/1997**	3.52		**2/24/1997**	5.01	4.
11/15/1996	3.31	5.	**1/5/1997**	3.96		**2/25/1997**	3.01	5.
11/16/1996	2.99		**1/6/1997**	3.99	1.	**2/26/1997**	4.39	20.
11/17/1996	3.		**1/7/1997**	4.06	1.	**2/27/1997**	5.3	22.
11/18/1996	3.46	14.	**1/8/1997**	4.06	1.	**2/28/1997**	6.97	1190.
11/19/1996	3.72	22.	**1/9/1997**	7.11	5.	**3/1/1997**	6.12	
11/20/1996	3.12	430.	**1/10/1997**	5.76	47.	**3/2/1997**	5.36	
11/21/1996	3.66	1060.	**1/11/1997**	4.91		**3/3/1997**	5.93	9.
11/22/1996	2.98	4450.	**1/12/1997**	4.38		**3/4/1997**	5.06	600.
11/23/1996	2.76		**1/13/1997**	4.01	1480.	**3/5/1997**	5.63	14.
11/24/1996	2.7		**1/14/1997**	4.04	2060.	**3/6/1997**	5.64	10.
11/25/1996	3.54	85.	**1/15/1997**	4.37	1890.	**3/7/1997**	4.95	8.
11/26/1996	3.49	54.	**1/16/1997**	6.06	2860.	**3/8/1997**	4.34	
11/27/1996	2.8	7.	**1/17/1997**	4.52	31.	**3/9/1997**	4.31	
11/28/1996	3.84		**1/18/1997**	3.89		**3/10/1997**	4.5	280.
11/29/1996	3.		**1/19/1997**	3.75		**3/11/1997**	4.3	750.
11/30/1996	3.96		**1/20/1997**	4.06		**3/12/1997**	4.21	760.
12/1/1996	6.38		**1/21/1997**	4.06	30.	**3/13/1997**	4.43	18.
12/2/1996	4.98	16.	**1/22/1997**	4.19	440.	**3/14/1997**	5.71	55.
12/3/1996	4.23	42.	**1/23/1997**	3.98	1090.	**3/15/1997**	4.31	
12/4/1996	3.88	2.	**1/24/1997**	4.48	170.	**3/16/1997**	3.85	
12/5/1996	5.52	9.	**1/25/1997**	4.6		**3/17/1997**	4.06	6.
12/6/1996	4.63	220.	**1/26/1997**	3.8		**3/18/1997**	4.26	20.
12/7/1996	5.58		**1/27/1997**	4.12	54.	**3/19/1997**	6.27	1030.
12/8/1996	4.69		**1/28/1997**	5.07	94.	**3/20/1997**	5.43	56.
12/9/1996	4.1		**1/29/1997**	4.46	310.	**3/21/1997**	4.69	11.
12/10/1996	3.93	5.	**1/30/1997**	4.2	54.	**3/22/1997**	3.74	
12/11/1996	3.92	2.	**1/31/1997**	5.13	96.	**3/23/1997**	3.27	
12/12/1996	5.44	1.	**2/1/1997**	3.99		**3/24/1997**	3.62	17.
12/13/1996	6.41	42.	**2/2/1997**	3.6		**3/25/1997**	4.47	33.
12/14/1996	4.64		**2/3/1997**	3.79	48.	**3/26/1997**	5.05	100.
12/15/1996	4.42		**2/4/1997**	3.96	1.	**3/27/1997**	3.99	10.
12/16/1996	4.27	2.	**2/5/1997**	4.1	13.	**3/28/1997**	3.86	
12/17/1996	5.11	1.	**2/6/1997**	3.99	22.	**3/29/1997**	3.4	
12/18/1996	4.58	78.	**2/7/1997**	4.02	5.	**3/30/1997**	3.72	
12/19/1996	4.51	3.	**2/8/1997**	4.46		**3/31/1997**	3.65	5.
12/20/1996	3.94	2.	**2/9/1997**	3.74		**4/1/1997**	3.45	5.
12/21/1996	3.94		**2/10/1997**	4.93	14.	**4/2/1997**	3.36	55.
12/22/1996	3.49		**2/11/1997**	3.98	9.	**4/3/1997**	3.31	3.

Table C- 1 (Continued…)

4/4/1997	3.23	3.	**5/25/1997**	2.93		**7/15/1997**	2.41	3.
4/5/1997	3.05		**5/26/1997**	3.2	7.	**7/16/1997**	2.62	60.
4/6/1997	4.79		**5/27/1997**	3.2	30.	**7/17/1997**	2.37	6.
4/7/1997	5.	7.	**5/28/1997**	2.24	13.	**7/18/1997**	2.44	9.
4/8/1997	3.67	24.	**5/29/1997**	2.28	1.	**7/19/1997**	2.15	
4/9/1997	3.57	20.	**5/30/1997**	3.04	16.	**7/20/1997**	2.39	
4/10/1997	3.39	13.	**5/31/1997**	2.94		**7/21/1997**	2.45	74.
4/11/1997	3.46	6.	**6/1/1997**	2.92		**7/22/1997**	4.13	21.
4/12/1997	4.9		**6/2/1997**	3.51	72.	**7/23/1997**	3.94	3720.
4/13/1997	3.57		**6/3/1997**	3.19	9.	**7/24/1997**	4.35	12.
4/14/1997	3.61	5.	**6/4/1997**	3.05	10.	**7/25/1997**	3.36	56.
4/15/1997	3.47	4.	**6/5/1997**	2.94	6.	**7/26/1997**	2.86	
4/16/1997	3.39	8.	**6/6/1997**	3.45	1.	**7/27/1997**	2.73	
4/17/1997	3.31	4.	**6/7/1997**	3.8		**7/28/1997**	3.18	26.
4/18/1997	3.06	11.	**6/8/1997**	3.29		**7/29/1997**	3.15	17.
4/19/1997	2.85		**6/9/1997**	2.81	1.	**7/30/1997**	3.62	37.
4/20/1997	2.78		**6/10/1997**	2.86	1.	**7/31/1997**	3.53	25.
4/21/1997	3.89	3.	**6/11/1997**	2.94	2.	**8/1/1997**	3.45	38.
4/22/1997	4.98	210.	**6/12/1997**	3.82	3.	**8/2/1997**	2.75	
4/23/1997	6.3	4060.	**6/13/1997**	3.32	600.	**8/3/1997**	2.89	
4/24/1997	4.93	21.	**6/14/1997**	2.75		**8/4/1997**	3.54	68.
4/25/1997	4.42	15.	**6/15/1997**	2.65		**8/5/1997**	4.6	110.
4/26/1997	4.8		**6/16/1997**	2.95	3.	**8/6/1997**	3.94	48.
4/27/1997	5.14		**6/17/1997**	3.12	4.	**8/7/1997**	4.21	75.
4/28/1997	4.63	13.	**6/18/1997**	2.99		**8/8/1997**	4.6	17.
4/29/1997	5.88	1282.	**6/19/1997**	2.96		**8/9/1997**	3.41	
4/30/1997	5.67	320.	**6/20/1997**	3.05	150.	**8/10/1997**	3.2	
5/1/1997	4.73	2250.	**6/21/1997**	2.69		**8/11/1997**	3.87	4.
5/2/1997	4.32	120.	**6/22/1997**	2.66		**8/12/1997**	3.88	170.
5/3/1997	5.33		**6/23/1997**	3.11	12.	**8/13/1997**	3.94	130.
5/4/1997	4.36		**6/24/1997**	3.09		**8/14/1997**	3.78	300.
5/5/1997	4.8	92.	**6/25/1997**	3.13	2.	**8/15/1997**	2.73	66.
5/6/1997	4.56	11.	**6/26/1997**	3.18		**8/16/1997**	2.47	
5/7/1997	3.79	44.	**6/27/1997**	3.03	1.	**8/17/1997**	3.	
5/8/1997	3.87	12.	**6/28/1997**	2.74		**8/18/1997**	3.4	140.
5/9/1997	3.72	22.	**6/29/1997**	2.5		**8/19/1997**	4.22	45.
5/10/1997	2.93		**6/30/1997**	2.86	4.	**8/20/1997**	3.03	35.
5/11/1997	2.9		**7/1/1997**	3.32	8.	**8/21/1997**	2.52	29.
5/12/1997	3.4	15.	**7/2/1997**	2.98	11.	**8/22/1997**	2.36	30.
5/13/1997	3.35	35.	**7/3/1997**	2.81	12.	**8/23/1997**	1.96	
5/14/1997	3.32	58.	**7/4/1997**	2.75		**8/24/1997**	2.05	
5/15/1997	3.16	27.	**7/5/1997**	2.5		**8/25/1997**	2.29	7.
5/16/1997	3.05	52.	**7/6/1997**	2.53		**8/26/1997**	2.36	66.
5/17/1997	2.89		**7/7/1997**	2.98		**8/27/1997**	2.32	84.
5/18/1997	2.82		**7/8/1997**	2.94	56.	**8/28/1997**	2.38	59.
5/19/1997	3.03	600.	**7/9/1997**	3.23	2.	**8/29/1997**	2.5	29.
5/20/1997	3.21	21.	**7/10/1997**	2.89	3.	**8/30/1997**	2.11	
5/21/1997	2.92	55.	**7/11/1997**	2.72		**8/31/1997**	2.09	
5/22/1997	3.1	21.	**7/12/1997**	2.34		**9/1/1997**	2.63	
5/23/1997	2.81	20.	**7/13/1997**	2.27		**9/2/1997**	2.8	82.
5/24/1997	2.54		**7/14/1997**	2.53	1.	**9/3/1997**	2.57	34.

Table C- 1 (Continued…)

9/4/1997	2.58	2490.	**10/25/1997**	2.34		**12/15/1997**	2.68	21.
9/5/1997	2.4	770.	**10/26/1997**	3.84		**12/16/1997**	2.77	10.
9/6/1997	2.11		**10/27/1997**	2.31	48.	**12/17/1997**	2.62	32.
9/7/1997	2.07		**10/28/1997**	2.42	11.	**12/18/1997**	2.7	27.
9/8/1997	2.33	380.	**10/29/1997**	2.61	100.	**12/19/1997**	2.56	52.
9/9/1997	3.13	1080.	**10/30/1997**	2.67	33.	**12/20/1997**	2.35	
9/10/1997	3.02	650.	**10/31/1997**	2.53	6.	**12/21/1997**	2.45	
9/11/1997	2.64	60.	**11/1/1997**	2.31		**12/22/1997**	3.92	31.
9/12/1997	2.64	40.	**11/2/1997**	3.11		**12/23/1997**	3.05	62.
9/13/1997	1.86		**11/3/1997**	3.11	11.	**12/24/1997**	4.29	
9/14/1997	2.21		**11/4/1997**	3.14	23.	**12/25/1997**	2.85	
9/15/1997	2.48	440.	**11/5/1997**	2.56	38.	**12/26/1997**	2.92	
9/16/1997	2.59	110.	**11/6/1997**	2.68	102.	**12/27/1997**	4.41	
9/17/1997	2.57	51.	**11/7/1997**	2.52	102.	**12/28/1997**	3.12	
9/18/1997	2.38	66.	**11/8/1997**	2.24		**12/29/1997**	3.29	24.
9/19/1997	2.34	42.	**11/9/1997**	2.14		**12/30/1997**	3.65	60.
9/20/1997	2.05		**11/10/1997**	2.7	82.	**12/31/1997**	3.11	39.
9/21/1997	1.98		**11/11/1997**	2.78	34.	**1/1/1998**	2.74	14.
9/22/1997	2.5	53.	**11/12/1997**	3.	240.	**1/2/1998**	3.03	
9/23/1997	2.56	900.	**11/13/1997**	4.12	250.	**1/3/1998**	2.92	
9/24/1997	3.93	340.	**11/14/1997**	3.1	500.	**1/4/1998**	2.78	
9/25/1997	2.78	84.	**11/15/1997**	2.28		**1/5/1998**	2.99	290.
9/26/1997	2.57	42.	**11/16/1997**	2.21		**1/6/1998**	5.12	700.
9/27/1997	2.23		**11/17/1997**	2.48	114.	**1/7/1998**	7.59	5720.
9/28/1997	2.5		**11/18/1997**	2.62	1050.	**1/8/1998**	7.85	2560.
9/29/1997	2.68	76.	**11/19/1997**	2.63	900.	**1/9/1998**	5.23	78.
9/30/1997	2.61	42.	**11/20/1997**	2.65	1430.	**1/10/1998**	3.82	
10/1/1997	2.6	21.	**11/21/1997**	4.15	3750.	**1/11/1998**	3.47	
10/2/1997	2.56	34.	**11/22/1997**	2.85		**1/12/1998**	3.62	37.
10/3/1997	2.58	15.	**11/23/1997**	2.48		**1/13/1998**	5.28	65.
10/4/1997	2.23		**11/24/1997**	2.78	125.	**1/14/1998**	3.6	20.
10/5/1997	2.62		**11/25/1997**	2.77	200.	**1/15/1998**	7.59	1630.
10/6/1997	2.53	18.	**11/26/1997**	2.86	42.	**1/16/1998**	7.54	57.
10/7/1997	2.67	10.	**11/27/1997**	2.27		**1/17/1998**	5.11	
10/8/1997	2.68	1700.	**11/28/1997**	2.57		**1/18/1998**	4.17	
10/9/1997	2.56	68.	**11/29/1997**	2.52		**1/19/1998**	5.7	
10/10/1997	2.62	180.	**11/30/1997**	3.89		**1/20/1998**	4.44	24.
10/11/1997	2.27		**12/1/1997**	3.16	20.	**1/21/1998**	4.	30.
10/12/1997	2.21		**12/2/1997**	2.85	33.	**1/22/1998**	4.97	19.
10/13/1997	2.56	24.	**12/3/1997**	3.05	25.	**1/23/1998**	6.42	48.
10/14/1997	2.75	44.	**12/4/1997**	2.96	29.	**1/24/1998**	5.61	
10/15/1997	2.78	60.	**12/5/1997**	2.64	13.	**1/25/1998**	4.29	
10/16/1997	2.82	63.	**12/6/1997**	2.31		**1/26/1998**	4.3	24.
10/17/1997	2.77	17.	**12/7/1997**	2.29		**1/27/1998**	7.22	23.
10/18/1997	2.48		**12/8/1997**	2.8	1.	**1/28/1998**	6.43	37.
10/19/1997	3.16		**12/9/1997**	2.89	9.	**1/29/1998**	5.86	50.
10/20/1997	3.6	11.	**12/10/1997**	2.98	11.	**1/30/1998**	4.96	8.
10/21/1997	2.72	4.	**12/11/1997**	2.68	4.	**1/31/1998**	4.12	
10/22/1997	2.82	20.	**12/12/1997**	2.57	7.	**2/1/1998**	3.86	
10/23/1997	2.75	88.	**12/13/1997**	2.34		**2/2/1998**	4.16	1.
10/24/1997	2.76	55.	**12/14/1997**	2.32		**2/3/1998**	6.43	1.

Table C- 1 (Continued…)

2/4/1998	8.1	1220.	**3/27/1998**	3.86	24.	**5/17/1998**	2.93	
2/5/1998	7.45	340.	**3/28/1998**	3.46		**5/18/1998**	3.03	1.
2/6/1998	5.54	1.	**3/29/1998**	3.42		**5/19/1998**	2.87	1.
2/7/1998	4.53		**3/30/1998**	3.73	18.	**5/20/1998**	3.17	
2/8/1998	4.07		**3/31/1998**	3.59	14.	**5/21/1998**	2.83	7.
2/9/1998	4.04		**4/1/1998**	3.94	78.	**5/22/1998**	2.79	76.
2/10/1998	4.02	1.	**4/2/1998**	3.41	110.	**5/23/1998**	3.21	
2/11/1998	4.82	1.	**4/3/1998**	4.51	30.	**5/24/1998**	2.51	
2/12/1998	4.26		**4/4/1998**	3.36		**5/25/1998**	2.84	78.
2/13/1998	3.93	1.	**4/5/1998**	2.38		**5/26/1998**	4.03	1.
2/14/1998	3.4		**4/6/1998**	3.41	13.	**5/27/1998**	3.13	8.
2/15/1998	3.33		**4/7/1998**	3.28	66.	**5/28/1998**	3.08	6.
2/16/1998	6.84	3.	**4/8/1998**	3.36	33.	**5/29/1998**	2.84	3.
2/17/1998	6.6	1.	**4/9/1998**	5.52	40.	**5/30/1998**	3.19	
2/18/1998	6.64	1470.	**4/10/1998**	3.71		**5/31/1998**	2.53	
2/19/1998	5.59	1.	**4/11/1998**	3.1		**6/1/1998**	2.93	
2/20/1998	4.89	3.	**4/12/1998**	2.86		**6/2/1998**	2.98	1.
2/21/1998	4.01		**4/13/1998**	3.48	6.	**6/3/1998**	3.48	3.
2/22/1998	4.19		**4/14/1998**	3.74	1.	**6/4/1998**	3.12	5.
2/23/1998	6.79	31.	**4/15/1998**	3.78	2.	**6/5/1998**	2.95	4.
2/24/1998	4.64	2.	**4/16/1998**	5.3	6.	**6/6/1998**	3.98	
2/25/1998	4.37	3.	**4/17/1998**	8.11	1080.	**6/7/1998**	2.79	
2/26/1998	4.19	4.	**4/18/1998**	8.11		**6/8/1998**	2.29	
2/27/1998	4.48	4.	**4/19/1998**	8.16		**6/9/1998**	2.93	3.
2/28/1998	3.7		**4/20/1998**	7.49	6.	**6/10/1998**	3.79	14.
3/1/1998	3.46		**4/21/1998**	5.95	3.	**6/11/1998**	3.06	3.
3/2/1998	3.86	1.	**4/22/1998**	5.02	1.	**6/12/1998**	3.87	2.
3/3/1998	3.66	1.	**4/23/1998**	4.7		**6/13/1998**	2.48	
3/4/1998	3.55	2.	**4/24/1998**	4.21	4.	**6/14/1998**	3.88	
3/5/1998	3.47	1.	**4/25/1998**	3.69		**6/15/1998**	5.41	17.
3/6/1998	3.38	12.	**4/26/1998**	3.47		**6/16/1998**	3.5	1.
3/7/1998	3.46		**4/27/1998**	3.73	4.	**6/17/1998**	3.08	13.
3/8/1998	7.18		**4/28/1998**	3.41	6.	**6/18/1998**	2.38	50.
3/9/1998	7.43	1220.	**4/29/1998**	3.36	11.	**6/19/1998**	2.94	
3/10/1998	5.82	56.	**4/30/1998**	3.47	42.	**6/20/1998**	2.58	
3/11/1998	4.83	5700.	**5/1/1998**	3.95	66.	**6/21/1998**	2.52	
3/12/1998	4.47	700.	**5/2/1998**	2.96		**6/22/1998**	2.89	
3/13/1998	4.34		**5/3/1998**	3.3		**6/23/1998**	2.88	10.
3/14/1998	3.94		**5/4/1998**	3.63	47.	**6/24/1998**	2.88	1.
3/15/1998	3.92		**5/5/1998**	3.26	46.	**6/25/1998**	2.74	37.
3/16/1998	3.97	3040.	**5/6/1998**	3.03	60.	**6/26/1998**	2.63	9.
3/17/1998	3.95	1880.	**5/7/1998**	5.23	7.	**6/27/1998**	2.38	
3/18/1998	5.37	190.	**5/8/1998**	6.9	29.	**6/28/1998**	2.3	
3/19/1998	6.77	165.	**5/9/1998**	4.5		**6/29/1998**	3.2	5.
3/20/1998	6.42	96.	**5/10/1998**	5.72		**6/30/1998**	3.64	1.
3/21/1998	5.68		**5/11/1998**	5.32	4.	**7/1/1998**	2.87	5.
3/22/1998	4.72		**5/12/1998**	4.19	4.	**7/2/1998**	2.68	11.
3/23/1998	4.53	4.	**5/13/1998**	3.81	1480.	**7/3/1998**	2.41	
3/24/1998	4.2	6.	**5/14/1998**	3.52	31.	**7/4/1998**	2.26	
3/25/1998	4.15	19.	**5/15/1998**	3.25	33.	**7/5/1998**	2.26	
3/26/1998	4.08	13.	**5/16/1998**	3.09		**7/6/1998**	2.64	

Table C- 1 (Continued…)

7/7/1998	2.7	1.	**8/27/1998**	2.47	5.	**10/17/1998**	1.53	
7/8/1998	2.79	1.	**8/28/1998**	2.38	2.	**10/18/1998**	2.29	
7/9/1998	2.7	1.	**8/29/1998**	2.48		**10/19/1998**	2.87	2.
7/10/1998	2.63	3.	**8/30/1998**	2.39		**10/20/1998**	2.46	21.
7/11/1998	2.33		**8/31/1998**	2.62	31.	**10/21/1998**	2.31	1.
7/12/1998	2.29		**9/1/1998**	2.51	58.	**10/22/1998**	2.49	1.
7/13/1998	2.72	34.	**9/2/1998**	2.51	1600.	**10/23/1998**	2.28	6.
7/14/1998	2.58	25.	**9/3/1998**	4.31	4.	**10/24/1998**	2.36	
7/15/1998	2.64	40.	**9/4/1998**	2.96	16.	**10/25/1998**	2.43	
7/16/1998	3.02	15.	**9/5/1998**	2.1		**10/26/1998**	2.74	11.
7/17/1998	2.64	52.	**9/6/1998**	2.02		**10/27/1998**	2.13	12.
7/18/1998	2.18		**9/7/1998**	2.38		**10/28/1998**	2.42	10.
7/19/1998	2.24		**9/8/1998**	3.31	2850.	**10/29/1998**	2.62	60.
7/20/1998	2.51		**9/9/1998**	2.67	6.	**10/30/1998**	2.14	6.
7/21/1998	2.47		**9/10/1998**	2.46	45.	**10/31/1998**	1.89	
7/22/1998	2.63	42.	**9/11/1998**	2.13	7.	**11/1/1998**	1.92	
7/23/1998	2.58	477.	**9/12/1998**	2.		**11/2/1998**	1.9	24.
7/24/1998	2.48	480.	**9/13/1998**	2.03		**11/3/1998**	2.75	74.
7/25/1998	2.07		**9/14/1998**	2.48	1.	**11/4/1998**	2.41	30.
7/26/1998	2.01		**9/15/1998**	2.47	6.	**11/5/1998**	2.36	91.
7/27/1998	2.95	27.	**9/16/1998**	2.52	9.	**11/6/1998**	2.16	16.
7/28/1998	2.64	1.	**9/17/1998**	2.52	3.	**11/7/1998**	1.91	
7/29/1998	2.51	16.	**9/18/1998**	2.53	5.	**11/8/1998**	2.01	
7/30/1998	2.46		**9/19/1998**	2.22		**11/9/1998**	2.65	12.
7/31/1998	2.7	2.	**9/20/1998**	2.24		**11/10/1998**	2.61	12.
8/1/1998	2.06		**9/21/1998**	2.99		**11/11/1998**	2.85	54.
8/2/1998	1.96		**9/22/1998**	2.94	4.	**11/12/1998**	2.38	52.
8/3/1998	2.49		**9/23/1998**	2.53		**11/13/1998**	2.3	15.
8/4/1998	2.37		**9/24/1998**	2.43	1.	**11/14/1998**	2.54	
8/5/1998	2.34	1065.	**9/25/1998**	2.47	6.	**11/15/1998**	2.13	
8/6/1998	2.47	5.	**9/26/1998**	2.08		**11/16/1998**	3.05	186.
8/7/1998	3.26		**9/27/1998**	2.12		**11/17/1998**	2.46	9.
8/8/1998	3.16		**9/28/1998**	2.48	4.	**11/18/1998**	2.32	176.
8/9/1998	4.36		**9/29/1998**	2.48	46.	**11/19/1998**	2.46	7.
8/10/1998	4.84		**9/30/1998**	2.18	5.	**11/20/1998**	2.32	44.
8/11/1998	3.7	17.	**10/1/1998**	2.5	7.	**11/21/1998**	1.94	
8/12/1998	3.56		**10/2/1998**	2.28	11.	**11/22/1998**	1.93	
8/13/1998	3.44	3.	**10/3/1998**	1.98		**11/23/1998**	2.5	8.
8/14/1998	2.53	1.	**10/4/1998**	2.07		**11/24/1998**	2.38	31.
8/15/1998	2.29		**10/5/1998**	2.48	1.	**11/25/1998**	2.63	6.
8/16/1998	2.62		**10/6/1998**	2.51	3.	**11/26/1998**	1.96	
8/17/1998	2.91	10.	**10/7/1998**	2.69	13.	**11/27/1998**	1.98	
8/18/1998	2.66	8.	**10/8/1998**	3.04	43.	**11/28/1998**	1.86	
8/19/1998	2.53	1.	**10/9/1998**	2.49	7.	**11/29/1998**	1.92	
8/20/1998	2.41	1.	**10/10/1998**	2.28		**11/30/1998**	2.45	88.
8/21/1998	2.39	5.	**10/11/1998**	2.3		**12/1/1998**	2.46	258.
8/22/1998	2.07		**10/12/1998**	2.52	6.	**12/2/1998**	2.51	245.
8/23/1998	2.11		**10/13/1998**	2.51	2.	**12/3/1998**	2.49	99.
8/24/1998	2.45	10.	**10/14/1998**	2.52	3.	**12/4/1998**	2.28	47.
8/25/1998	2.37	3.	**10/15/1998**	2.44	4.	**12/5/1998**	2.06	
8/26/1998	2.51	1.	**10/16/1998**	2.37	41.	**12/6/1998**	2.13	

Table C- 1 (Continued…)

12/7/1998	2.47	115.	**1/27/1999**	3.62	1.	**3/19/1999**	2.88	3.
12/8/1998	3.35	13.	**1/28/1999**	3.37	2.	**3/20/1999**	2.56	
12/9/1998	2.69	8.	**1/29/1999**	3.1	11.	**3/21/1999**	4.01	
12/10/1998	2.36	9.	**1/30/1999**	2.83		**3/22/1999**	3.1	39.
12/11/1998	2.25	700.	**1/31/1999**	2.64		**3/23/1999**	3.1	3.
12/12/1998	2.79		**2/1/1999**	4.46	2.	**3/24/1999**	3.31	11.
12/13/1998	3.69		**2/2/1999**	3.97	13.	**3/25/1999**	3.05	1.
12/14/1998	2.64	5.	**2/3/1999**	3.43	90.	**3/26/1999**	2.81	
12/15/1998	4.18	4.	**2/4/1999**	3.22		**3/27/1999**	2.49	
12/16/1998	3.31	39.	**2/5/1999**	2.99	7.	**3/28/1999**	2.5	
12/17/1998	2.56	2.	**2/6/1999**	2.77		**3/29/1999**	2.87	
12/18/1998	2.4	9.	**2/7/1999**	2.7		**3/30/1999**	2.93	
12/19/1998	2.16		**2/8/1999**	2.94		**3/31/1999**	2.97	2.
12/20/1998	2.15		**2/9/1999**	3.01	3.	**4/1/1999**	5.01	24.
12/21/1998	2.63	1.	**2/10/1999**	2.98	82.	**4/2/1999**	3.25	
12/22/1998	2.49	3.	**2/11/1999**	3.02	8.	**4/3/1999**	3.25	
12/23/1998	3.1	8.	**2/12/1999**	2.74		**4/4/1999**	2.94	
12/24/1998	4.96		**2/13/1999**	2.5		**4/5/1999**	2.66	3.
12/25/1998	2.66		**2/14/1999**	2.26		**4/6/1999**	3.03	
12/26/1998	2.45		**2/15/1999**	2.72	1.	**4/7/1999**	2.99	57.
12/27/1998	2.34		**2/16/1999**	2.65		**4/8/1999**	3.	11.
12/28/1998	2.71	3.	**2/17/1999**	3.2	34.	**4/9/1999**	2.94	4.
12/29/1998	2.73	4.	**2/18/1999**	3.32	62.	**4/10/1999**	2.55	
12/30/1998	2.48	11.	**2/19/1999**	3.71	2100.	**4/11/1999**	2.85	
12/31/1998	2.48	12.	**2/20/1999**	3.25		**4/12/1999**	2.98	1.
1/1/1999	2.27		**2/21/1999**	2.89		**4/13/1999**	2.83	2.
1/2/1999	4.45		**2/22/1999**	3.52	1.	**4/14/1999**	2.69	1.
1/3/1999	5.72		**2/23/1999**	2.97	6.	**4/15/1999**	3.14	12.
1/4/1999	3.45	18.	**2/24/1999**	2.95	4.	**4/16/1999**	2.6	5.
1/5/1999	4.57	2.	**2/25/1999**	2.96	39.	**4/17/1999**	2.24	
1/6/1999	3.05	3.	**2/26/1999**	2.84	6.	**4/18/1999**	2.32	
1/7/1999	2.86	118.	**2/27/1999**	2.63		**4/19/1999**	2.91	1.
1/8/1999	2.86	2.	**2/28/1999**	2.6		**4/20/1999**	5.03	2.
1/9/1999	2.48		**3/1/1999**	2.77		**4/21/1999**	3.82	113.
1/10/1999	2.33		**3/2/1999**	2.88	2.	**4/22/1999**	4.08	135.
1/11/1999	2.77		**3/3/1999**	3.22	2150.	**4/23/1999**	3.88	15.
1/12/1999	2.81		**3/4/1999**	2.84	18.	**4/24/1999**	3.5	
1/13/1999	2.81	10.	**3/5/1999**	2.72	4.	**4/25/1999**	3.42	
1/14/1999	3.21	12.	**3/6/1999**	2.53		**4/26/1999**	4.16	6.
1/15/1999	3.01	13.	**3/7/1999**	2.31		**4/27/1999**	4.9	11.
1/16/1999	2.41		**3/8/1999**	2.95	53.	**4/28/1999**	5.23	107.
1/17/1999	3.43		**3/9/1999**	3.09	3.	**4/29/1999**	7.66	10.
1/18/1999	5.26		**3/10/1999**	2.87	6.	**4/30/1999**	8.46	2650.
1/19/1999	3.59	1.	**3/11/1999**	2.9		**5/1/1999**	5.57	
1/20/1999	3.09	7.	**3/12/1999**	2.74	2.	**5/2/1999**	4.54	
1/21/1999	3.05		**3/13/1999**	2.65		**5/3/1999**	4.93	1.
1/22/1999	2.86	10.	**3/14/1999**	3.78		**5/4/1999**	4.51	4.
1/23/1999	6.15		**3/15/1999**	3.55	127.	**5/5/1999**	4.49	10.
1/24/1999	11.11		**3/16/1999**	3.12		**5/6/1999**	4.36	
1/25/1999	5.54	5.	**3/17/1999**	3.11	17.	**5/7/1999**	3.96	
1/26/1999	4.02	2.	**3/18/1999**	3.12	1.	**5/8/1999**	3.67	

Table C- 1 (Continued…)

5/9/1999	3.52		**6/29/1999**	2.86	62.	**8/19/1999**	3.65	107.
5/10/1999	4.12		**6/30/1999**	4.5		**8/20/1999**	4.7	53.
5/11/1999	3.9		**7/1/1999**	5.57	95.	**8/21/1999**	3.45	
5/12/1999	3.89		**7/2/1999**	3.88	300.	**8/22/1999**	3.34	
5/13/1999	4.22	1.	**7/3/1999**	2.85		**8/23/1999**	4.47	
5/14/1999	10.19	4.	**7/4/1999**	2.62		**8/24/1999**	4.78	9.
5/15/1999	5.39		**7/5/1999**	2.86		**8/25/1999**	5.71	46.
5/16/1999	4.48		**7/6/1999**	3.05	1.	**8/26/1999**	6.3	118.
5/17/1999	4.69		**7/7/1999**	3.34	1.	**8/27/1999**	5.48	88.
5/18/1999	4.85		**7/8/1999**	3.12	94.	**8/28/1999**	3.97	
5/19/1999	4.5	16.	**7/9/1999**	3.96	9.	**8/29/1999**	3.84	
5/20/1999	4.29	8.	**7/10/1999**	3.75		**8/30/1999**	3.89	47.
5/21/1999	4.67		**7/11/1999**	3.68		**8/31/1999**	3.86	5.
5/22/1999	4.47		**7/12/1999**	4.31	12.	**9/1/1999**	3.9	17.
5/23/1999	4.11		**7/13/1999**	3.61	30.	**9/2/1999**	3.84	30.
5/24/1999	4.46	2.	**7/14/1999**	3.44	42.	**9/3/1999**	3.71	2.
5/25/1999	4.41		**7/15/1999**	3.27	102.	**9/4/1999**	3.71	
5/26/1999	4.05	40.	**7/16/1999**	3.36	38.	**9/5/1999**	6.71	
5/27/1999	4.23	1.	**7/17/1999**	2.71		**9/6/1999**	4.36	
5/28/1999	4.23	145.	**7/18/1999**	2.79		**9/7/1999**	4.15	3.
5/29/1999	3.66		**7/19/1999**	3.19	5.	**9/8/1999**	3.66	98.
5/30/1999	3.46		**7/20/1999**	3.34		**9/9/1999**	3.9	3.
5/31/1999	3.93	1.	**7/21/1999**	3.79	14.	**9/10/1999**	3.4	21.
6/1/1999	4.1	40.	**7/22/1999**	3.56	25.	**9/11/1999**	3.21	
6/2/1999	4.18	1.	**7/23/1999**	3.3	2.	**9/12/1999**	3.04	
6/3/1999	4.21	43.	**7/24/1999**	2.89		**9/13/1999**	3.43	
6/4/1999	3.71	39.	**7/25/1999**	2.79		**9/14/1999**	3.43	
6/5/1999	3.83		**7/26/1999**	3.29	5.	**9/15/1999**	6.06	30.
6/6/1999	3.67		**7/27/1999**	3.22	10.	**9/16/1999**	4.32	48.
6/7/1999	3.6	26.	**7/28/1999**	3.17	1480.	**9/17/1999**	3.44	5.
6/8/1999	3.45		**7/29/1999**	3.5	180.	**9/18/1999**	3.18	
6/9/1999	3.11	3.	**7/30/1999**	3.15	52.	**9/19/1999**	3.13	
6/10/1999	2.5	225.	**7/31/1999**	2.71		**9/20/1999**	3.49	116.
6/11/1999	3.09		**8/1/1999**	2.71		**9/21/1999**	3.39	29.
6/12/1999	2.62		**8/2/1999**	3.07	5.	**9/22/1999**	3.21	5.
6/13/1999	2.74		**8/3/1999**	3.03		**9/23/1999**	3.2	185.
6/14/1999	3.08	1.	**8/4/1999**	2.92	16.	**9/24/1999**	3.02	27.
6/15/1999	3.33		**8/5/1999**	2.91	6.	**9/25/1999**	2.84	
6/16/1999	4.43	22.	**8/6/1999**	2.74	38.	**9/26/1999**	2.91	
6/17/1999	3.31	23.	**8/7/1999**	2.56		**9/27/1999**	5.28	3.
6/18/1999	2.95	3.	**8/8/1999**	2.54		**9/28/1999**	4.61	96.
6/19/1999	2.87		**8/9/1999**	3.14	12.	**9/29/1999**	6.98	117.
6/20/1999	3.85		**8/10/1999**	3.05	20.	**9/30/1999**	4.6	1200.
6/21/1999	3.36	2.	**8/11/1999**	3.08	97.	**10/1/1999**	3.6	42.
6/22/1999	3.3		**8/12/1999**	3.06	4.	**10/2/1999**	3.28	
6/23/1999	3.41	18.	**8/13/1999**	3.12	55.	**10/3/1999**	3.25	
6/24/1999	3.67	4.	**8/14/1999**	5.23		**10/4/1999**	3.89	38.
6/25/1999	3.06	1.	**8/15/1999**	3.95		**10/5/1999**	3.58	9.
6/26/1999	2.65		**8/16/1999**	3.81	39.	**10/6/1999**	3.58	13.
6/27/1999	2.89		**8/17/1999**	3.05	12.	**10/7/1999**	3.74	18.
6/28/1999	3.01		**8/18/1999**	3.53	100.	**10/8/1999**	3.68	637.

Table C- 1 (Continued…)

10/9/1999	3.14		**11/29/1999**	3.37	133.	**1/19/2000**	3.82	1.
10/10/1999	4.2		**11/30/1999**	3.23	480.	**1/20/2000**	4.78	174.
10/11/1999	5.1	220.	**12/1/1999**	3.06	1120.	**1/21/2000**	3.76	3.
10/12/1999	3.82	100.	**12/2/1999**	3.33	440.	**1/22/2000**	3.49	
10/13/1999	4.96	114.	**12/3/1999**	3.34	108.	**1/23/2000**	4.05	
10/14/1999	3.74	275.	**12/4/1999**	3.12		**1/24/2000**	4.19	11.
10/15/1999	3.53	16.	**12/5/1999**	3.33		**1/25/2000**	4.	10.
10/16/1999	3.21		**12/6/1999**	3.65	200.	**1/26/2000**	4.1	18.
10/17/1999	3.97		**12/7/1999**	3.28	78.	**1/27/2000**	3.96	32.
10/18/1999	2.97	11.	**12/8/1999**	3.28	34.	**1/28/2000**	3.91	2.
10/19/1999	3.54	13.	**12/9/1999**	3.38	40.	**1/29/2000**	3.96	
10/20/1999	4.63	143.	**12/10/1999**	3.57	230.	**1/30/2000**	6.71	
10/21/1999	3.55	175.	**12/11/1999**	2.96		**1/31/2000**	6.28	64.
10/22/1999	3.42	617.	**12/12/1999**	3.01		**2/1/2000**	5.57	19.
10/23/1999	2.83		**12/13/1999**	4.39	238.	**2/2/2000**	5.05	8.
10/24/1999	2.79		**12/14/1999**	5.17	4800.	**2/3/2000**	5.34	24.
10/25/1999	3.15	14.	**12/15/1999**	3.84	455.	**2/4/2000**	5.13	2500.
10/26/1999	3.08	16.	**12/16/1999**	3.72	115.	**2/5/2000**	4.49	
10/27/1999	3.19	198.	**12/17/1999**	3.49	56.	**2/6/2000**	4.34	
10/28/1999	3.16	104.	**12/18/1999**	3.23		**2/7/2000**	4.78	4.
10/29/1999	2.7	3.	**12/19/1999**	3.19		**2/8/2000**	4.61	11.
10/30/1999	2.76		**12/20/1999**	3.64	52.	**2/9/2000**	4.61	9.
10/31/1999	2.97		**12/21/1999**	4.71	44.	**2/10/2000**	4.4	1.
11/1/1999	3.41	5.	**12/22/1999**	3.86	265.	**2/11/2000**	4.43	14.
11/2/1999	3.79	480.	**12/23/1999**	3.57	600.	**2/12/2000**	7.44	
11/3/1999	2.99	500.	**12/24/1999**	3.23		**2/13/2000**	6.12	
11/4/1999	3.03	175.	**12/25/1999**	2.99		**2/14/2000**	7.21	17.
11/5/1999	3.02	105.	**12/26/1999**	3.19		**2/15/2000**	5.55	15.
11/6/1999	2.74		**12/27/1999**	3.52	210.	**2/16/2000**	5.03	5.
11/7/1999	2.68		**12/28/1999**	3.4	1170.	**2/17/2000**	4.81	3.
11/8/1999	3.11	14.	**12/29/1999**	3.39	620.	**2/18/2000**	5.44	
11/9/1999	3.07	57.	**12/30/1999**	3.41	367.	**2/19/2000**	4.54	
11/10/1999	3.06	44.	**12/31/1999**	3.2		**2/20/2000**	4.17	
11/11/1999	3.08	62.	**1/1/2000**	2.91		**2/21/2000**	5.43	1.
11/12/1999	2.78	105.	**1/2/2000**	3.13		**2/22/2000**	4.46	
11/13/1999	2.53		**1/3/2000**	3.63	5.	**2/23/2000**	4.39	
11/14/1999	2.67		**1/4/2000**	3.63	3.	**2/24/2000**	4.38	1.
11/15/1999	2.91	4.	**1/5/2000**	3.47		**2/25/2000**	4.25	168.
11/16/1999	2.86	45.	**1/6/2000**	3.44	2.	**2/26/2000**	4.	
11/17/1999	3.04	198.	**1/7/2000**	3.2	12.	**2/27/2000**	3.92	
11/18/1999	3.24	258.	**1/8/2000**	3.02		**2/28/2000**	4.09	59.
11/19/1999	3.21	20.	**1/9/2000**	3.92		**2/29/2000**	3.95	460.
11/20/1999	2.98		**1/10/2000**	6.36	8.	**3/1/2000**	4.02	126.
11/21/1999	3.22		**1/11/2000**	4.31	21.	**3/2/2000**	3.99	37.
11/22/1999	3.57	23.	**1/12/2000**	3.95	1.	**3/3/2000**	3.85	7.
11/23/1999	3.49	19.	**1/13/2000**	3.8		**3/4/2000**	3.49	
11/24/1999	3.44	13.	**1/14/2000**	3.45	4.	**3/5/2000**	3.49	
11/25/1999	3.05		**1/15/2000**	3.23		**3/6/2000**	3.84	308.
11/26/1999	4.99		**1/16/2000**	3.23		**3/7/2000**	3.84	4300.
11/27/1999	3.24		**1/17/2000**	3.54		**3/8/2000**	3.83	5300.
11/28/1999	3.12		**1/18/2000**	3.87	1.	**3/9/2000**	3.85	5467.

Table C- 1 (Continued…)

3/10/2000	3.73	3962.	**4/30/2000**	4.08		**6/20/2000**	3.81	16.
3/11/2000	3.73		**5/1/2000**	4.4	5.	**6/21/2000**	3.76	5.
3/12/2000	3.26		**5/2/2000**	4.17	7.	**6/22/2000**	3.78	100.
3/13/2000	3.64	74.	**5/3/2000**	4.12	4.	**6/23/2000**	3.52	3.
3/14/2000	3.64	232.	**5/4/2000**	4.05	820.	**6/24/2000**	3.48	
3/15/2000	3.64	60.	**5/5/2000**	3.95	83.	**6/25/2000**	3.48	
3/16/2000	6.93	118.	**5/6/2000**	3.6		**6/26/2000**	3.6	1.
3/17/2000	4.97	33.	**5/7/2000**	3.62		**6/27/2000**	3.58	32.
3/18/2000	3.69		**5/8/2000**	4.	24.	**6/28/2000**	4.29	62.
3/19/2000	3.49		**5/9/2000**	3.93	14.	**6/29/2000**	4.12	135.
3/20/2000	6.58	2.	**5/10/2000**	3.96	142.	**6/30/2000**	3.42	50.
3/21/2000	6.92	32.	**5/11/2000**	3.96	700.	**7/1/2000**	3.07	
3/22/2000	5.61	2.	**5/12/2000**	3.87	370.	**7/2/2000**	3.05	
3/23/2000	4.81	4.	**5/13/2000**	3.36		**7/3/2000**	3.31	
3/24/2000	4.37	1.	**5/14/2000**	3.27		**7/4/2000**	3.44	43.
3/25/2000	4.07		**5/15/2000**	3.79		**7/5/2000**	3.65	130.
3/26/2000	3.69		**5/16/2000**	3.82	115.	**7/6/2000**	3.53	5.
3/27/2000	3.69	1.	**5/17/2000**	3.86	1.	**7/7/2000**	4.03	6.
3/28/2000	4.62		**5/18/2000**	3.92	9.	**7/8/2000**	3.13	28.
3/29/2000	4.25	4.	**5/19/2000**	3.65	46.	**7/9/2000**	3.15	280.
3/30/2000	4.12	1.	**5/20/2000**	3.84		**7/10/2000**	3.61	110.
3/31/2000	4.12	5.	**5/21/2000**	3.92		**7/11/2000**	3.62	172.
4/1/2000	3.89		**5/22/2000**	3.77	640.	**7/12/2000**	3.77	
4/2/2000	3.71		**5/23/2000**	3.68	224.	**7/13/2000**	4.09	
4/3/2000	6.32	21.	**5/24/2000**	3.71	86.	**7/14/2000**	3.43	
4/4/2000	4.84	4.	**5/25/2000**	3.93	300.	**7/15/2000**	3.1	
4/5/2000	4.49		**5/26/2000**	3.41	79.	**7/16/2000**	3.12	
4/6/2000	4.47	2.	**5/27/2000**	3.41		**7/17/2000**	3.51	8.
4/7/2000	4.32	4.	**5/28/2000**	3.46		**7/18/2000**	3.59	21.
4/8/2000	5.47		**5/29/2000**	3.54		**7/19/2000**	3.62	58.
4/9/2000	4.3		**5/30/2000**	3.57	7.	**7/20/2000**	3.54	145.
4/10/2000	4.46	57.	**5/31/2000**	3.67	2.	**7/21/2000**	3.35	205.
4/11/2000	4.37	4.	**6/1/2000**	3.74	36.	**7/22/2000**	3.55	
4/12/2000	4.32	17.	**6/2/2000**	3.56	59.	**7/23/2000**	6.86	
4/13/2000	4.78	19.	**6/3/2000**	4.57		**7/24/2000**	4.3	2081.
4/14/2000	4.53		**6/4/2000**	3.58		**7/25/2000**	4.11	245.
4/15/2000	4.79		**6/5/2000**	4.29	100.	**7/26/2000**	3.85	70.
4/16/2000	4.32		**6/6/2000**	3.83	24.	**7/27/2000**	3.75	550.
4/17/2000	4.74	3.	**6/7/2000**	3.65	46.	**7/28/2000**	3.54	290.
4/18/2000	4.49	2.	**6/8/2000**	3.62	23.	**7/29/2000**	3.24	
4/19/2000	4.25		**6/9/2000**	3.58	2.	**7/30/2000**	3.28	
4/20/2000	4.19	21.	**6/10/2000**	3.26		**7/31/2000**	4.6	440.
4/21/2000	3.78		**6/11/2000**	3.35		**8/1/2000**	4.38	9400.
4/22/2000	3.42	80.	**6/12/2000**	3.62	250.	**8/2/2000**	3.96	119.
4/23/2000	3.51	21.	**6/13/2000**	3.69	450.	**8/3/2000**	3.84	480.
4/24/2000	4.28	35.	**6/14/2000**	3.65	98.	**8/4/2000**	4.56	2400.
4/25/2000	4.2	13.	**6/15/2000**	3.82	1070.	**8/5/2000**	3.47	
4/26/2000	4.23		**6/16/2000**	3.69	122.	**8/6/2000**	3.42	
4/27/2000	4.15		**6/17/2000**	3.32		**8/7/2000**	3.81	251.
4/28/2000	6.64		**6/18/2000**	3.34		**8/8/2000**	3.79	1410.
4/29/2000	4.53		**6/19/2000**	3.86		**8/9/2000**	4.61	5200.

Table C- 1 (Continued…)

8/10/2000	4.52	26000.	**9/30/2000**	3.16		**11/20/2000**	3.55	
8/11/2000	3.59	100.	**10/1/2000**	3.14		**11/21/2000**	3.33	19.
8/12/2000	3.33		**10/2/2000**	3.55	3.	**11/22/2000**	3.3	2.
8/13/2000	3.32		**10/3/2000**	3.68	8.	**11/23/2000**	2.78	
8/14/2000	3.72	1404.	**10/4/2000**	3.64	9.	**11/24/2000**	2.86	
8/15/2000	3.7	2884.	**10/5/2000**	3.57	32.	**11/25/2000**	3.89	
8/16/2000	3.82	535.	**10/6/2000**	3.35	8.	**11/26/2000**	3.13	
8/17/2000	3.82	79.	**10/7/2000**	3.		**11/27/2000**	3.51	1.
8/18/2000	4.93	12.	**10/8/2000**	2.85		**11/28/2000**	3.43	
8/19/2000	3.24		**10/9/2000**	3.31		**11/29/2000**	3.36	1.
8/20/2000	3.28		**10/10/2000**	3.37	1.	**11/30/2000**	3.25	2.
8/21/2000	3.81	5.	**10/11/2000**	3.4	25.	**12/1/2000**	3.12	1.
8/22/2000	3.77	12.	**10/12/2000**	3.13	3.	**12/2/2000**	2.93	
8/23/2000	3.66	190.	**10/13/2000**	3.13		**12/3/2000**	2.92	
8/24/2000	3.59	152.	**10/14/2000**	2.97		**12/4/2000**	3.32	
8/25/2000	3.44	9.	**10/15/2000**	3.03		**12/5/2000**	3.35	
8/26/2000	3.22		**10/16/2000**	3.53		**12/6/2000**	3.28	
8/27/2000	3.32		**10/17/2000**	3.67		**12/7/2000**	3.34	
8/28/2000	3.7	1.	**10/18/2000**	3.64	31.	**12/8/2000**	3.19	5.
8/29/2000	3.6	11.	**10/19/2000**	3.54		**12/9/2000**	3.	
8/30/2000	3.96	12.	**10/20/2000**	3.5		**12/10/2000**	2.94	
8/31/2000	4.02	17.	**10/21/2000**	3.26		**12/11/2000**	3.34	
9/1/2000	3.45	4500.	**10/22/2000**	3.31		**12/12/2000**	3.3	1.
9/2/2000	4.24		**10/23/2000**	3.68	1.	**12/13/2000**	3.37	24.
9/3/2000	4.71		**10/24/2000**	3.73	9.	**12/14/2000**	3.43	20.
9/4/2000	3.95		**10/25/2000**	3.7	6.	**12/15/2000**	3.38	3.
9/5/2000	3.73	32.	**10/26/2000**	3.47	3.	**12/16/2000**	4.19	
9/6/2000	3.65	1.	**10/27/2000**	3.41		**12/17/2000**	3.44	
9/7/2000	3.57	7.	**10/28/2000**	3.06		**12/18/2000**	3.41	7.
9/8/2000	3.57	4.	**10/29/2000**	2.96		**12/19/2000**	3.69	5.
9/9/2000	3.23		**10/30/2000**	3.48		**12/20/2000**	3.49	4.
9/10/2000	3.28		**10/31/2000**	3.36	6.	**12/21/2000**	3.53	1.
9/11/2000	3.69		**11/1/2000**	3.38	1.	**12/22/2000**	3.29	
9/12/2000	3.6	3.	**11/2/2000**	3.33		**12/23/2000**	3.09	
9/13/2000	3.73	1.	**11/3/2000**	3.23		**12/24/2000**	2.99	
9/14/2000	3.69	1.	**11/4/2000**	3.03		**12/25/2000**	2.88	
9/15/2000	3.48	8.	**11/5/2000**	2.95		**12/26/2000**	3.26	
9/16/2000	3.12		**11/6/2000**	3.6		**12/27/2000**	3.37	4.
9/17/2000	3.21		**11/7/2000**	3.66		**12/28/2000**	3.31	
9/18/2000	4.92	2.	**11/8/2000**	3.71		**12/29/2000**	3.31	
9/19/2000	4.29	200.	**11/9/2000**	3.91	31.	**12/30/2000**	3.04	
9/20/2000	3.75	9.	**11/10/2000**	3.24		**12/31/2000**	2.87	
9/21/2000	3.94	8.	**11/11/2000**	2.96		**1/1/2001**	2.93	
9/22/2000	4.09	3.	**11/12/2000**	2.95		**1/2/2001**	3.3	4.
9/23/2000	4.16		**11/13/2000**	3.56		**1/3/2001**	3.2	1.
9/24/2000	3.43		**11/14/2000**	4.02	33.	**1/4/2001**	3.26	1.
9/25/2000	4.91		**11/15/2000**	3.33	9.	**1/5/2001**	3.23	3.
9/26/2000	4.03	17.	**11/16/2000**	3.35	2.	**1/6/2001**	3.05	
9/27/2000	3.68	59.	**11/17/2000**	3.39		**1/7/2001**	3.1	
9/28/2000	3.65		**11/18/2000**	2.82		**1/8/2001**	3.86	5.
9/29/2000	3.43	7.	**11/19/2000**	3.22		**1/9/2001**	3.35	4.

Table C- 1 (Continued…)

1/10/2001	3.38	8.	**3/2/2001**	3.71	29.	**4/22/2001**	3.64	
1/11/2001	3.38	36.	**3/3/2001**	4.6		**4/23/2001**	4.12	1.
1/12/2001	3.38	11.	**3/4/2001**	5.04		**4/24/2001**	4.62	
1/13/2001	3.07		**3/5/2001**	4.7	360.	**4/25/2001**	5.05	6.
1/14/2001	2.94		**3/6/2001**	4.12	31.	**4/26/2001**	3.81	3.
1/15/2001	3.45		**3/7/2001**	3.89	840.	**4/27/2001**	3.66	
1/16/2001	3.37	1.	**3/8/2001**	3.72	94.	**4/28/2001**	3.37	
1/17/2001	3.47	9.	**3/9/2001**	3.56	72.	**4/29/2001**	3.32	
1/18/2001	4.31	3.	**3/10/2001**	3.31		**4/30/2001**	3.73	
1/19/2001	5.31	15.	**3/11/2001**	3.21		**5/1/2001**	3.7	3.
1/20/2001	4.84		**3/12/2001**	4.05	740.	**5/2/2001**	3.7	3.
1/21/2001	3.49		**3/13/2001**	3.87	358.	**5/3/2001**	3.76	4.
1/22/2001	3.59		**3/14/2001**	3.82	1.	**5/4/2001**	3.44	5.
1/23/2001	3.62	2.	**3/15/2001**	5.81	19.	**5/5/2001**	3.31	
1/24/2001	3.54	5.	**3/16/2001**	4.36	4.	**5/6/2001**	3.24	
1/25/2001	3.45		**3/17/2001**	3.62		**5/7/2001**	3.55	3.
1/26/2001	3.45	3.	**3/18/2001**	3.71		**5/8/2001**	3.64	12.
1/27/2001	3.23		**3/19/2001**	4.06	2.	**5/9/2001**	3.6	70.
1/28/2001	3.17		**3/20/2001**	5.84	59.	**5/10/2001**	3.67	5.
1/29/2001	3.59		**3/21/2001**	7.01	16.	**5/11/2001**	3.43	10.
1/30/2001	3.88		**3/22/2001**	5.11	8.	**5/12/2001**	3.13	
1/31/2001	3.54	72.	**3/23/2001**	4.32	17.	**5/13/2001**	2.95	
2/1/2001	3.4		**3/24/2001**	3.93		**5/14/2001**	3.44	1.
2/2/2001	3.27		**3/25/2001**	3.64		**5/15/2001**	3.5	
2/3/2001	3.14		**3/26/2001**	4.27		**5/16/2001**	4.5	2.
2/4/2001	3.16		**3/27/2001**	3.87	3.	**5/17/2001**	3.88	
2/5/2001	3.45		**3/28/2001**	4.24		**5/18/2001**	3.54	2.
2/6/2001	3.41		**3/29/2001**	7.77	45.	**5/19/2001**	3.14	
2/7/2001	3.44	345.	**3/30/2001**	7.47	205.	**5/20/2001**	3.23	
2/8/2001	3.36	80.	**3/31/2001**	7.47		**5/21/2001**	3.92	1.
2/9/2001	3.45	100.	**4/1/2001**	7.15		**5/22/2001**	3.74	46.
2/10/2001	3.27		**4/2/2001**	5.7	10.	**5/23/2001**	3.43	1.
2/11/2001	3.17		**4/3/2001**	5.69	5.	**5/24/2001**	3.51	1.
2/12/2001	4.21	240.	**4/4/2001**	4.92	16.	**5/25/2001**	4.87	
2/13/2001	3.1	820.	**4/5/2001**	4.77	2.	**5/26/2001**	4.44	
2/14/2001	3.98	7.	**4/6/2001**	4.53	13.	**5/27/2001**	3.04	
2/15/2001	4.23	18.	**4/7/2001**	4.08		**5/28/2001**	3.64	
2/16/2001	5.42	24.	**4/8/2001**	4.04		**5/29/2001**	3.58	2.
2/17/2001	5.82		**4/9/2001**	4.36		**5/30/2001**	3.42	94.
2/18/2001	4.07		**4/10/2001**	4.3	70.	**5/31/2001**	3.42	4.
2/19/2001	4.22	13.	**4/11/2001**	4.25		**6/1/2001**	4.3	
2/20/2001	4.07	32.	**4/12/2001**	4.09	1.	**6/2/2001**	3.23	
2/21/2001	3.89	50.	**4/13/2001**	4.01		**6/3/2001**	3.08	
2/22/2001	4.09	615.	**4/14/2001**	3.63		**6/4/2001**	3.55	1.
2/23/2001	4.01	185.	**4/15/2001**	3.53		**6/5/2001**	3.54	8.
2/24/2001	3.7		**4/16/2001**	4.03	2.	**6/6/2001**	3.59	7.
2/25/2001	4.8		**4/17/2001**	3.9	3.	**6/7/2001**	3.52	56.
2/26/2001	4.25	77.	**4/18/2001**	3.97	2.	**6/8/2001**	3.6	40.
2/27/2001	4.01	117.	**4/19/2001**	4.11	2.	**6/9/2001**	3.05	
2/28/2001	3.86	88.	**4/20/2001**	3.98	3.	**6/10/2001**	3.01	
3/1/2001	3.77	60.	**4/21/2001**	3.69		**6/11/2001**	3.5	3.

Table C- 1 (Continued…)

6/12/2001	3.5	250.	**8/2/2001**	3.33	2.	**9/22/2001**	2.88	
6/13/2001	4.28	8.	**8/3/2001**	3.32		**9/23/2001**	2.86	
6/14/2001	3.57	4.	**8/4/2001**	3.02		**9/24/2001**	4.54	
6/15/2001	3.55	1.	**8/5/2001**	3.		**9/25/2001**	3.54	3.
6/16/2001	3.09		**8/6/2001**	3.43	2.	**9/26/2001**	2.74	3.
6/17/2001	2.89		**8/7/2001**	3.39	32.	**9/27/2001**	3.22	
6/18/2001	3.39		**8/8/2001**	3.74	78.	**9/28/2001**	2.93	2.
6/19/2001	2.7		**8/9/2001**	3.39	8300.	**9/29/2001**	2.77	
6/20/2001	3.18	1.	**8/10/2001**	3.58	14.	**9/30/2001**	2.77	
6/21/2001	3.21		**8/11/2001**	3.68		**10/1/2001**	3.26	
6/22/2001	3.87	16.	**8/12/2001**	3.23		**10/2/2001**	3.17	
6/23/2001	2.89		**8/13/2001**	4.18	3.	**10/3/2001**	3.26	
6/24/2001	2.9		**8/14/2001**	3.52	245.	**10/4/2001**	3.19	119.
6/25/2001	4.22		**8/15/2001**	3.4	148.	**10/5/2001**	3.18	1.
6/26/2001	3.76		**8/16/2001**	3.4		**10/6/2001**	2.84	
6/27/2001	3.5	1.	**8/17/2001**	3.5	1.	**10/7/2001**	2.72	
6/28/2001	3.41	1.	**8/18/2001**	3.42		**10/8/2001**	3.08	
6/29/2001	3.26		**8/19/2001**	3.18		**10/9/2001**	3.04	
6/30/2001	2.96		**8/20/2001**	3.43	23.	**10/10/2001**	3.21	
7/1/2001	3.91		**8/21/2001**	3.5	225.	**10/11/2001**	3.13	62.
7/2/2001	3.33	4.	**8/22/2001**	3.33	1.	**10/12/2001**	3.04	6.
7/3/2001	3.3	2.	**8/23/2001**	3.62	2.	**10/13/2001**	2.97	
7/4/2001	3.95		**8/24/2001**	3.43	62.	**10/14/2001**	3.67	
7/5/2001	3.31	3.	**8/25/2001**	2.98		**10/15/2001**	3.45	112.
7/6/2001	3.09		**8/26/2001**	2.99		**10/16/2001**	3.3	
7/7/2001	2.9		**8/27/2001**	3.35		**10/17/2001**	3.28	7.
7/8/2001	3.41		**8/28/2001**	3.42	2.	**10/18/2001**	3.39	2.
7/9/2001	3.4	40.	**8/29/2001**	3.32	23.	**10/19/2001**	3.3	11.
7/10/2001	3.24	1.	**8/30/2001**	3.44	1.	**10/20/2001**	2.97	
7/11/2001	3.39	5.	**8/31/2001**	3.32	40.	**10/21/2001**	3.01	
7/12/2001	3.2	24.	**9/1/2001**	3.		**10/22/2001**	3.41	36.
7/13/2001	3.11	60.	**9/2/2001**	2.87		**10/23/2001**	3.4	2.
7/14/2001	2.76		**9/3/2001**	3.15		**10/24/2001**	3.49	12.
7/15/2001	2.78		**9/4/2001**	3.73		**10/25/2001**	3.24	24.
7/16/2001	3.14	21.	**9/5/2001**	3.38	165.	**10/26/2001**	3.06	
7/17/2001	3.26	58.	**9/6/2001**	3.34	2.	**10/27/2001**	2.67	
7/18/2001	3.45	4.	**9/7/2001**	3.24	8.	**10/28/2001**	2.71	
7/19/2001	3.36	12.	**9/8/2001**	3.02		**10/29/2001**	3.24	1.
7/20/2001	3.16	3.	**9/9/2001**	3.17		**10/30/2001**	3.14	1.
7/21/2001	2.9		**9/10/2001**	3.56		**10/31/2001**	3.09	
7/22/2001	2.87		**9/11/2001**	3.33	1.	**11/1/2001**	3.23	1.
7/23/2001	3.36	7.	**9/12/2001**	3.29	3.	**11/2/2001**	3.16	3.
7/24/2001	3.35	35.	**9/13/2001**	3.22	49.	**11/3/2001**	2.81	
7/25/2001	4.23	35.	**9/14/2001**	3.12		**11/4/2001**	2.7	
7/26/2001	3.87	268.	**9/15/2001**	2.76		**11/5/2001**	3.13	
7/27/2001	3.78	15.	**9/16/2001**	2.83		**11/6/2001**	3.09	1.
7/28/2001	2.94		**9/17/2001**	3.3	2.	**11/7/2001**	3.11	
7/29/2001	3.12		**9/18/2001**	3.2	2.	**11/8/2001**	3.15	
7/30/2001	3.67	52.	**9/19/2001**	3.29		**11/9/2001**	3.01	
7/31/2001	3.45	460.	**9/20/2001**	3.85	8.	**11/10/2001**	2.79	
8/1/2001	3.53	7.	**9/21/2001**	3.21		**11/11/2001**	2.8	

Table C- 1 (Continued…)

11/12/2001	3.07	21.	**1/2/2002**	3.11		**2/22/2002**	3.66	210.
11/13/2001	3.14		**1/3/2002**	3.11		**2/23/2002**	3.38	
11/14/2001	3.16		**1/4/2002**	3.36	5.	**2/24/2002**	3.32	
11/15/2001	3.17		**1/5/2002**	3.24		**2/25/2002**	3.74	14.
11/16/2001	3.2	5.	**1/6/2002**	4.46		**2/26/2002**	3.68	1500.
11/17/2001	2.91		**1/7/2002**	3.68		**2/27/2002**	3.6	16.
11/18/2001	2.91		**1/8/2002**	3.38	1.	**2/28/2002**	3.66	4.
11/19/2001	3.28	2.	**1/9/2002**	3.37	11.	**3/1/2002**	3.66	5.
11/20/2001	3.16	6.	**1/10/2002**	3.31	84.	**3/2/2002**	5.26	
11/21/2001	3.14		**1/11/2002**	3.21	190.	**3/3/2002**	4.99	
11/22/2001	2.73		**1/12/2002**	3.04		**3/4/2002**	4.28	1.
11/23/2001	3.1		**1/13/2002**	2.95		**3/5/2002**	4.04	10.
11/24/2001	3.38		**1/14/2002**	3.3		**3/6/2002**	4.08	
11/25/2001	3.19		**1/15/2002**	3.31		**3/7/2002**	3.97	
11/26/2001	3.36		**1/16/2002**	3.27		**3/8/2002**	3.9	1.
11/27/2001	3.35	22.	**1/17/2002**	3.41		**3/9/2002**	3.77	
11/28/2001	3.35	2.	**1/18/2002**	3.25		**3/10/2002**	3.55	
11/29/2001	3.4		**1/19/2002**	6.6		**3/11/2002**	3.97	3.
11/30/2001	3.35	13.	**1/20/2002**	3.66		**3/12/2002**	4.83	
12/1/2001	2.91		**1/21/2002**	3.97		**3/13/2002**	6.36	18.
12/2/2001	2.87		**1/22/2002**	3.69	3.	**3/14/2002**	5.04	190.
12/3/2001	3.16	2.	**1/23/2002**	8.27	7.	**3/15/2002**	4.42	81.
12/4/2001	3.11	5.	**1/24/2002**	6.39	320.	**3/16/2002**	4.11	
12/5/2001	3.18		**1/25/2002**	5.38	143.	**3/17/2002**	4.71	
12/6/2001	3.05	2.	**1/26/2002**	4.15		**3/18/2002**	4.63	16.
12/7/2001	2.99		**1/27/2002**	3.88		**3/19/2002**	4.42	19.
12/8/2001	2.85		**1/28/2002**	4.02	150.	**3/20/2002**	4.7	8.
12/9/2001	2.68		**1/29/2002**	4.14	2.	**3/21/2002**	5.34	23.
12/10/2001	4.82	40.	**1/30/2002**	3.96	1.	**3/22/2002**	4.36	3600.
12/11/2001	3.3	1219.	**1/31/2002**	3.96	1.	**3/23/2002**	4.02	
12/12/2001	3.06	1.	**2/1/2002**	3.83		**3/24/2002**	3.82	
12/13/2001	3.06	44.	**2/2/2002**	3.41		**3/25/2002**	4.15	138.
12/14/2001	2.98	20.	**2/3/2002**	3.41		**3/26/2002**	4.93	97.
12/15/2001	2.7		**2/4/2002**	3.64		**3/27/2002**	4.55	198.
12/16/2001	2.65		**2/5/2002**	3.61	3.	**3/28/2002**	4.04	36.
12/17/2001	3.85	1.	**2/6/2002**	4.9	14.	**3/29/2002**	3.84	
12/18/2001	3.3	3.	**2/7/2002**	5.32	420.	**3/30/2002**	3.77	
12/19/2001	3.12	3.	**2/8/2002**	4.45	76.	**3/31/2002**	4.12	
12/20/2001	3.08	5.	**2/9/2002**	4.08		**4/1/2002**	4.12	32.
12/21/2001	3.03	1.	**2/10/2002**	4.19		**4/2/2002**	4.04	7.
12/22/2001	2.85		**2/11/2002**	4.07	8.	**4/3/2002**	3.83	2.
12/23/2001	3.12		**2/12/2002**	4.03	1.	**4/4/2002**	3.7	1.
12/24/2001	2.89		**2/13/2002**	3.97		**4/5/2002**	3.65	
12/25/2001	2.45		**2/14/2002**	3.79	21.	**4/6/2002**	3.43	
12/26/2001	2.8	1.	**2/15/2002**	3.65	4.	**4/7/2002**	3.52	
12/27/2001	2.93	7.	**2/16/2002**	3.49		**4/8/2002**	3.93	
12/28/2001	2.9		**2/17/2002**	3.54		**4/9/2002**	4.17	2.
12/29/2001	2.72		**2/18/2002**	3.83	1.	**4/10/2002**	4.	17.
12/30/2001	2.52		**2/19/2002**	3.92	8.	**4/11/2002**	3.93	18.
12/31/2001	2.91	4.	**2/20/2002**	3.88	530.	**4/12/2002**	3.91	8.
1/1/2002	2.73		**2/21/2002**	3.82	145.	**4/13/2002**	3.67	

Table C- 1 (Continued…)

4/14/2002	3.87		**6/4/2002**	3.23	302.	**7/25/2002**	7.22
4/15/2002	4.1	370.	**6/5/2002**	3.23	121.	**7/26/2002**	4.74
4/16/2002	5.24	19.	**6/6/2002**	3.49	10.	**7/27/2002**	3.29
4/17/2002	3.39	510.	**6/7/2002**	3.18	110.	**7/28/2002**	3.15
4/18/2002	3.33	27.	**6/8/2002**	2.7		**7/29/2002**	3.36
4/19/2002	3.29	42.	**6/9/2002**	2.7		**7/30/2002**	3.32
4/20/2002	3.06		**6/10/2002**	3.06	8.	**7/31/2002**	3.28
4/21/2002	3.06		**6/11/2002**	3.08	116.	**8/1/2002**	3.2
4/22/2002	3.42	1.	**6/12/2002**	3.11	12.	**8/2/2002**	3.17
4/23/2002	3.27	12.	**6/13/2002**	3.39	31.	**8/3/2002**	2.84
4/24/2002	3.24	5.	**6/14/2002**	3.14	110.	**8/4/2002**	2.74
4/25/2002	3.15	3.	**6/15/2002**	2.68		**8/5/2002**	3.13
4/26/2002	2.97	1.	**6/16/2002**	2.59		**8/6/2002**	3.
4/27/2002	2.9		**6/17/2002**	2.4	2.	**8/7/2002**	3.03
4/28/2002	2.96		**6/18/2002**	3.04	17.	**8/8/2002**	2.91
4/29/2002	3.17		**6/19/2002**	3.05	5.	**8/9/2002**	2.93
4/30/2002	3.27	39.	**6/20/2002**	2.94	148.	**8/10/2002**	2.6
5/1/2002	3.36	1.	**6/21/2002**	2.81	52.	**8/11/2002**	2.68
5/2/2002	3.5		**6/22/2002**	2.59		**8/12/2002**	3.03
5/3/2002	3.25		**6/23/2002**	2.62		**8/13/2002**	3.02
5/4/2002	3.59		**6/24/2002**	2.93	37.	**8/14/2002**	3.71
5/5/2002	2.97		**6/25/2002**	2.97	262.	**8/15/2002**	3.92
5/6/2002	3.44	1.	**6/26/2002**	6.18	38.	**8/16/2002**	3.17
5/7/2002	3.44	94.	**6/27/2002**	5.2	102.	**8/17/2002**	2.93
5/8/2002	3.53	2.	**6/28/2002**	3.59	8500.	**8/18/2002**	2.97
5/9/2002	3.51		**6/29/2002**	3.13		**8/19/2002**	3.17
5/10/2002	3.28	1.	**6/30/2002**	2.93		**8/20/2002**	3.17
5/11/2002	3.09		**7/1/2002**	3.61	39.	**8/21/2002**	3.27
5/12/2002	3.12		**7/2/2002**	3.41	82.	**8/22/2002**	3.07
5/13/2002	4.23		**7/3/2002**	3.36	56.	**8/23/2002**	3.02
5/14/2002	3.39	11.	**7/4/2002**	2.91		**8/24/2002**	2.71
5/15/2002	3.28	2.	**7/5/2002**	2.91	9.	**8/25/2002**	2.82
5/16/2002	3.3	5.	**7/6/2002**	2.69		**8/26/2002**	4.04
5/17/2002	3.32	49.	**7/7/2002**	2.7		**8/27/2002**	3.75
5/18/2002	3.33		**7/8/2002**	3.11	12.	**8/28/2002**	3.76
5/19/2002	2.71		**7/9/2002**	3.35	280.	**8/29/2002**	3.51
5/20/2002	3.28		**7/10/2002**	4.82	54.	**8/30/2002**	4.39
5/21/2002	3.13		**7/11/2002**	4.67	185.	**8/31/2002**	6.57
5/22/2002	3.16	76.	**7/12/2002**	3.38	5.	**9/1/2002**	5.6
5/23/2002	3.17	162.	**7/13/2002**	3.07		**9/2/2002**	3.82
5/24/2002	3.1	3.	**7/14/2002**	3.46		**9/3/2002**	3.94
5/25/2002	2.76		**7/15/2002**	3.34	8.	**9/4/2002**	3.63
5/26/2002	2.79		**7/16/2002**	3.31	8.	**9/5/2002**	3.39
5/27/2002	3.08		**7/17/2002**	2.6	2.	**9/6/2002**	3.29
5/28/2002	3.25	1.	**7/18/2002**	3.19	6.	**9/7/2002**	3.06
5/29/2002	3.19		**7/19/2002**	2.94	3.	**9/8/2002**	3.01
5/30/2002	4.01	1.	**7/20/2002**	2.75		**9/9/2002**	3.45
5/31/2002	3.23	3.	**7/21/2002**	2.7		**9/10/2002**	3.39
6/1/2002	4.04		**7/22/2002**	3.35	8.	**9/11/2002**	3.3
6/2/2002	3.43		**7/23/2002**	4.03	243.	**9/12/2002**	3.22
6/3/2002	3.35	280.	**7/24/2002**	6.06	440.	**9/13/2002**	3.14

Table C- 1 (Continued…)

9/14/2002	4.47	**10/21/2002**	4.67	**11/27/2002**	3.82
9/15/2002	4.95	**10/22/2002**	4.6	**11/28/2002**	3.38
9/16/2002	4.05	**10/23/2002**	4.22	**11/29/2002**	3.51
9/17/2002	3.57	**10/24/2002**	3.87	**11/30/2002**	3.5
9/18/2002	7.36	**10/25/2002**	3.88	**12/1/2002**	3.36
9/19/2002	5.79	**10/26/2002**	3.55	**12/2/2002**	3.85
9/20/2002	4.48	**10/27/2002**	3.5	**12/3/2002**	3.81
9/21/2002	3.91	**10/28/2002**	6.16	**12/4/2002**	3.81
9/22/2002	3.82	**10/29/2002**	7.34	**12/5/2002**	3.81
9/23/2002	3.88	**10/30/2002**	5.79	**12/6/2002**	7.27
9/24/2002	3.82	**10/31/2002**	4.55	**12/7/2002**	5.97
9/25/2002	3.88	**11/1/2002**	4.06	**12/8/2002**	5.7
9/26/2002	4.82	**11/2/2002**	3.71	**12/9/2002**	5.57
9/27/2002	4.22	**11/3/2002**	3.52	**12/10/2002**	5.85
9/28/2002	3.52	**11/4/2002**	3.93	**12/11/2002**	7.67
9/29/2002	3.36	**11/5/2002**	6.19	**12/12/2002**	6.6
9/30/2002	3.63	**11/6/2002**	5.66	**12/13/2002**	8.13
10/1/2002	3.65	**11/7/2002**	4.41	**12/14/2002**	6.11
10/2/2002	3.67	**11/8/2002**	4.08	**12/15/2002**	5.32
10/3/2002	3.64	**11/9/2002**	3.8	**12/16/2002**	5.21
10/4/2002	3.46	**11/10/2002**	3.82	**12/17/2002**	4.95
10/5/2002	3.14	**11/11/2002**	5.02	**12/18/2002**	4.85
10/6/2002	3.07	**11/12/2002**	8.32	**12/19/2002**	5.19
10/7/2002	3.47	**11/13/2002**	6.17	**12/20/2002**	6.03
10/8/2002	3.44	**11/14/2002**	5.1	**12/21/2002**	4.6
10/9/2002	3.39	**11/15/2002**	4.64	**12/22/2002**	4.38
10/10/2002	4.27	**11/16/2002**	7.68	**12/23/2002**	4.48
10/11/2002	7.98	**11/17/2002**	7.3	**12/24/2002**	7.25
10/12/2002	5.28	**11/18/2002**	6.61	**12/25/2002**	7.28
10/13/2002	6.14	**11/19/2002**	5.56	**12/26/2002**	6.23
10/14/2002	5.45	**11/20/2002**	5.06	**12/27/2002**	5.34
10/15/2002	6.39	**11/21/2002**	4.78	**12/28/2002**	4.78
10/16/2002	7.78	**11/22/2002**	4.44	**12/29/2002**	4.52
10/17/2002	6.2	**11/23/2002**	4.02	**12/30/2002**	4.78
10/18/2002	5.07	**11/24/2002**	4.03	**12/31/2002**	5.5
10/19/2002	4.48	**11/25/2002**	4.15		
10/20/2002	4.46	**11/26/2002**	4.04		

Table C- 2. Thomasville Hamby Creek WWTP Effluent Flow and Fecal Coliform Bacteria Concentration

Date	Flow(cfs)	FC conc.	Date	Flow(cfs)	FC conc.	Date	Flow(cfs)	FC conc.
1/1/1996	2.28		**2/16/1996**	2.97	6000.	**4/2/1996**	3.7	4.
1/2/1996	3.37		**2/17/1996**	2.42		**4/3/1996**	3.38	
1/3/1996	3.21		**2/18/1996**	2.35		**4/4/1996**	3.11	
1/4/1996	2.85		**2/19/1996**	3.27		**4/5/1996**	2.48	
1/5/1996	2.65		**2/20/1996**	3.56	1.	**4/6/1996**	2.34	
1/6/1996	2.14		**2/21/1996**	3.63	1.	**4/7/1996**	2.15	
1/7/1996	2.35		**2/22/1996**	3.18		**4/8/1996**	3.04	
1/8/1996	2.26		**2/23/1996**	2.9		**4/9/1996**	3.91	
1/9/1996	2.84		**2/24/1996**	2.44		**4/10/1996**	3.14	
1/10/1996	3.		**2/25/1996**	2.22		**4/11/1996**	3.12	3.
1/11/1996	2.65	16.	**2/26/1996**	2.91		**4/12/1996**	2.84	
1/12/1996	2.77		**2/27/1996**	2.94		**4/13/1996**	2.48	
1/13/1996	2.63		**2/28/1996**	2.86		**4/14/1996**	2.38	
1/14/1996	3.05		**2/29/1996**	2.71		**4/15/1996**	3.21	
1/15/1996	4.26		**3/1/1996**	2.58		**4/16/1996**	3.51	
1/16/1996	4.4		**3/2/1996**	2.29		**4/17/1996**	3.06	
1/17/1996	4.52		**3/3/1996**	2.12		**4/18/1996**	2.89	
1/18/1996	4.67	3.	**3/4/1996**	2.78		**4/19/1996**	2.84	
1/19/1996	5.56		**3/5/1996**	2.8	32.	**4/20/1996**	2.5	
1/20/1996	3.68		**3/6/1996**	3.63	1.	**4/21/1996**	2.32	
1/21/1996	3.06		**3/7/1996**	4.82	23.	**4/22/1996**	2.92	
1/22/1996	3.48		**3/8/1996**	4.56	2000.	**4/23/1996**	2.94	
1/23/1996	3.44		**3/9/1996**	2.97		**4/24/1996**	3.	
1/24/1996	4.07	3.	**3/10/1996**	2.63		**4/25/1996**	2.82	
1/25/1996	3.5	6000.	**3/11/1996**	3.36	3550.	**4/26/1996**	3.07	
1/26/1996	3.02	9.	**3/12/1996**	3.23	1600.	**4/27/1996**	2.3	
1/27/1996	5.16		**3/13/1996**	3.26		**4/28/1996**	2.14	
1/28/1996	3.41		**3/14/1996**	3.14		**4/29/1996**	2.71	
1/29/1996	3.76		**3/15/1996**	3.09		**4/30/1996**	2.64	
1/30/1996	3.86	1.	**3/16/1996**	2.55		**5/1/1996**	3.11	
1/31/1996	4.06		**3/17/1996**	2.46		**5/2/1996**	2.76	
2/1/1996	3.43		**3/18/1996**	3.02		**5/3/1996**	2.6	
2/2/1996	4.88		**3/19/1996**	4.6	1.	**5/4/1996**	1.99	
2/3/1996	4.27		**3/20/1996**	4.01	2.	**5/5/1996**	1.83	
2/4/1996	3.36		**3/21/1996**	3.45	5.	**5/6/1996**	2.62	
2/5/1996	3.59		**3/22/1996**	3.06		**5/7/1996**	2.69	
2/6/1996	4.2		**3/23/1996**	2.51		**5/8/1996**	2.84	
2/7/1996	3.9		**3/24/1996**	2.34		**5/9/1996**	2.97	
2/8/1996	4.47	1.	**3/25/1996**	3.11		**5/10/1996**	2.76	
2/9/1996	3.88		**3/26/1996**	3.18		**5/11/1996**	2.35	
2/10/1996	3.11		**3/27/1996**	3.13		**5/12/1996**	2.13	
2/11/1996	2.77		**3/28/1996**	4.42	1.	**5/13/1996**	2.92	
2/12/1996	3.32	1.	**3/29/1996**	3.28		**5/14/1996**	3.19	1850.
2/13/1996	3.19		**3/30/1996**	2.53		**5/15/1996**	3.22	175.
2/14/1996	3.12		**3/31/1996**	2.62		**5/16/1996**	3.09	1.
2/15/1996	3.04	1.	**4/1/1996**	4.14	1.	**5/17/1996**	2.94	

Table C- 2 (Continued)

Date	Flow(cfs)	FC conc.	Date	Flow(cfs)	FC conc.	Date	Flow(cfs)	FC conc.
5/18/1996	2.3		**7/4/1996**	1.74		**8/20/1996**	3.03	22.
5/19/1996	2.09		**7/5/1996**	1.7		**8/21/1996**	3.04	4764.
5/20/1996	2.87		**7/6/1996**	1.78		**8/22/1996**	2.94	2300.
5/21/1996	3.03		**7/7/1996**	1.76		**8/23/1996**	2.93	133.
5/22/1996	2.99		**7/8/1996**	2.68		**8/24/1996**	3.11	
5/23/1996	2.87		**7/9/1996**	2.77	7.	**8/25/1996**	2.93	
5/24/1996	2.84		**7/10/1996**	2.74	13.	**8/26/1996**	3.32	
5/25/1996	2.1		**7/11/1996**	2.98		**8/27/1996**	3.46	
5/26/1996	1.92		**7/12/1996**	3.09		**8/28/1996**	3.39	
5/27/1996	2.65		**7/13/1996**	1.97		**8/29/1996**	3.17	
5/28/1996	3.62		**7/14/1996**	1.82		**8/30/1996**	2.88	3.
5/29/1996	3.02		**7/15/1996**	2.49		**8/31/1996**	2.39	
5/30/1996	3.05		**7/16/1996**	2.92		**9/1/1996**	2.07	
5/31/1996	2.74		**7/17/1996**	2.75		**9/2/1996**	2.27	
6/1/1996	2.02		**7/18/1996**	3.03		**9/3/1996**	4.67	
6/2/1996	1.98		**7/19/1996**	2.75		**9/4/1996**	5.75	2.
6/3/1996	2.73		**7/20/1996**	2.06		**9/5/1996**	5.07	
6/4/1996	3.21		**7/21/1996**	1.74		**9/6/1996**	6.51	
6/5/1996	2.62	1.	**7/22/1996**	3.08		**9/7/1996**	4.38	
6/6/1996	2.83		**7/23/1996**	2.83		**9/8/1996**	3.34	
6/7/1996	2.59		**7/24/1996**	2.81	200.	**9/9/1996**	3.78	
6/8/1996	2.3		**7/25/1996**	3.37		**9/10/1996**	3.88	
6/9/1996	2.84		**7/26/1996**	3.3		**9/11/1996**	4.83	
6/10/1996	3.27		**7/27/1996**	2.11		**9/12/1996**	5.2	2.
6/11/1996	2.9		**7/28/1996**	2.43		**9/13/1996**	4.	
6/12/1996	2.88		**7/29/1996**	2.98	1.	**9/14/1996**	2.91	
6/13/1996	2.9		**7/30/1996**	2.94		**9/15/1996**	2.59	
6/14/1996	2.79		**7/31/1996**	2.91		**9/16/1996**	3.75	
6/15/1996	2.58		**8/1/1996**	3.78		**9/17/1996**	3.8	
6/16/1996	2.36		**8/2/1996**	3.65		**9/18/1996**	3.35	
6/17/1996	2.98		**8/3/1996**	2.77		**9/19/1996**	3.36	10.
6/18/1996	3.08		**8/4/1996**	2.38		**9/20/1996**	2.89	
6/19/1996	3.19		**8/5/1996**	2.06		**9/21/1996**	2.39	
6/20/1996	2.94		**8/6/1996**	2.65		**9/22/1996**	2.32	
6/21/1996	2.81	5.	**8/7/1996**	3.52	28.	**9/23/1996**	3.06	
6/22/1996	2.24		**8/8/1996**	2.92	1.	**9/24/1996**	3.09	
6/23/1996	1.88		**8/9/1996**	2.66		**9/25/1996**	3.03	
6/24/1996	2.84	1.	**8/10/1996**	2.12		**9/26/1996**	2.95	12.
6/25/1996	3.03		**8/11/1996**	1.93		**9/27/1996**	2.88	
6/26/1996	2.83		**8/12/1996**	4.12	1.	**9/28/1996**	2.38	
6/27/1996	2.81		**8/13/1996**	4.05		**9/29/1996**	2.35	
6/28/1996	2.56		**8/14/1996**	3.24		**9/30/1996**	3.05	
6/29/1996	1.9		**8/15/1996**	3.04		**10/1/1996**	4.52	
6/30/1996	1.78		**8/16/1996**	2.76		**10/2/1996**	5.	1.
7/1/1996	2.24		**8/17/1996**	2.25		**10/3/1996**	4.19	2.
7/2/1996	2.23	2.	**8/18/1996**	2.04		**10/4/1996**	3.46	
7/3/1996	2.07	10.	**8/19/1996**	2.95	42.	**10/5/1996**	2.79	

Table C- 2 (Continued)

10/6/1996	2.69		**11/23/1996**	2.49		**1/10/1997**	4.99	
10/7/1996	3.49	2.	**11/24/1996**	2.35		**1/11/1997**	3.78	
10/8/1996	5.39		**11/25/1996**	3.21		**1/12/1997**	3.26	
10/9/1996	4.37		**11/26/1996**	3.66	33.	**1/13/1997**	3.88	
10/10/1996	3.95	5.	**11/27/1996**	3.14		**1/14/1997**	3.82	2.
10/11/1996	3.38		**11/28/1996**	2.37		**1/15/1997**	3.7	
10/12/1996	2.87		**11/29/1996**	2.26		**1/16/1997**	5.07	
10/13/1996	2.68		**11/30/1996**	2.92		**1/17/1997**	4.05	
10/14/1996	3.2		**12/1/1996**	4.72		**1/18/1997**	3.23	
10/15/1996	3.2	1.	**12/2/1996**	4.52	1.	**1/19/1997**	2.94	
10/16/1996	3.16		**12/3/1996**	3.6		**1/20/1997**	3.91	
10/17/1996	3.06		**12/4/1996**	3.56		**1/21/1997**	3.88	
10/18/1996	3.29		**12/5/1996**	4.03		**1/22/1997**	3.75	
10/19/1996	2.53		**12/6/1996**	4.42		**1/23/1997**	3.69	
10/20/1996	2.31		**12/7/1996**	3.94		**1/24/1997**	3.84	
10/21/1996	3.16		**12/8/1996**	3.63		**1/25/1997**	3.73	
10/22/1996	3.24		**12/9/1996**	3.89		**1/26/1997**	3.01	
10/23/1996	3.13		**12/10/1996**	3.73		**1/27/1997**	3.72	
10/24/1996	3.01		**12/11/1996**	3.54		**1/28/1997**	4.27	
10/25/1996	2.79		**12/12/1996**	3.52		**1/29/1997**	3.98	
10/26/1996	2.32		**12/13/1996**	4.97	1.	**1/30/1997**	3.74	
10/27/1996	2.21		**12/14/1996**	3.53		**1/31/1997**	3.5	
10/28/1996	2.97		**12/15/1996**	3.06		**2/1/1997**	3.	
10/29/1996	3.18		**12/16/1996**	3.5		**2/2/1997**	2.56	
10/30/1996	3.06		**12/17/1996**	3.74		**2/3/1997**	3.44	
10/31/1996	2.98		**12/18/1996**	3.94		**2/4/1997**	3.57	
11/1/1996	2.83		**12/19/1996**	4.52		**2/5/1997**	3.73	
11/2/1996	3.59		**12/20/1996**	3.59		**2/6/1997**	3.39	1.
11/3/1996	2.24		**12/21/1996**	2.81		**2/7/1997**	3.34	
11/4/1996	2.98		**12/22/1996**	2.65		**2/8/1997**	3.49	
11/5/1996	2.97		**12/23/1996**	2.8	1.	**2/9/1997**	2.87	
11/6/1996	3.12		**12/24/1996**	3.1		**2/10/1997**	3.57	
11/7/1996	3.01		**12/25/1996**	2.73		**2/11/1997**	3.3	4000.
11/8/1996	3.65		**12/26/1996**	2.75		**2/12/1997**	3.13	3600.
11/9/1996	2.91		**12/27/1996**	3.04		**2/13/1997**	3.5	
11/10/1996	2.38		**12/28/1996**	2.72		**2/14/1997**	5.35	3000.
11/11/1996	3.09	1.	**12/29/1996**	2.69		**2/15/1997**	5.44	
11/12/1996	3.08		**12/30/1996**	3.49		**2/16/1997**	3.87	
11/13/1996	2.99		**12/31/1996**	3.58		**2/17/1997**	4.	1.
11/14/1996	2.87		**1/1/1997**	2.55		**2/18/1997**	3.7	7.
11/15/1996	2.87		**1/2/1997**	3.42		**2/19/1997**	3.44	
11/16/1996	2.32		**1/3/1997**	3.17		**2/20/1997**	3.29	
11/17/1996	2.16		**1/4/1997**	2.72		**2/21/1997**	3.62	
11/18/1996	3.39		**1/5/1997**	3.26		**2/22/1997**	3.1	
11/19/1996	3.42		**1/6/1997**	3.76		**2/23/1997**	2.74	
11/20/1996	3.14	1.	**1/7/1997**	3.5		**2/24/1997**	3.37	
11/21/1996	3.41		**1/8/1997**	3.47		**2/25/1997**	3.43	1.
11/22/1996	3.29		**1/9/1997**	5.31		**2/26/1997**	3.65	

Table C- 2 (Continued)

2/27/1997	3.65		**4/16/1997**	3.37	1.	**6/3/1997**	3.12	
2/28/1997	5.22		**4/17/1997**	3.51		**6/4/1997**	2.78	
3/1/1997	4.76		**4/18/1997**	3.27		**6/5/1997**	2.89	1.
3/2/1997	4.01		**4/19/1997**	2.54		**6/6/1997**	3.34	
3/3/1997	4.46		**4/20/1997**	2.45		**6/7/1997**	2.35	
3/4/1997	3.98		**4/21/1997**	3.24	1.	**6/8/1997**	2.14	
3/5/1997	4.04	2.	**4/22/1997**	3.88	3.	**6/9/1997**	2.78	
3/6/1997	4.35		**4/23/1997**	5.53		**6/10/1997**	2.93	
3/7/1997	3.62		**4/24/1997**	4.57		**6/11/1997**	2.6	
3/8/1997	2.93		**4/25/1997**	3.74		**6/12/1997**	2.87	
3/9/1997	2.69		**4/26/1997**	2.92		**6/13/1997**	4.123	
3/10/1997	3.4	2.	**4/27/1997**	3.55		**6/14/1997**	2.73	
3/11/1997	3.43		**4/28/1997**	5.73	1.	**6/15/1997**	2.28	
3/12/1997	3.37		**4/29/1997**	6.04		**6/16/1997**	2.94	
3/13/1997	3.2		**4/30/1997**	4.75		**6/17/1997**	3.74	
3/14/1997	4.13		**5/1/1997**	4.51		**6/18/1997**	2.98	
3/15/1997	4.36		**5/2/1997**	3.94		**6/19/1997**	3.03	
3/16/1997	2.99		**5/3/1997**	4.26		**6/20/1997**	2.81	
3/17/1997	3.35		**5/4/1997**	3.6		**6/21/1997**	2.15	
3/18/1997	3.59	2.	**5/5/1997**	4.	2.	**6/22/1997**	2.01	
3/19/1997	5.17		**5/6/1997**	3.86	25.	**6/23/1997**	2.89	
3/20/1997	4.71		**5/7/1997**	3.68		**6/24/1997**	2.85	
3/21/1997	3.97		**5/8/1997**	3.58		**6/25/1997**	2.8	
3/22/1997	3.06		**5/9/1997**	3.6		**6/26/1997**	2.81	
3/23/1997	2.7		**5/10/1997**	2.76		**6/27/1997**	2.5	
3/24/1997	3.52		**5/11/1997**	2.54		**6/28/1997**	2.03	
3/25/1997	3.39		**5/12/1997**	3.05		**6/29/1997**	1.95	
3/26/1997	4.08		**5/13/1997**	3.29	1.	**6/30/1997**	2.08	
3/27/1997	3.6		**5/14/1997**	3.03		**7/1/1997**	2.43	1.
3/28/1997	3.22		**5/15/1997**	3.1		**7/2/1997**	2.24	
3/29/1997	3.2		**5/16/1997**	2.9		**7/3/1997**	2.08	
3/30/1997	2.8		**5/17/1997**	2.4		**7/4/1997**	1.91	
3/31/1997	3.62		**5/18/1997**	2.28		**7/5/1997**	2.15	
4/1/1997	3.25		**5/19/1997**	3.03		**7/6/1997**	1.89	
4/2/1997	3.28		**5/20/1997**	2.98		**7/7/1997**	2.76	
4/3/1997	3.24		**5/21/1997**	3.02		**7/8/1997**	2.84	1.
4/4/1997	3.15		**5/22/1997**	2.95		**7/9/1997**	2.73	
4/5/1997	2.54		**5/23/1997**	2.87		**7/10/1997**	2.85	
4/6/1997	3.08		**5/24/1997**	2.3		**7/11/1997**	2.65	
4/7/1997	3.81	2.	**5/25/1997**	2.54		**7/12/1997**	2.1	
4/8/1997	3.49		**5/26/1997**	2.97		**7/13/1997**	1.98	
4/9/1997	3.69	3.	**5/27/1997**	3.13		**7/14/1997**	2.4	
4/10/1997	3.55		**5/28/1997**	2.91	1.	**7/15/1997**	2.8	22.
4/11/1997	3.14		**5/29/1997**	2.99		**7/16/1997**	2.44	3.
4/12/1997	3.77		**5/30/1997**	2.83		**7/17/1997**	2.63	45.
4/13/1997	3.17		**5/31/1997**	2.32		**7/18/1997**	2.2	10.
4/14/1997	3.61		**6/1/1997**	2.28		**7/19/1997**	1.9	
4/15/1997	3.46		**6/2/1997**	3.27		**7/20/1997**	2.54	

Table C- 2 (Continued)

7/21/1997	3.04	2.	**9/10/1997**	3.1		**10/31/1997**	2.27	
7/22/1997	3.45		**9/11/1997**	2.78		**11/1/1997**	2.54	
7/23/1997	4.54		**9/12/1997**	2.3		**11/2/1997**	2.34	
7/24/1997	4.36		**9/13/1997**	2.03		**11/3/1997**	2.77	
7/25/1997	3.3		**9/14/1997**	1.93		**11/4/1997**	2.66	
7/26/1997	2.29		**9/15/1997**	2.71		**11/5/1997**	2.71	
7/27/1997	2.12		**9/16/1997**	2.78		**11/6/1997**	2.67	
7/28/1997	3.08	1.	**9/17/1997**	2.61		**11/7/1997**	2.54	
7/29/1997	3.13		**9/18/1997**	2.58		**11/8/1997**	2.05	
7/30/1997	3.25		**9/19/1997**	2.66		**11/9/1997**	1.9	
7/31/1997	2.86		**9/20/1997**	2.13		**11/10/1997**	2.66	
8/1/1997	2.58		**9/21/1997**	1.95		**11/11/1997**	2.64	
8/2/1997	2.21		**9/22/1997**	2.65		**11/12/1997**	2.71	
8/3/1997	2.05		**9/23/1997**	2.69		**11/13/1997**	3.64	
8/4/1997	2.79		**9/24/1997**	3.9		**11/14/1997**	3.95	
8/5/1997	2.79	1.	**9/25/1997**	3.04	1.	**11/15/1997**	2.2	
8/6/1997	2.64		**9/26/1997**	2.71		**11/16/1997**	2.05	
8/7/1997	2.55		**9/27/1997**	2.11		**11/17/1997**	2.62	2.
8/8/1997	2.43		**9/28/1997**	2.16		**11/18/1997**	2.68	46.
8/9/1997	2.08		**9/29/1997**	2.7		**11/19/1997**	2.65	80.
8/10/1997	1.97		**9/30/1997**	2.71		**11/20/1997**	2.58	36.
8/11/1997	2.87		**10/1/1997**	2.88		**11/21/1997**	3.42	4.
8/12/1997	2.79	2.	**10/2/1997**	2.44		**11/22/1997**	3.4	
8/13/1997	2.73	3.	**10/3/1997**	2.49		**11/23/1997**	2.31	
8/14/1997	2.54	4.	**10/4/1997**	2.02		**11/24/1997**	2.7	
8/15/1997	2.32		**10/5/1997**	1.97		**11/25/1997**	2.75	
8/16/1997	2.18		**10/6/1997**	2.68		**11/26/1997**	2.6	
8/17/1997	1.96		**10/7/1997**	2.65		**11/27/1997**	2.09	
8/18/1997	2.25		**10/8/1997**	2.74		**11/28/1997**	2.01	
8/19/1997	2.5	5.	**10/9/1997**	2.65		**11/29/1997**	2.34	
8/20/1997	2.79	1200.	**10/10/1997**	2.71		**11/30/1997**	3.27	
8/21/1997	2.5	100.	**10/11/1997**	2.08		**12/1/1997**	3.36	
8/22/1997	2.51		**10/12/1997**	1.94		**12/2/1997**	3.09	
8/23/1997	2.04		**10/13/1997**	2.77		**12/3/1997**	2.99	1.
8/24/1997	1.93		**10/14/1997**	2.77		**12/4/1997**	3.	
8/25/1997	2.59		**10/15/1997**	2.86		**12/5/1997**	2.78	
8/26/1997	2.73		**10/16/1997**	2.72		**12/6/1997**	2.58	
8/27/1997	2.81		**10/17/1997**	2.65		**12/7/1997**	2.1	
8/28/1997	2.61	.1	**10/18/1997**	2.16		**12/8/1997**	2.89	15.
8/29/1997	2.46		**10/19/1997**	3.11		**12/9/1997**	2.85	
8/30/1997	1.93		**10/20/1997**	2.88	1.	**12/10/1997**	3.05	1.
8/31/1997	1.88		**10/21/1997**	2.68		**12/11/1997**	2.8	6.
9/1/1997	1.96		**10/22/1997**	2.73		**12/12/1997**	2.67	
9/2/1997	2.63	3050.	**10/23/1997**	2.83		**12/13/1997**	2.17	
9/3/1997	2.21		**10/24/1997**	2.57		**12/14/1997**	2.05	
9/4/1997	2.55		**10/25/1997**	2.02		**12/15/1997**	2.77	
9/5/1997	2.49		**10/26/1997**	3.02		**12/16/1997**	2.91	
9/6/1997	2.06		**10/27/1997**	3.26	1.	**12/17/1997**	2.05	
9/7/1997	1.89		**10/28/1997**	2.74	1.	**12/18/1997**	4.3	1.
9/8/1997	2.61		**10/29/1997**	2.78	5.	**12/19/1997**	2.68	
9/9/1997	2.77		**10/30/1997**	2.64		**12/20/1997**	2.26	

Table C- 2 (Continued)

12/21/1997	2.18		**2/10/1998**	3.39	600.	**4/2/1998**	3.69	1.
12/22/1997	3.47		**2/11/1998**	3.47	15.	**4/3/1998**	3.57	
12/23/1997	2.62		**2/12/1998**	3.56	10.	**4/4/1998**	3.97	
12/24/1997	4.2		**2/13/1998**	3.14	5.	**4/5/1998**	2.98	
12/25/1997	3.2		**2/14/1998**	2.6		**4/6/1998**	3.35	1.
12/26/1997	2.74		**2/15/1998**	2.35		**4/7/1998**	3.59	1.
12/27/1997	3.71		**2/16/1998**	3.91	2.	**4/8/1998**	3.5	
12/28/1997	3.27		**2/17/1998**	5.97		**4/9/1998**	4.63	
12/29/1997	2.97		**2/18/1998**	4.8	4.	**4/10/1998**	3.37	
12/30/1997	3.44		**2/19/1998**	4.06	20.	**4/11/1998**	3.	
12/31/1997	3.02		**2/20/1998**	3.61		**4/12/1998**	2.82	
1/1/1998	2.55		**2/21/1998**	2.91		**4/13/1998**	3.25	
1/2/1998	2.72		**2/22/1998**	2.69		**4/14/1998**	3.57	1.
1/3/1998	2.75		**2/23/1998**	4.31	1.	**4/15/1998**	3.48	
1/4/1998	2.64		**2/24/1998**	3.61	2.	**4/16/1998**	3.82	1.
1/5/1998	3.3		**2/25/1998**	3.48		**4/17/1998**	6.19	7.
1/6/1998	3.93		**2/26/1998**	2.89		**4/18/1998**	4.84	
1/7/1998	5.49		**2/27/1998**	2.7	4.	**4/19/1998**	4.76	
1/8/1998	5.98		**2/28/1998**	2.6		**4/20/1998**	5.58	6.
1/9/1998	4.38		**3/1/1998**	2.4		**4/21/1998**	4.55	1.
1/10/1998	3.06		**3/2/1998**	2.86	1.	**4/22/1998**	4.37	2.
1/11/1998	2.67		**3/3/1998**	2.8	14.	**4/23/1998**	4.18	2.
1/12/1998	3.08		**3/4/1998**	3.07		**4/24/1998**	3.8	
1/13/1998	3.1		**3/5/1998**	3.	3.	**4/25/1998**	3.8	
1/14/1998	2.95		**3/6/1998**	2.57		**4/26/1998**	2.92	
1/15/1998	4.62		**3/7/1998**	2.19		**4/27/1998**	3.63	1.
1/16/1998	4.98	3.	**3/8/1998**	4.06		**4/28/1998**	3.45	5.
1/17/1998	3.83		**3/9/1998**	5.62	23.	**4/29/1998**	3.16	
1/18/1998	3.04		**3/10/1998**	4.36	270.	**4/30/1998**	3.31	
1/19/1998	4.31		**3/11/1998**	4.07		**5/1/1998**	3.49	
1/20/1998	3.65	1.	**3/12/1998**	3.97	37.	**5/2/1998**	2.87	
1/21/1998	3.37		**3/13/1998**	3.62		**5/3/1998**	2.98	
1/22/1998	3.6		**3/14/1998**	3.2		**5/4/1998**	3.41	
1/23/1998	5.59		**3/15/1998**	2.9		**5/5/1998**	3.51	
1/24/1998	4.21		**3/16/1998**	3.55		**5/6/1998**	3.28	
1/25/1998	3.44		**3/17/1998**	3.6		**5/7/1998**	4.23	1.
1/26/1998	3.68		**3/18/1998**	3.87		**5/8/1998**	4.98	2.
1/27/1998	5.21		**3/19/1998**	5.55		**5/9/1998**	3.69	
1/28/1998	5.58		**3/20/1998**	4.81		**5/10/1998**	3.46	
1/29/1998	4.35		**3/21/1998**	4.2		**5/11/1998**	5.29	
1/30/1998	3.62	3.	**3/22/1998**	3.86		**5/12/1998**	4.36	1.
1/31/1998	3.04		**3/23/1998**	3.9		**5/13/1998**	3.78	
2/1/1998	2.76		**3/24/1998**	3.8		**5/14/1998**	3.67	1.
2/2/1998	3.32		**3/25/1998**	3.6		**5/15/1998**	3.4	3.
2/3/1998	3.92		**3/26/1998**	3.55		**5/16/1998**	2.87	
2/4/1998	5.26		**3/27/1998**	3.2		**5/17/1998**	2.7	
2/5/1998	5.46		**3/28/1998**	2.8		**5/18/1998**	3.28	1.
2/6/1998	4.28	4.	**3/29/1998**	5.5		**5/19/1998**	3.23	3.
2/7/1998	3.3		**3/30/1998**	3.34		**5/20/1998**	3.25	
2/8/1998	2.97		**3/31/1998**	3.24		**5/21/1998**	3.33	3200.
2/9/1998	3.52		**4/1/1998**	3.74		**5/22/1998**	3.04	

Table C- 2 (Continued)

5/23/1998	3.08		**7/13/1998**	2.62		**9/2/1998**	2.5	
5/24/1998	2.47		**7/14/1998**	2.68		**9/3/1998**	3.16	
5/25/1998	2.92		**7/15/1998**	2.65		**9/4/1998**	3.81	
5/26/1998	3.27		**7/16/1998**	3.44		**9/5/1998**	2.27	
5/27/1998	3.34	1.	**7/17/1998**	3.02		**9/6/1998**	2.01	
5/28/1998	3.09		**7/18/1998**	2.23		**9/7/1998**	2.24	
5/29/1998	3.05	6.	**7/19/1998**	2.17		**9/8/1998**	3.39	1.
5/30/1998	2.56		**7/20/1998**	2.84	1.	**9/9/1998**	2.75	
5/31/1998	2.39		**7/21/1998**	2.49		**9/10/1998**	2.75	
6/1/1998	3.12		**7/22/1998**	2.75		**9/11/1998**	2.53	
6/2/1998	3.04	1.	**7/23/1998**	2.75		**9/12/1998**	2.24	
6/3/1998	3.23		**7/24/1998**	2.67		**9/13/1998**	2.18	
6/4/1998	3.27		**7/25/1998**	2.3		**9/14/1998**	2.51	
6/5/1998	2.96		**7/26/1998**	2.01		**9/15/1998**	2.7	
6/6/1998	3.37		**7/27/1998**	2.95		**9/16/1998**	2.68	
6/7/1998	2.56		**7/28/1998**	2.79		**9/17/1998**	2.6	
6/8/1998	3.16		**7/29/1998**	3.		**9/18/1998**	2.42	
6/9/1998	2.98		**7/30/1998**	2.75		**9/19/1998**	2.14	
6/10/1998	3.43		**7/31/1998**	2.65		**9/20/1998**	2.12	
6/11/1998	2.97		**8/1/1998**	2.18		**9/21/1998**	2.78	
6/12/1998	2.91		**8/2/1998**	1.94		**9/22/1998**	2.8	
6/13/1998	2.43		**8/3/1998**	2.4	10.	**9/23/1998**	2.51	
6/14/1998	2.31		**8/4/1998**	2.42		**9/24/1998**	2.5	
6/15/1998	4.28	2.	**8/5/1998**	2.46		**9/25/1998**	2.3	
6/16/1998	3.18	20.	**8/6/1998**	2.41		**9/26/1998**	2.1	
6/17/1998	3.14		**8/7/1998**	2.45		**9/27/1998**	2.02	
6/18/1998	2.98		**8/8/1998**	2.88		**9/28/1998**	2.44	
6/19/1998	2.8		**8/9/1998**	2.83		**9/29/1998**	2.37	
6/20/1998	2.34		**8/10/1998**	3.86		**9/30/1998**	2.55	
6/21/1998	2.12		**8/11/1998**	3.09		**10/1/1998**	2.31	
6/22/1998	3.01		**8/12/1998**	3.56	3.	**10/2/1998**	2.39	
6/23/1998	2.98		**8/13/1998**	3.55	1.	**10/3/1998**	1.97	
6/24/1998	2.8	4.	**8/14/1998**	2.65		**10/4/1998**	2.	
6/25/1998	2.78		**8/15/1998**	2.27		**10/5/1998**	2.69	
6/26/1998	2.49		**8/16/1998**	2.14		**10/6/1998**	2.62	
6/27/1998	2.25		**8/17/1998**	3.3		**10/7/1998**	2.62	1.
6/28/1998	2.07		**8/18/1998**	2.89	1.	**10/8/1998**	3.26	
6/29/1998	2.39		**8/19/1998**	2.89		**10/9/1998**	2.76	600.
6/30/1998	2.32		**8/20/1998**	2.62		**10/10/1998**	2.19	
7/1/1998	2.08	3900.	**8/21/1998**	2.55		**10/11/1998**	1.93	
7/2/1998	2.13		**8/22/1998**	2.28		**10/12/1998**	2.6	
7/3/1998	2.22		**8/23/1998**	2.09		**10/13/1998**	2.67	
7/4/1998	2.01		**8/24/1998**	2.86		**10/14/1998**	2.73	
7/5/1998	2.		**8/25/1998**	2.69		**10/15/1998**	2.45	
7/6/1998	2.87		**8/26/1998**	2.59		**10/16/1998**	2.58	16.
7/7/1998	2.5	1.	**8/27/1998**	2.56		**10/17/1998**	1.93	
7/8/1998	2.77		**8/28/1998**	2.51		**10/18/1998**	1.96	
7/9/1998	2.67		**8/29/1998**	2.24		**10/19/1998**	2.67	1.
7/10/1998	2.42	10.	**8/30/1998**	2.27		**10/20/1998**	2.56	
7/11/1998	2.11		**8/31/1998**	2.65		**10/21/1998**	2.38	
7/12/1998	1.98		**9/1/1998**	2.63		**10/22/1998**	2.36	

Table C- 2 (Continued)

10/23/1998	2.27		**12/13/1998**	3.71		**2/2/1999**	4.55	1.
10/24/1998	1.9		**12/14/1998**	2.86		**2/3/1999**	3.64	1.
10/25/1998	2.		**12/15/1998**	2.95		**2/4/1999**	3.29	
10/26/1998	2.36		**12/16/1998**	4.4	5.	**2/5/1999**	3.07	2.
10/27/1998	2.36		**12/17/1998**	2.7	4.	**2/6/1999**	2.83	
10/28/1998	2.4	1.	**12/18/1998**	2.4		**2/7/1999**	2.55	
10/29/1998	2.4		**12/19/1998**	2.21		**2/8/1999**	3.03	
10/30/1998	2.98	8.	**12/20/1998**	2.07		**2/9/1999**	2.83	
10/31/1998	2.03		**12/21/1998**	2.27		**2/10/1999**	2.97	
11/1/1998	1.8		**12/22/1998**	2.19		**2/11/1999**	2.9	4.
11/2/1998	2.49		**12/23/1998**	2.06		**2/12/1999**	2.87	
11/3/1998	2.8		**12/24/1998**	4.6		**2/13/1999**	2.46	
11/4/1998	2.4		**12/25/1998**	2.82		**2/14/1999**	2.33	
11/5/1998	4.5		**12/26/1998**	2.24		**2/15/1999**	2.78	4.
11/6/1998	2.26		**12/27/1998**	1.78		**2/16/1999**	2.81	
11/7/1998	1.98		**12/28/1998**	2.46		**2/17/1999**	2.84	
11/8/1998	1.89		**12/29/1998**	2.55	4.	**2/18/1999**	3.73	
11/9/1998	2.57		**12/30/1998**	2.48	1.	**2/19/1999**	3.05	
11/10/1998	2.57		**12/31/1998**	2.34		**2/20/1999**	3.36	
11/11/1998	3.02		**1/1/1999**	2.14		**2/21/1999**	2.53	
11/12/1998	2.55	300.	**1/2/1999**	2.63		**2/22/1999**	2.98	
11/13/1998	2.46	1.	**1/3/1999**	5.29		**2/23/1999**	2.92	10.
11/14/1998	2.48		**1/4/1999**	3.43	2.	**2/24/1999**	2.9	56.
11/15/1998	2.42		**1/5/1999**	3.03		**2/25/1999**	2.87	
11/16/1998	2.84	600.	**1/6/1999**	2.9	1.	**2/26/1999**	2.64	8.
11/17/1998	2.77	4600.	**1/7/1999**	2.75	1.	**2/27/1999**	2.44	
11/18/1998	2.64	4900.	**1/8/1999**	2.13	2.	**2/28/1999**	2.47	
11/19/1998	2.47	7.	**1/9/1999**	1.87		**3/1/1999**	2.95	3.
11/20/1998	2.5		**1/10/1999**	1.6		**3/2/1999**	2.72	10.
11/21/1998	2.05		**1/11/1999**	1.78	2.	**3/3/1999**	3.11	10.
11/22/1998	1.9		**1/12/1999**	2.37		**3/4/1999**	2.98	30.
11/23/1998	2.58		**1/13/1999**	2.47	1.	**3/5/1999**	2.66	
11/24/1998	2.45		**1/14/1999**	2.69		**3/6/1999**	2.37	
11/25/1998	2.38		**1/15/1999**	3.61		**3/7/1999**	2.24	
11/26/1998	2.29		**1/16/1999**	2.52		**3/8/1999**	2.75	1.
11/27/1998	2.02		**1/17/1999**	2.66		**3/9/1999**	2.83	2.
11/28/1998	2.04		**1/18/1999**	4.84		**3/10/1999**	2.82	1.
11/29/1998	1.93		**1/19/1999**	3.57		**3/11/1999**	2.74	
11/30/1998	2.43		**1/20/1999**	3.19		**3/12/1999**	2.64	
12/1/1998	2.43	22.	**1/21/1999**	3.07	1.	**3/13/1999**	1.82	
12/2/1998	2.41		**1/22/1999**	2.89		**3/14/1999**	2.85	
12/3/1998	2.5	1.	**1/23/1999**	2.89		**3/15/1999**	3.5	
12/4/1998	2.49		**1/24/1999**	3.65		**3/16/1999**	3.1	10.
12/5/1998	2.07		**1/25/1999**	4.64	1.	**3/17/1999**	2.89	5.
12/6/1998	1.94		**1/26/1999**	3.44	1.	**3/18/1999**	2.72	
12/7/1998	2.6	8.	**1/27/1999**	3.33		**3/19/1999**	2.4	
12/8/1998	2.67		**1/28/1999**	3.32		**3/20/1999**	2.17	
12/9/1998	3.32		**1/29/1999**	3.21		**3/21/1999**	3.01	
12/10/1998	2.58	1.	**1/30/1999**	2.8		**3/22/1999**	3.16	
12/11/1998	2.54		**1/31/1999**	2.57		**3/23/1999**	2.97	
12/12/1998	2.21		**2/1/1999**	3.84	7.	**3/24/1999**	3.05	

Table C- 2 (Continued)

3/25/1999	2.95		**5/15/1999**	2.29		**7/5/1999**	2.11	
3/26/1999	2.59		**5/16/1999**	2.25		**7/6/1999**	2.32	
3/27/1999	2.41		**5/17/1999**	2.73		**7/7/1999**	2.35	
3/28/1999	2.29		**5/18/1999**	2.7		**7/8/1999**	2.36	
3/29/1999	2.76	1.	**5/19/1999**	2.89		**7/9/1999**	2.3	5.
3/30/1999	2.8		**5/20/1999**	2.77		**7/10/1999**	2.12	
3/31/1999	2.78	1.	**5/21/1999**	2.52		**7/11/1999**	1.97	
4/1/1999	2.9		**5/22/1999**	2.15		**7/12/1999**	3.13	1.
4/2/1999	2.29		**5/23/1999**	2.07		**7/13/1999**	3.25	1.
4/3/1999	2.14		**5/24/1999**	2.87		**7/14/1999**	2.82	5.
4/4/1999	2.04		**5/25/1999**	2.68	20.	**7/15/1999**	2.7	12.
4/5/1999	2.8	2.	**5/26/1999**	2.72	12.	**7/16/1999**	2.72	
4/6/1999	2.79		**5/27/1999**	2.62		**7/17/1999**	2.48	
4/7/1999	2.8	8.	**5/28/1999**	2.64		**7/18/1999**	2.2	
4/8/1999	2.72	2.	**5/29/1999**	2.16		**7/19/1999**	2.63	
4/9/1999	2.51		**5/30/1999**	1.98		**7/20/1999**	2.74	
4/10/1999	2.45		**5/31/1999**	2.48		**7/21/1999**	2.85	
4/11/1999	2.1		**6/1/1999**	2.56	6.	**7/22/1999**	3.	44.
4/12/1999	2.67	1.	**6/2/1999**	2.65	2.	**7/23/1999**	2.58	89.
4/13/1999	2.78		**6/3/1999**	2.54	67.	**7/24/1999**	2.18	
4/14/1999	2.6	1.	**6/4/1999**	2.39		**7/25/1999**	2.01	
4/15/1999	2.86	7.	**6/5/1999**	2.06		**7/26/1999**	2.58	1.
4/16/1999	2.41	15.	**6/6/1999**	1.98		**7/27/1999**	2.66	208.
4/17/1999	2.25		**6/7/1999**	2.65		**7/28/1999**	2.59	
4/18/1999	2.11		**6/8/1999**	2.64	30.	**7/29/1999**	2.62	
4/19/1999	2.63		**6/9/1999**	2.63	1.	**7/30/1999**	2.34	
4/20/1999	2.6		**6/10/1999**	2.65		**7/31/1999**	2.19	
4/21/1999	2.51		**6/11/1999**	2.59		**8/1/1999**	1.99	
4/22/1999	2.44		**6/12/1999**	2.09		**8/2/1999**	2.52	1.
4/23/1999	2.2		**6/13/1999**	2.01		**8/3/1999**	2.38	2.
4/24/1999	1.9		**6/14/1999**	2.68	14.	**8/4/1999**	2.12	
4/25/1999	1.9		**6/15/1999**	2.64	3.	**8/5/1999**	2.41	4.
4/26/1999	2.64		**6/16/1999**	3.21		**8/6/1999**	1.95	8.
4/27/1999	2.95	2.	**6/17/1999**	2.8	1.	**8/7/1999**	2.	
4/28/1999	3.4	1.	**6/18/1999**	2.57		**8/8/1999**	2.2	
4/29/1999	3.6	164.	**6/19/1999**	2.13		**8/9/1999**	2.44	1.
4/30/1999	4.92	260.	**6/20/1999**	2.79		**8/10/1999**	2.42	23.
5/1/1999	3.01		**6/21/1999**	2.71		**8/11/1999**	2.5	2.
5/2/1999	2.52		**6/22/1999**	2.68		**8/12/1999**	2.5	
5/3/1999	2.91		**6/23/1999**	2.68		**8/13/1999**	2.16	
5/4/1999	2.83	1.	**6/24/1999**	2.63		**8/14/1999**	2.24	
5/5/1999	2.95	10.	**6/25/1999**	2.57		**8/15/1999**	3.22	
5/6/1999	2.21	12.	**6/26/1999**	2.21		**8/16/1999**	2.57	
5/7/1999	2.58		**6/27/1999**	2.21		**8/17/1999**	2.54	
5/8/1999	2.19		**6/28/1999**	2.53	2.	**8/18/1999**	2.49	
5/9/1999	2.11		**6/29/1999**	2.57	1.	**8/19/1999**	2.51	
5/10/1999	2.89		**6/30/1999**	2.69		**8/20/1999**	2.52	1.
5/11/1999	2.84		**7/1/1999**	3.4		**8/21/1999**	2.59	
5/12/1999	2.71		**7/2/1999**	3.2		**8/22/1999**	2.06	
5/13/1999	2.6		**7/3/1999**	2.35		**8/23/1999**	2.82	
5/14/1999	3.		**7/4/1999**	1.98		**8/24/1999**	2.68	5.

Table C- 2 (Continued)

8/25/1999	3.99	250.	**10/15/1999**	3.02		**12/5/1999**	2.15	
8/26/1999	3.02		**10/16/1999**	2.62		**12/6/1999**	3.03	3.
8/27/1999	4.15		**10/17/1999**	2.76		**12/7/1999**	2.71	9.
8/28/1999	2.53		**10/18/1999**	2.94		**12/8/1999**	2.34	15.
8/29/1999	2.34		**10/19/1999**	2.99	16.	**12/9/1999**	2.57	12.
8/30/1999	2.68		**10/20/1999**	3.87		**12/10/1999**	3.06	7.
8/31/1999	2.63		**10/21/1999**	3.54	5000.	**12/11/1999**	2.28	
9/1/1999	2.67		**10/22/1999**	3.04	9600.	**12/12/1999**	2.13	
9/2/1999	2.6	3.	**10/23/1999**	2.48		**12/13/1999**	2.74	1.
9/3/1999	2.51		**10/24/1999**	2.31		**12/14/1999**	4.27	
9/4/1999	2.08		**10/25/1999**	2.85	5450.	**12/15/1999**	3.21	7.
9/5/1999	3.82		**10/26/1999**	2.76	39.	**12/16/1999**	2.87	20.
9/6/1999	3.01		**10/27/1999**	2.69	162.	**12/17/1999**	2.67	3.
9/7/1999	2.97		**10/28/1999**	2.6	5.	**12/18/1999**	2.45	
9/8/1999	2.77	4.	**10/29/1999**	2.56	1.	**12/19/1999**	2.21	
9/9/1999	3.02		**10/30/1999**	2.24		**12/20/1999**	2.87	
9/10/1999	2.77		**10/31/1999**	2.17		**12/21/1999**	3.33	
9/11/1999	2.23		**11/1/1999**	2.64	4.	**12/22/1999**	3.14	
9/12/1999	2.1		**11/2/1999**	3.35	67.	**12/23/1999**	2.81	14.
9/13/1999	2.62	9.	**11/3/1999**	2.7	7.	**12/24/1999**	2.48	
9/14/1999	2.67	9.	**11/4/1999**	2.62	2.	**12/25/1999**	2.19	
9/15/1999	3.36	53.	**11/5/1999**	2.36	6.	**12/26/1999**	2.26	
9/16/1999	4.4		**11/6/1999**	2.18		**12/27/1999**	3.99	
9/17/1999	2.65	1.	**11/7/1999**	2.08		**12/28/1999**	2.34	
9/18/1999	2.35		**11/8/1999**	2.63	2.	**12/29/1999**	2.45	
9/19/1999	1.43		**11/9/1999**	2.61		**12/30/1999**	2.31	1.
9/20/1999	2.69	3.	**11/10/1999**	2.58	1.	**12/31/1999**	2.41	
9/21/1999	2.66		**11/11/1999**	2.6	4.	**1/1/2000**	2.05	
9/22/1999	2.69	1.	**11/12/1999**	2.54	38.	**1/2/2000**	2.1	
9/23/1999	2.49		**11/13/1999**	2.23		**1/3/2000**	2.68	
9/24/1999	2.55		**11/14/1999**	2.15		**1/4/2000**	2.99	
9/25/1999	2.03		**11/15/1999**	2.67	3.	**1/5/2000**	2.96	2.
9/26/1999	2.04		**11/16/1999**	2.63		**1/6/2000**	2.39	22.
9/27/1999	3.42		**11/17/1999**	2.66		**1/7/2000**	2.62	4.
9/28/1999	4.45	8.	**11/18/1999**	2.32	4.	**1/8/2000**	2.24	
9/29/1999	4.11	10.	**11/19/1999**	2.41	2.	**1/9/2000**	2.78	
9/30/1999	3.87	10.	**11/20/1999**	2.18		**1/10/2000**	4.38	3.
10/1/1999	3.		**11/21/1999**	2.18		**1/11/2000**	3.12	7.
10/2/1999	2.49		**11/22/1999**	2.61	3.	**1/12/2000**	3.13	
10/3/1999	2.27		**11/23/1999**	2.43		**1/13/2000**	3.02	5.
10/4/1999	2.88	3.	**11/24/1999**	2.48	1.	**1/14/2000**	2.98	1.
10/5/1999	2.09		**11/25/1999**	2.08		**1/15/2000**	2.47	
10/6/1999	2.85	1.	**11/26/1999**	2.99		**1/16/2000**	2.27	
10/7/1999	2.68		**11/27/1999**	2.36		**1/17/2000**	2.88	
10/8/1999	2.52		**11/28/1999**	2.13		**1/18/2000**	3.	
10/9/1999	2.22		**11/29/1999**	2.75		**1/19/2000**	3.04	2.
10/10/1999	2.62		**11/30/1999**	2.64	1.	**1/20/2000**	3.72	10.
10/11/1999	4.4		**12/1/1999**	2.52	3.	**1/21/2000**	3.01	
10/12/1999	3.26	2.	**12/2/1999**	2.66	7.	**1/22/2000**	2.46	
10/13/1999	3.98		**12/3/1999**	2.58	108.	**1/23/2000**	2.81	
10/14/1999	3.6	30.	**12/4/1999**	2.24		**1/24/2000**	3.17	

Table C- 2 (Continued)

1/25/2000	3.14		**3/16/2000**	3.7	6.	**5/6/2000**	2.5	
1/26/2000	3.14		**3/17/2000**	4.26	12.	**5/7/2000**	2.4	
1/27/2000	3.24	2.	**3/18/2000**	2.78		**5/8/2000**	2.11	
1/28/2000	3.1	1.	**3/19/2000**	2.74		**5/9/2000**	2.99	1.
1/29/2000	2.7		**3/20/2000**	4.		**5/10/2000**	2.99	
1/30/2000	3.98		**3/21/2000**	3.25	4.	**5/11/2000**	2.92	
1/31/2000	4.66		**3/22/2000**	2.25		**5/12/2000**	2.3	1.
2/1/2000	4.32		**3/23/2000**	3.21		**5/13/2000**	2.43	
2/2/2000	4.04	2.	**3/24/2000**	3.2		**5/14/2000**	2.43	
2/3/2000	4.05	2.	**3/25/2000**	2.76		**5/15/2000**	2.89	
2/4/2000	3.97	1.	**3/26/2000**	2.76		**5/16/2000**	2.85	
2/5/2000	3.36		**3/27/2000**	3.49		**5/17/2000**	2.94	
2/6/2000	2.98		**3/28/2000**	3.33		**5/18/2000**	3.18	
2/7/2000	3.47		**3/29/2000**	3.11		**5/19/2000**	2.88	
2/8/2000	3.38	1.	**3/30/2000**	3.03	1.	**5/20/2000**	2.44	
2/9/2000	3.42	20.	**3/31/2000**	2.88	1.	**5/21/2000**	2.46	
2/10/2000	3.22	3.	**4/1/2000**	2.53		**5/22/2000**	4.16	2.
2/11/2000	3.04	30.	**4/2/2000**	2.32		**5/23/2000**	3.11	
2/12/2000	3.98		**4/3/2000**	3.52		**5/24/2000**	2.86	2.
2/13/2000	3.58		**4/4/2000**	3.45		**5/25/2000**	3.3	1.
2/14/2000	4.87		**4/5/2000**	3.3		**5/26/2000**	2.81	
2/15/2000	4.02		**4/6/2000**	3.24	2.	**5/27/2000**	2.82	
2/16/2000	3.61		**4/7/2000**	2.98	1.	**5/28/2000**	2.43	
2/17/2000	3.32		**4/8/2000**	3.34		**5/29/2000**	2.69	
2/18/2000	3.99		**4/9/2000**	3.12		**5/30/2000**	2.62	
2/19/2000	2.87		**4/10/2000**	3.37		**5/31/2000**	2.54	
2/20/2000	2.59		**4/11/2000**	3.2	1.	**6/1/2000**	2.5	
2/21/2000	2.95		**4/12/2000**	3.15		**6/2/2000**	1.91	4.
2/22/2000	3.1	33.	**4/13/2000**	3.5		**6/3/2000**	2.24	
2/23/2000	3.16	2.	**4/14/2000**	3.06	2.	**6/4/2000**	2.2	
2/24/2000	2.91		**4/15/2000**	3.69		**6/5/2000**	2.71	1.
2/25/2000	3.06	7.	**4/16/2000**	3.17		**6/6/2000**	2.75	
2/26/2000	2.69		**4/17/2000**	3.44		**6/7/2000**	2.54	3.
2/27/2000	2.54		**4/18/2000**	3.54		**6/8/2000**	2.51	4.
2/28/2000	3.	2.	**4/19/2000**	3.31		**6/9/2000**	2.21	2.
2/29/2000	3.09		**4/20/2000**	3.14	2.	**6/10/2000**	1.91	
3/1/2000	2.97	5.	**4/21/2000**	2.62		**6/11/2000**	1.95	
3/2/2000	2.97		**4/22/2000**	2.39		**6/12/2000**	2.42	
3/3/2000	2.94	3.	**4/23/2000**	2.34		**6/13/2000**	2.57	
3/4/2000	2.44		**4/24/2000**	2.9		**6/14/2000**	2.5	2.
3/5/2000	2.42		**4/25/2000**	3.25		**6/15/2000**	2.8	
3/6/2000	2.96	1.	**4/26/2000**	2.9		**6/16/2000**	2.47	1.
3/7/2000	2.94	2.	**4/27/2000**	3.06		**6/17/2000**	2.03	
3/8/2000	2.97	3.	**4/28/2000**	4.08		**6/18/2000**	1.97	
3/9/2000	2.94	1.	**4/29/2000**	3.58		**6/19/2000**	2.62	
3/10/2000	2.73	22.	**4/30/2000**	2.82		**6/20/2000**	2.5	
3/11/2000	2.55		**5/1/2000**	3.13		**6/21/2000**	2.57	
3/12/2000	2.29		**5/2/2000**	3.35		**6/22/2000**	2.45	
3/13/2000	2.76	39.	**5/3/2000**	3.14		**6/23/2000**	2.41	
3/14/2000	2.8	8.	**5/4/2000**	3.07		**6/24/2000**	2.03	
3/15/2000	2.84	10.	**5/5/2000**	2.91	3.	**6/25/2000**	1.93	

Table C- 2 (Continued)

6/26/2000	2.54		**8/16/2000**	2.72	21.	**10/6/2000**	2.58	
6/27/2000	2.46		**8/17/2000**	2.82	54.	**10/7/2000**	2.21	
6/28/2000	2.89		**8/18/2000**	2.9	7.	**10/8/2000**	2.18	
6/29/2000	2.74	2.	**8/19/2000**	2.44		**10/9/2000**	2.71	
6/30/2000	2.28		**8/20/2000**	2.29		**10/10/2000**	2.71	
7/1/2000	1.9		**8/21/2000**	2.77	2.	**10/11/2000**	2.68	
7/2/2000	1.79		**8/22/2000**	2.88		**10/12/2000**	2.72	
7/3/2000	1.97		**8/23/2000**	2.84		**10/13/2000**	2.46	
7/4/2000	1.92		**8/24/2000**	2.8		**10/14/2000**	2.24	
7/5/2000	2.18		**8/25/2000**	2.55	3.	**10/15/2000**	2.12	
7/6/2000	2.23		**8/26/2000**	2.28		**10/16/2000**	2.69	
7/7/2000	2.9		**8/27/2000**	2.24		**10/17/2000**	2.76	
7/8/2000	2.12		**8/28/2000**	3.11		**10/18/2000**	2.49	
7/9/2000	2.04		**8/29/2000**	2.81		**10/19/2000**	2.68	9.
7/10/2000	2.49		**8/30/2000**	2.73		**10/20/2000**	2.59	3.
7/11/2000	2.51		**8/31/2000**	3.01	1.	**10/21/2000**	2.25	
7/12/2000	2.83	2.	**9/1/2000**	2.56	9.5	**10/22/2000**	2.18	
7/13/2000	3.3		**9/2/2000**	2.99		**10/23/2000**	2.77	
7/14/2000	2.76		**9/3/2000**	2.95		**10/24/2000**	2.61	1.
7/15/2000	2.43		**9/4/2000**	2.84		**10/25/2000**	2.69	21.
7/16/2000	2.17		**9/5/2000**	2.75		**10/26/2000**	2.62	
7/17/2000	2.79		**9/6/2000**	2.76		**10/27/2000**	2.45	
7/18/2000	2.82		**9/7/2000**	2.72		**10/28/2000**	4.22	
7/19/2000	2.67		**9/8/2000**	2.71	3.	**10/29/2000**	2.24	
7/20/2000	2.66		**9/9/2000**	2.37		**10/30/2000**	2.61	
7/21/2000	2.78	3.	**9/10/2000**	2.22		**10/31/2000**	2.53	
7/22/2000	2.45		**9/11/2000**	2.8		**11/1/2000**	2.92	
7/23/2000	2.55		**9/12/2000**	2.66		**11/2/2000**	2.59	
7/24/2000	3.59		**9/13/2000**	2.34		**11/3/2000**	2.51	1.5
7/25/2000	3.1		**9/14/2000**	2.56		**11/4/2000**	2.25	
7/26/2000	3.09	2.	**9/15/2000**	2.97		**11/5/2000**	2.1	
7/27/2000	2.79	1.	**9/16/2000**	2.91		**11/6/2000**	2.68	
7/28/2000	2.8		**9/17/2000**	2.16		**11/7/2000**	2.7	
7/29/2000	2.36		**9/18/2000**	2.73		**11/8/2000**	2.76	3.
7/30/2000	2.21		**9/19/2000**	4.05		**11/9/2000**	2.91	29.
7/31/2000	3.04	1.	**9/20/2000**	2.89	3.	**11/10/2000**	2.62	
8/1/2000	3.8	4.	**9/21/2000**	2.77		**11/11/2000**	2.21	
8/2/2000	3.02		**9/22/2000**	2.7		**11/12/2000**	2.16	
8/3/2000	2.92		**9/23/2000**	3.3		**11/13/2000**	2.6	
8/4/2000	3.14		**9/24/2000**	2.47		**11/14/2000**	3.29	
8/5/2000	2.5		**9/25/2000**	3.57		**11/15/2000**	2.72	6.5
8/6/2000	2.38		**9/26/2000**	3.63	4.	**11/16/2000**	2.77	5.
8/7/2000	2.82		**9/27/2000**	2.97		**11/17/2000**	2.61	2.
8/8/2000	2.82		**9/28/2000**	2.8		**11/18/2000**	2.26	
8/9/2000	2.83		**9/29/2000**	2.81		**11/19/2000**	2.46	
8/10/2000	3.82		**9/30/2000**	2.34		**11/20/2000**	2.92	
8/11/2000	2.8		**10/1/2000**	2.39		**11/21/2000**	2.76	1.
8/12/2000	2.38		**10/2/2000**	2.68		**11/22/2000**	2.58	
8/13/2000	2.2		**10/3/2000**	2.8		**11/23/2000**	2.18	
8/14/2000	2.81	1.	**10/4/2000**	2.65		**11/24/2000**	2.2	
8/15/2000	2.81	6.	**10/5/2000**	2.82		**11/25/2000**	2.91	

Table C- 2 (Continued)

11/26/2000	2.58		**1/16/2001**	2.54		**3/8/2001**	2.98	
11/27/2000	2.74		**1/17/2001**	2.51		**3/9/2001**	2.78	
11/28/2000	2.74		**1/18/2001**	3.3	1.	**3/10/2001**	2.55	
11/29/2000	2.74	1.	**1/19/2001**	3.72		**3/11/2001**	2.31	
11/30/2000	2.65		**1/20/2001**	4.16		**3/12/2001**	2.87	
12/1/2000	2.46		**1/21/2001**	2.88		**3/13/2001**	3.08	
12/2/2000	2.29		**1/22/2001**	2.91		**3/14/2001**	2.81	
12/3/2000	2.15		**1/23/2001**	2.88		**3/15/2001**	3.81	
12/4/2000	2.4		**1/24/2001**	2.87		**3/16/2001**	3.33	
12/5/2000	2.3	1.	**1/25/2001**	2.7		**3/17/2001**	2.86	
12/6/2000	2.71		**1/26/2001**	2.28		**3/18/2001**	2.66	
12/7/2000	2.55		**1/27/2001**	2.25		**3/19/2001**	2.99	
12/8/2000	2.54		**1/28/2001**	2.63		**3/20/2001**	3.34	
12/9/2000	2.14		**1/29/2001**	2.41		**3/21/2001**	4.5	
12/10/2000	2.09		**1/30/2001**	2.99		**3/22/2001**	3.91	
12/11/2000	2.51		**1/31/2001**	2.72		**3/23/2001**	3.14	2.
12/12/2000	2.67		**2/1/2001**	2.32		**3/24/2001**	2.76	
12/13/2000	2.82		**2/2/2001**	2.4		**3/25/2001**	2.55	
12/14/2000	2.79		**2/3/2001**	2.15		**3/26/2001**	2.97	
12/15/2000	2.45	1.	**2/4/2001**	2.08		**3/27/2001**	2.84	
12/16/2000	2.62		**2/5/2001**	2.42		**3/28/2001**	2.83	
12/17/2000	3.12		**2/6/2001**	2.58	2.	**3/29/2001**	4.08	
12/18/2000	2.77		**2/7/2001**	2.6		**3/30/2001**	4.65	
12/19/2000	2.95		**2/8/2001**	2.51		**3/31/2001**	3.83	
12/20/2000	2.65		**2/9/2001**	2.32		**4/1/2001**	4.17	
12/21/2000	2.65		**2/10/2001**	2.33		**4/2/2001**	3.99	
12/22/2000	2.45		**2/11/2001**	2.06		**4/3/2001**	3.65	
12/23/2000	2.2		**2/12/2001**	3.		**4/4/2001**	3.7	
12/24/2000	2.21		**2/13/2001**	2.8		**4/5/2001**	3.29	
12/25/2000	2.03		**2/14/2001**	2.96		**4/6/2001**	3.27	
12/26/2000	2.26		**2/15/2001**	2.95	1.	**4/7/2001**	2.51	
12/27/2000	2.55		**2/16/2001**	3.		**4/8/2001**	2.67	
12/28/2000	2.52		**2/17/2001**	4.6		**4/9/2001**	3.01	
12/29/2000	2.37		**2/18/2001**	3.		**4/10/2001**	2.89	
12/30/2000	2.32		**2/19/2001**	3.08		**4/11/2001**	2.85	
12/31/2000	2.27		**2/20/2001**	2.85		**4/12/2001**	2.65	
1/1/2001	2.34		**2/21/2001**	2.8		**4/13/2001**	2.53	
1/2/2001	2.68		**2/22/2001**	2.9		**4/14/2001**	2.33	
1/3/2001	2.57		**2/23/2001**	2.55		**4/15/2001**	2.33	
1/4/2001	2.68		**2/24/2001**	2.63		**4/16/2001**	2.78	
1/5/2001	2.6		**2/25/2001**	3.13		**4/17/2001**	2.83	
1/6/2001	2.32		**2/26/2001**	3.29		**4/18/2001**	2.95	
1/7/2001	2.25		**2/27/2001**	2.98		**4/19/2001**	2.88	
1/8/2001	2.81		**2/28/2001**	2.79		**4/20/2001**	2.79	
1/9/2001	2.59		**3/1/2001**	2.69		**4/21/2001**	2.26	
1/10/2001	2.63		**3/2/2001**	2.75		**4/22/2001**	2.12	
1/11/2001	2.58		**3/3/2001**	2.6		**4/23/2001**	2.74	
1/12/2001	2.56		**3/4/2001**	3.88		**4/24/2001**	2.92	
1/13/2001	2.37		**3/5/2001**	3.85		**4/25/2001**	3.65	
1/14/2001	2.08		**3/6/2001**	3.28		**4/26/2001**	2.92	
1/15/2001	2.63		**3/7/2001**	3.06		**4/27/2001**	2.6	

Table C- 2 (Continued)

4/28/2001	2.22		**6/18/2001**	2.64		**8/8/2001**	1.9	
4/29/2001	2.16		**6/19/2001**	2.53		**8/9/2001**	1.83	
4/30/2001	2.56		**6/20/2001**	2.48		**8/10/2001**	2.29	10.
5/1/2001	2.6		**6/21/2001**	2.56		**8/11/2001**	1.97	
5/2/2001	2.55		**6/22/2001**	2.68		**8/12/2001**	2.12	
5/3/2001	2.61		**6/23/2001**	2.33		**8/13/2001**	2.54	
5/4/2001	2.3		**6/24/2001**	1.9		**8/14/2001**	2.54	5.
5/5/2001	2.12		**6/25/2001**	4.25		**8/15/2001**	2.34	
5/6/2001	1.96		**6/26/2001**	2.63		**8/16/2001**	2.18	2.
5/7/2001	2.55	1.	**6/27/2001**	2.61		**8/17/2001**	2.17	
5/8/2001	2.55		**6/28/2001**	2.59	1.	**8/18/2001**	2.59	
5/9/2001	2.36		**6/29/2001**	2.89		**8/19/2001**	1.93	
5/10/2001	1.62		**6/30/2001**	2.01		**8/20/2001**	2.29	
5/11/2001	2.54		**7/1/2001**	1.95		**8/21/2001**	2.39	
5/12/2001	2.13		**7/2/2001**	2.44		**8/22/2001**	4.49	
5/13/2001	1.97		**7/3/2001**	1.97		**8/23/2001**	2.32	
5/14/2001	2.6		**7/4/2001**	2.8		**8/24/2001**	2.5	
5/15/2001	2.5		**7/5/2001**	2.99		**8/25/2001**	2.2	
5/16/2001	3.03		**7/6/2001**	2.9		**8/26/2001**	2.	
5/17/2001	2.99		**7/7/2001**	2.1		**8/27/2001**	2.4	
5/18/2001	2.5		**7/8/2001**	2.43		**8/28/2001**	2.24	
5/19/2001	2.22		**7/9/2001**	2.66		**8/29/2001**	2.24	
5/20/2001	2.25		**7/10/2001**	2.51		**8/30/2001**	2.49	
5/21/2001	2.82	1.	**7/11/2001**	2.7		**8/31/2001**	3.17	
5/22/2001	2.75		**7/12/2001**	2.5		**9/1/2001**	1.95	
5/23/2001	2.6		**7/13/2001**	2.51		**9/2/2001**	1.78	
5/24/2001	2.59		**7/14/2001**	2.13		**9/3/2001**	1.95	
5/25/2001	2.49		**7/15/2001**	2.14		**9/4/2001**	2.6	
5/26/2001	3.41		**7/16/2001**	2.48		**9/5/2001**	2.59	
5/27/2001	2.04		**7/17/2001**	2.42		**9/6/2001**	2.29	
5/28/2001	2.67		**7/18/2001**	2.52		**9/7/2001**	2.31	
5/29/2001	2.69		**7/19/2001**	2.54		**9/8/2001**	1.97	
5/30/2001	2.56	8.	**7/20/2001**	2.43		**9/9/2001**	1.99	
5/31/2001	2.52		**7/21/2001**	2.07		**9/10/2001**	2.39	
6/1/2001	3.03	1.	**7/22/2001**	1.95		**9/11/2001**	2.33	1.
6/2/2001	2.34		**7/23/2001**	2.29		**9/12/2001**	2.33	
6/3/2001	2.03		**7/24/2001**	2.54	2.	**9/13/2001**	2.86	1.
6/4/2001	2.57		**7/25/2001**	2.69	2.	**9/14/2001**	2.03	
6/5/2001	2.5	4.	**7/26/2001**	3.21	1.	**9/15/2001**	1.99	
6/6/2001	2.62	2.	**7/27/2001**	2.77	2.	**9/16/2001**	1.93	
6/7/2001	2.63		**7/28/2001**	2.13		**9/17/2001**	2.41	
6/8/2001	2.54		**7/29/2001**	2.23		**9/18/2001**	2.37	
6/9/2001	2.08		**7/30/2001**	2.61		**9/19/2001**	2.4	
6/10/2001	1.93		**7/31/2001**	2.5		**9/20/2001**	2.78	5.
6/11/2001	2.6		**8/1/2001**	2.53		**9/21/2001**	2.34	4.
6/12/2001	2.59		**8/2/2001**	2.54		**9/22/2001**	1.98	
6/13/2001	3.	1.	**8/3/2001**	2.47		**9/23/2001**	1.9	
6/14/2001	2.92	1.	**8/4/2001**	2.03		**9/24/2001**	3.03	
6/15/2001	2.82		**8/5/2001**	1.91		**9/25/2001**	2.93	
6/16/2001	2.26		**8/6/2001**	2.53		**9/26/2001**	2.46	
6/17/2001	2.		**8/7/2001**	2.24		**9/27/2001**	2.47	

Table C- 2 (Continued)

9/28/2001	2.36		**11/18/2001**	1.9		**1/8/2002**	2.69	
9/29/2001	2.07		**11/19/2001**	2.25		**1/9/2002**	2.53	
9/30/2001	2.03		**11/20/2001**	2.24	3.	**1/10/2002**	2.6	
10/1/2001	2.28		**11/21/2001**	2.14		**1/11/2002**	2.31	3.
10/2/2001	2.46		**11/22/2001**	2.05		**1/12/2002**	2.3	
10/3/2001	2.32		**11/23/2001**	1.82		**1/13/2002**	2.08	
10/4/2001	2.32		**11/24/2001**	2.36		**1/14/2002**	2.47	
10/5/2001	2.29	1.	**11/25/2001**	1.89		**1/15/2002**	2.43	
10/6/2001	2.04		**11/26/2001**	2.21		**1/16/2002**	2.34	
10/7/2001	1.96		**11/27/2001**	2.27		**1/17/2002**	2.3	
10/8/2001	2.46		**11/28/2001**	2.3	1.	**1/18/2002**	2.39	7.
10/9/2001	2.34		**11/29/2001**	2.25		**1/19/2002**	2.59	
10/10/2001	2.29		**11/30/2001**	2.32		**1/20/2002**	3.81	
10/11/2001	2.35		**12/1/2001**	2.02		**1/21/2002**	3.45	
10/12/2001	2.29		**12/2/2001**	1.87		**1/22/2002**	3.1	3.
10/13/2001	1.99		**12/3/2001**	2.33		**1/23/2002**	5.03	
10/14/2001	2.28		**12/4/2001**	2.3		**1/24/2002**	4.26	
10/15/2001	2.46		**12/5/2001**	2.26		**1/25/2002**	4.38	
10/16/2001	2.45		**12/6/2001**	2.28		**1/26/2002**	3.26	
10/17/2001	2.7		**12/7/2001**	2.09		**1/27/2002**	2.05	
10/18/2001	2.43		**12/8/2001**	1.86		**1/28/2002**	3.01	
10/19/2001	2.36		**12/9/2001**	1.77		**1/29/2002**	2.83	
10/20/2001	2.2		**12/10/2001**	3.12		**1/30/2002**	2.66	
10/21/2001	2.01		**12/11/2001**	3.		**1/31/2002**	2.69	
10/22/2001	2.26	13.	**12/12/2001**	2.42		**2/1/2002**	2.62	9.
10/23/2001	1.84		**12/13/2001**	2.44	3.	**2/2/2002**	2.36	
10/24/2001	2.27		**12/14/2001**	2.5	3.	**2/3/2002**	2.23	
10/25/2001	2.31		**12/15/2001**	2.07		**2/4/2002**	2.5	
10/26/2001	2.29		**12/16/2001**	1.94		**2/5/2002**	2.64	
10/27/2001	1.99		**12/17/2001**	2.99		**2/6/2002**	2.72	
10/28/2001	2.14		**12/18/2001**	2.55	29.	**2/7/2002**	3.74	
10/29/2001	2.42		**12/19/2001**	2.44		**2/8/2002**	3.06	
10/30/2001	2.4	5.	**12/20/2001**	2.24		**2/9/2002**	2.53	
10/31/2001	2.36		**12/21/2001**	2.13	8.	**2/10/2002**	2.66	
11/1/2001	2.37		**12/22/2001**	1.99		**2/11/2002**	3.	
11/2/2001	2.3		**12/23/2001**	1.94		**2/12/2002**	2.72	1.
11/3/2001	2.06		**12/24/2001**	2.48		**2/13/2002**	2.71	2.
11/4/2001	1.97		**12/25/2001**	1.86		**2/14/2002**	2.52	
11/5/2001	2.45	1.	**12/26/2001**	2.08		**2/15/2002**	2.49	1.
11/6/2001	2.25		**12/27/2001**	2.13		**2/16/2002**	2.41	
11/7/2001	2.37		**12/28/2001**	2.03		**2/17/2002**	2.34	
11/8/2001	2.39		**12/29/2001**	1.95		**2/18/2002**	2.53	4.
11/9/2001	2.25		**12/30/2001**	1.9		**2/19/2002**	2.99	4.
11/10/2001	2.04		**12/31/2001**	2.1		**2/20/2002**	2.12	1.
11/11/2001	1.99		**1/1/2002**	1.8		**2/21/2002**	2.49	1.
11/12/2001	2.37		**1/2/2002**	2.2		**2/22/2002**	2.46	3.
11/13/2001	2.27		**1/3/2002**	2.2		**2/23/2002**	2.43	
11/14/2001	2.36		**1/4/2002**	2.6		**2/24/2002**	2.26	
11/15/2001	2.34	7.	**1/5/2002**	2.3		**2/25/2002**	2.21	
11/16/2001	2.12	4.	**1/6/2002**	3.07		**2/26/2002**	2.54	
11/17/2001	1.96		**1/7/2002**	3.12	3.	**2/27/2002**	2.52	

Table C- 2 (Continued)

2/28/2002	2.52		**4/21/2002**	2.14		**6/12/2002**	2.06	5.
3/1/2002	2.4		**4/22/2002**	2.5		**6/13/2002**	2.11	
3/2/2002	3.03		**4/23/2002**	2.76	3.	**6/14/2002**	2.12	12.
3/3/2002	3.43		**4/24/2002**	2.64	10.	**6/15/2002**	1.87	
3/4/2002	2.96		**4/25/2002**	2.55	3.	**6/16/2002**	1.7	
3/5/2002	2.9		**4/26/2002**	2.75	18.	**6/17/2002**	2.08	1.
3/6/2002	2.75	3.	**4/27/2002**	2.11		**6/18/2002**	2.15	
3/7/2002	2.73	8.	**4/28/2002**	2.01		**6/19/2002**	2.05	1.
3/8/2002	2.9		**4/29/2002**	2.46		**6/20/2002**	2.07	52.
3/9/2002	2.22		**4/30/2002**	2.47		**6/21/2002**	2.05	14.
3/10/2002	2.32		**5/1/2002**	2.52		**6/22/2002**	1.79	
3/11/2002	2.8	1.	**5/2/2002**	2.33		**6/23/2002**	1.79	
3/12/2002	3.17	1.	**5/3/2002**	2.42		**6/24/2002**	2.19	
3/13/2002	4.26	1.	**5/4/2002**	2.27		**6/25/2002**	2.17	2.
3/14/2002	3.61	2.	**5/5/2002**	2.52		**6/26/2002**	2.9	11.
3/15/2002	3.17	3.	**5/6/2002**	2.45		**6/27/2002**	2.86	
3/16/2002	2.7		**5/7/2002**	2.39		**6/28/2002**	2.37	
3/17/2002	2.86		**5/8/2002**	2.24		**6/29/2002**	2.19	
3/18/2002	3.31		**5/9/2002**	2.5		**6/30/2002**	1.66	
3/19/2002	3.		**5/10/2002**	2.32		**7/1/2002**	1.84	1.
3/20/2002	3.07		**5/11/2002**	2.03		**7/2/2002**	1.54	
3/21/2002	3.95	3.	**5/12/2002**	1.88		**7/3/2002**	2.	
3/22/2002	3.32		**5/13/2002**	2.63		**7/4/2002**	2.	
3/23/2002	2.92		**5/14/2002**	2.69	3.	**7/5/2002**	2.1	
3/24/2002	2.72		**5/15/2002**	2.26		**7/6/2002**	2.06	
3/25/2002	3.09		**5/16/2002**	2.48		**7/7/2002**	1.98	
3/26/2002	3.06		**5/17/2002**	2.11		**7/8/2002**	2.94	1.
3/27/2002	3.39		**5/18/2002**	2.32		**7/9/2002**	2.46	
3/28/2002	2.96		**5/19/2002**	2.02		**7/10/2002**	1.96	1.
3/29/2002	2.75		**5/20/2002**	2.37	2.	**7/11/2002**	2.5	
3/30/2002	2.47		**5/21/2002**	2.45		**7/12/2002**	2.62	
3/31/2002	2.63		**5/22/2002**	2.41		**7/13/2002**	2.05	
4/1/2002	3.68	5.	**5/23/2002**	2.36	2.	**7/14/2002**	2.17	
4/2/2002	2.48	3.	**5/24/2002**	2.4		**7/15/2002**	1.96	
4/3/2002	2.9		**5/25/2002**	1.96		**7/16/2002**	2.83	
4/4/2002	2.75		**5/26/2002**	1.8		**7/17/2002**	1.8	2.
4/5/2002	2.63		**5/27/2002**	2.29		**7/18/2002**	2.71	
4/6/2002	2.61		**5/28/2002**	2.28	3.	**7/19/2002**	1.83	1.
4/7/2002	2.27		**5/29/2002**	2.37	2.	**7/20/2002**	2.15	
4/8/2002	2.74	10.	**5/30/2002**	2.29		**7/21/2002**	1.9	
4/9/2002	2.75	4.	**5/31/2002**	2.23		**7/22/2002**	2.48	2.
4/10/2002	2.98	2.	**6/1/2002**	2.27		**7/23/2002**	2.62	
4/11/2002	2.62	5.	**6/2/2002**	1.9		**7/24/2002**	2.84	
4/12/2002	2.65	4.	**6/3/2002**	2.19		**7/25/2002**	3.01	
4/13/2002	2.46		**6/4/2002**	2.27		**7/26/2002**	3.38	
4/14/2002	2.45		**6/5/2002**	2.21		**7/27/2002**	2.23	
4/15/2002	2.8		**6/6/2002**	2.41	2.	**7/28/2002**	2.05	
4/16/2002	2.63		**6/7/2002**	2.67	3.	**7/29/2002**	2.39	
4/17/2002	1.95	2.	**6/8/2002**	2.		**7/30/2002**	2.39	7.
4/18/2002	2.63	2.	**6/9/2002**	1.81		**7/31/2002**	2.35	1.
4/19/2002	2.57	3.	**6/10/2002**	2.18		**8/1/2002**	1.95	
4/20/2002	2.28		**6/11/2002**	2.16		**8/2/2002**	2.28	

Table C- 2 (Continued)

8/3/2002	1.9	**9/23/2002**	2.63	**11/13/2002**	4.57
8/4/2002	2.	**9/24/2002**	2.73	**11/14/2002**	3.85
8/5/2002	2.24	**9/25/2002**	2.61	**11/15/2002**	3.3
8/6/2002	2.48	**9/26/2002**	3.64	**11/16/2002**	4.26
8/7/2002	2.37	**9/27/2002**	3.42	**11/17/2002**	5.6
8/8/2002	2.21	**9/28/2002**	2.9	**11/18/2002**	4.91
8/9/2002	2.17	**9/29/2002**	2.55	**11/19/2002**	3.97
8/10/2002	2.01	**9/30/2002**	2.85	**11/20/2002**	4.65
8/11/2002	1.95	**10/1/2002**	2.81	**11/21/2002**	2.6
8/12/2002	2.49	**10/2/2002**	2.77	**11/22/2002**	3.36
8/13/2002	2.5	**10/3/2002**	2.7	**11/23/2002**	2.86
8/14/2002	2.59	**10/4/2002**	2.5	**11/24/2002**	2.76
8/15/2002	2.7	**10/5/2002**	2.24	**11/25/2002**	2.98
8/16/2002	2.59	**10/6/2002**	2.17	**11/26/2002**	2.99
8/17/2002	2.21	**10/7/2002**	2.58	**11/27/2002**	2.87
8/18/2002	2.1	**10/8/2002**	2.67	**11/28/2002**	2.62
8/19/2002	2.36	**10/9/2002**	2.41	**11/29/2002**	2.49
8/20/2002	2.54	**10/10/2002**	2.54	**11/30/2002**	2.54
8/21/2002	2.36	**10/11/2002**	3.86	**12/1/2002**	2.59
8/22/2002	2.3	**10/12/2002**	3.68	**12/2/2002**	2.82
8/23/2002	2.27	**10/13/2002**	3.8	**12/3/2002**	2.76
8/24/2002	2.05	**10/14/2002**	3.18	**12/4/2002**	3.02
8/25/2002	1.97	**10/15/2002**	3.45	**12/5/2002**	1.9
8/26/2002	3.35	**10/16/2002**	5.34	**12/6/2002**	1.47
8/27/2002	2.87	**10/17/2002**	4.06	**12/7/2002**	2.84
8/28/2002	2.99	**10/18/2002**	3.29	**12/8/2002**	2.64
8/29/2002	2.69	**10/19/2002**	2.87	**12/9/2002**	3.24
8/30/2002	3.63	**10/20/2002**	2.42	**12/10/2002**	2.86
8/31/2002	3.86	**10/21/2002**	3.1	**12/11/2002**	4.64
9/1/2002	4.69	**10/22/2002**	3.33	**12/12/2002**	3.97
9/2/2002	2.97	**10/23/2002**	2.87	**12/13/2002**	4.78
9/3/2002	2.9	**10/24/2002**	2.97	**12/14/2002**	4.42
9/4/2002	3.	**10/25/2002**	2.88	**12/15/2002**	3.78
9/5/2002	2.74	**10/26/2002**	2.64	**12/16/2002**	3.64
9/6/2002	2.59	**10/27/2002**	2.6	**12/17/2002**	3.48
9/7/2002	2.3	**10/28/2002**	3.82	**12/18/2002**	3.3
9/8/2002	2.2	**10/29/2002**	4.61	**12/19/2002**	3.25
9/9/2002	2.62	**10/30/2002**	4.36	**12/20/2002**	4.05
9/10/2002	2.61	**10/31/2002**	3.51	**12/21/2002**	3.34
9/11/2002	2.6	**11/1/2002**	3.13	**12/22/2002**	2.97
9/12/2002	2.42	**11/2/2002**	2.76	**12/23/2002**	2.9
9/13/2002	2.36	**11/3/2002**	2.61	**12/24/2002**	4.06
9/14/2002	2.54	**11/4/2002**	2.92	**12/25/2002**	.45
9/15/2002	3.88	**11/5/2002**	3.38	**12/26/2002**	3.47
9/16/2002	3.87	**11/6/2002**	4.58	**12/27/2002**	3.06
9/17/2002	3.07	**11/7/2002**	3.62	**12/28/2002**	2.81
9/18/2002	3.37	**11/8/2002**	3.16	**12/29/2002**	2.67
9/19/2002	3.57	**11/9/2002**	3.06	**12/30/2002**	2.73
9/20/2002	2.46	**11/10/2002**	2.88	**12/31/2002**	2.7
9/21/2002	2.19	**11/11/2002**	3.26		
9/22/2002	2.91	**11/12/2002**	5.01		

APPENDIX D: TMDL QUESTIONAIRE – DAVIDSON COUNTY (RICH FORK CREEK AND HAMBY CREEK WATERSHEDS)

TMDL QUESTIONAIRE – Davidson County (Hamby Creek Watershed)

Manure Application

1. Is manure from beef cattle, dairy cattle, swine, poultry, sheep, or horses collected and applied to agricultural lands? **Only extremely limited amounts around feeders – mostly beef cattle on pasture**.

Can you approximate the percentage of livestock that is collected and applied to agricultural land?
Example: 30 percent swine, 100 percent dairy cattle, and 100 percent poultry are collected and applied.

Animal Type	Percent Collected and Applied
Beef Cattle	**Less than 5%**
Dairy Cattle	**No commercial operations in watershed**
Swine	**No commercial operations in watershed**
Poultry	**No commercial operations in watershed**
Sheep	**No commercial operations in watershed**
Horses	**No commercial operations in watershed**

2. Is manure imported (poultry litter) into the county? Yes or **No** (circle correct answer)

   2a. Are there any confined poultry operations? How do they manage their poultry litter? Where (and how, and when) do they land apply? **None in this watershed**

3. If so, is data available to calculate the loading rates? Yes or No (circle correct answer)
   What are the rates if known? _____

4. Dairy cattle are assumed to be confined 40 percent of the time and grazing 60 percent. Dairy cattle are assumed not to have access to streams. **No commercial dairy operations in this watershed**
   How is the liquid residual from cleaning barns after milking disposed of?
   It could be assumed that the majority of the operation's parlor waste is collected with the waste system. If this is a significant amount available for runoff, please indicate. ___

Stream Access

5. Do beef cattle have access to streams? **Yes** or No (circle correct answer)
   Could you approximate the percentage beef cattle having stream access within the watershed? **95%**__

6. Are hogs confined or do they have limited stream access? Confined _ Limited access __

   No commercial swine operations in this watershed

7. Percent of beef cows with access to forested areas __**100**____%

8. Do you think the estimated number of 22-38 deer per square mile is accurate? Yes or No (circle correct answer)
   No estimate. Contact NC Wildlife Resources Commission

9. Do you have any other estimate on deer population? _____ per square mile

Septic System Contribution

10. What do you estimate the septic system failure rate in your county to be? _____%
    EPA assumes 20 percent. **No estimate. Contact Davidson County Health Department**

TMDL QUESTIONAIRE – Davidson County (Rich Fork Creek Watershed)

Manure Application

1. Is manure from beef cattle, dairy cattle, swine, poultry, sheep, or horses collected and applied to agricultural lands? **Only in very limited amounts from beef cattle operations from around feeders. One poultry operation applies waste in this watershed.**

Can you approximate the percentage of livestock that is collected and applied to agricultural land?
Example: 30 percent swine, 100 percent dairy cattle, and 100 percent poultry are collected and applied.

Animal Type	Percent Collected and Applied
Beef Cattle	**Less than 5%**
Dairy Cattle	**No commercial operations in watershed**
Swine	**No commercial operations in watershed**
Poultry	**100% only 1 operation**
Sheep	**No commercial operations in watershed**
Horses	**No commercial operations in watershed**

2. Is manure imported (poultry litter) into the county? Yes or **No** (circle correct answer)

3. If so, is data available to calculate the loading rates? Yes or No (circle correct answer)
   What are the rates if known? _____

4. Dairy cattle are assumed to be confined 40 percent of the time and grazing 60 percent. Dairy cattle are assumed not to have access to streams. **No commercial dairies in this watershed**
   How is the liquid residual from cleaning barns after milking disposed of?
   It could be assumed that the majority of the operation's parlor waste is collected with the waste system. If this is a significant amount available for runoff, please indicate. _____ __

Stream Access

5. Do beef cattle have access to streams? **Yes** or No (circle correct answer)
   Could you approximate the percentage beef cattle having stream access within the watershed? **95** %

6. Are hogs confined or do they have limited stream access? Confined __% Limited access __
   No commercial swine operations in this watershed
7. Percent of beef cows with access to forested areas **_100_____**%

8. Do you think the estimated number of 15-30 deer per square mile is accurate? Yes or No (circle correct answer)
   No estimate. Contact NC Wildlife Resources Commission

9. Do you have any other estimate on deer population? _____ per square mile

Septic System Contribution

10. What do you estimate the septic system failure rate in your county to be? ___;
    EPA assumes 20 percent. **No estimate. Contact Davidson County Health Department.**

APPENDIX E PUBLIC NOTIFICATION OF PUBLIC REVIEW DRAFT OF RICH FORK CREEK AND HAMBY CREEK FECAL COLIFORM TMDLS

Appendix E-1. Public Notice

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E. Director
Division of Water Quality

Now Available Upon Request

Fecal Coliform
Total Maximum Daily Loads
Rich Fork and Hamby Creeks

Public Review Draft – February 2004

Is now available upon request from the North Carolina Division of Water Quality. This TMDL study was prepared as a requirement of the Federal Water Pollution Control Act, Section 303(d). The study identifies the sources of the pollutants, determines allowable loads to surface waters, and suggests pollutant allocations.

TO OBTAIN A FREE COPY OF THE TMDL REPORT:

Please contact Ms. Robin Markham (919) 733-5083, extension 558 or write to:

Adugna Kebede
Water Quality Planning Branch
NC Division of Water Quality
1617 Mail Service Center
Raleigh, NC 27699-1617

The draft TMDL is also located on the following website: http://h2o.enr.state.nc.us/tmdl. Interested parties are invited to comment on the draft TMDL study by **March 25, 2004**. Comments concerning the report should be directed to the Division of Water Quality at the above address.

Public Meeting Notice

A public meeting to discuss the TMDL will be held on
March 18 at 10:00 AM at the following address:
Thomasville Public Library (Conference Room)
14 Randolph Street
Thomasville, NC 27360
Phone: (336)- 474-2690

Appendix E-2. Affidavit of Publication from High Point Enterprise Public Notification

Public Notice
State of North Carolina
Division of Water Quality

Availability of the Fecal Coliform Total Maximum Daily Loads (TMDLs) for Rich Fork and Hamby Creeks

Copies of the TMDL may be obtained by calling Robin Markham at (919) 733-5083 ext. 568 or on the internet at http://h2o.enr.state.nc.us/tmdl. A public meeting to discuss the TMDL will be held on March 10, 10:00 AM at the following address:
Thomasville Public Library
(Conference Room)
14 Randolph Street
Thomasville, NC 27360
Phone: (336)-474-2580

Written comments regarding this TMDL will be accepted until March 26th. Please mail comments to: NCDWQ-Planning Branch, attn: Adagna Kobeda, 1617 Mail Service Center, Raleigh NC 27699.

February 26, 2004

NORTH CAROLINA
GUILFORD COUNTY

AFFIDAVIT OF PUBLICATION

Before the undersigned, a Notary Public of said County and State, duly commissioned, qualified, and authorized by law to administer oaths, personally appeared Carol F. Elliott, who being first duly sworn, deposes and says: that she is Advertising billing Manager of THE HIGH POINT ENTERPRISE, INC. engaged in the publication of a newspaper known as THE HIGH POINT ENTERPRISE, published, issued, and entered as second class mail in the City of High Point in said County and State; that (she) is authorized to make this affidavit and sworn statement; that the notice or other legal advertisement, a true copy of which is attached hereto, was published in The High Point Enterprise on the following dates:.....

February 26, 2004

.....

and that the said newspaper in which such notice, paper, document, or legal advertisement was published was, at the time of each and every such publication, a newspaper meeting all the requirements and qualifications of Section 1-597 of the General Statutes of North Carolina and was a qualified newspaper within the meaning of Section 1-597 of the General Statutes of North Carolina.

This.....19thday of.....March....., 20 04.....

Carol F. Elliott

Sworn to and subscribed before me, this 19th day of March, 20 04

Retta C. Edwards
Notary Public

OFFICIAL SEAL
Notary Public - North Carolina
DAVIDSON COUNTY
RETTA C. EDWARDS
My Commission Expires

My Commission expires.....

My Commission Expires 1-16-2008

Appendix E-3. Affidavit of Publication from Thomasville Times Public Notification

Public Notice
State of North Carolina
Division of Water Quality

Availability of the Fecal Coliform Total Maximum Daily Loads (TMDLs) for Rich Fork and Hamby Creeks

Copies of the TMDL may be obtained by calling Robin Markham at (919) 733-5083 ext. 556 or on the internet at http://h2o.enr.state.nc.us/tmdl. A public meeting to discuss the TMDL will be held on March 18, 10:00 AM at the following address:
Thomasville Public Library
(Conference Room)
14 Randolph Street
Thomasville, NC 27360
Phone: (336)-474-2690

Written comments regarding the TMDL will be accepted until March 25th. Please mail comments to: NCDWQ-Planning Branch, attn: Adugna Kebede, 1617 Mail Service Center, Raleigh NC 27699.

February 26, 2004

NORTH CAROLINA
DAVIDSON COUNTY

AFFIDAVIT OF PUBLICATION

Before the undersigned, a Notary Public of said County and State, duly commissioned, qualified, and authorized by law to administer oaths, personally appeared Carol F. Elliott, who being first duly sworn, deposes and says: that he is Adv. Billing Mgr. of THE HIGH POINT ENTERPRISE, INC. engaged in the publication of a newspaper known as THE THOMASVILLE TIMES published, issued and entered as second class mail in the City of Thomasville Davidson County, NC that he (she) is authorized to make this affidavit and sworn statement; that the notice or other legal advertisement, a true copy of which is attached hereto, was published in the Thomasville Times on the following dates:

February 26, 2004

and that the said newspaper in which such notice, paper, document, or legal advertisement was published was, at the time of each and every such publication, a newspaper meeting all the requirements and qualifications of Section 1-597 of the General Statutes of North Carolina and was a qualified newspaper within the meaning of Section 1-597 of the General Statutes of North Carolina.

This 19th day of March, 20 04

Carol F. Elliott

Sworn to and subscribed before me, this 19th day of March, 20 04

Retta C. Edwards
Notary Public

OFFICIAL SEAL
Notary Public - North Carolina
DAVIDSON COUNTY
RETTA C. EDWARDS
My Commission Expires

My Commission expires:

My Commission Expires 1-16-2006

APPENDIX F. PUBLIC COMMENTS ON THE PUBLIC REVIEW DRAFT OF THE RICH FORK CREEK AND HAMBY CREEK FECAL COLIFORM TMDLS AND DWQ RESPONSE

Appendix F-1. Public Comments on the Public Review Draft of the Rich Fork Creek and Hamby Creek Fecal Coliform TMDLs

BLUE RIDGE ENVIRONMENTAL DEFENSE LEAGUE
332 Shady Grove Church Road Winston-Salem, NC 27107
Tel (336)769-0955 - Fax (336)769-9198 - E-mail: Heelsrnum1@aol.com
www.bredl.org

March 24, 2004

Adugna Kebede
Water Quality Planning Branch
NC Division of Water Quality
1617 Mail Service Center
Raleigh, NC 27699-1617

Re: TMDL Loads for Fecal Coliform for Rich Fork Creek and Hamby Creek

Dear Mr. Kebede:

Thank you for the informative public meeting in Thomasville and the opportunity to provide comments on the Rich Fork Creek TMDL study.

As noted in the draft study, the objective of the TMDL study is to estimate the pollution level and allocate this level to the known sources in the watershed so that effective measures can be implemented and water quality returned to an acceptable level for designated water uses. In the case of Rich Fork and Hamby Creeks which are Class C waters, the designated uses are, "Biological Integrity, Propagation of aquatic life, and Recreation." (page iii).

After limited water monitoring and recognizing the absence of more frequent sampling, DWQ has selected a water quality target of an instantaneous concentration of 400cfu/100ml measured at the two existing ambient monitoring stations. To the extent that measuring water quality at these locations downstream of the two major waste water treatment plants will reflect water quality upstream of these two facilities, reaching this target satisfies the goal of the study. However, while violations at the WWTPS will result in higher concentrations at the downstream sites, these monitors will not help identify pollution sources above these plants.

The study breaks down the larger watersheds into subwatersheds. Rich Fork Creek above the Westside WWTP has three smaller creeks that come together just upstream of the plant: Rich Fork, Payne, and Ensley creeks. High Point's sewer collection system follows these smaller drainage systems. Understanding how land use changes are impacting pollution levels without reliable monitoring in each subwatershed is difficult and this inadequate monitoring will handicap the implementation of control measures.

It should also be noted that all three subwatersheds are undergoing rapid land use changes. The study uses 1996 land cover data to describe current conditions. Significant changes have taken place since 1996 and are reflected in more current maps of urbanized areas from the year 2000 Census. As you know, the conversion of forest cover to roofs and asphalt signicantly impacts stormwater runoff. Assumptions about land use and land cover should reflect the current conditions. Please also note that the Rich Fork Creek watershed originates in the City of High Point and not "near" High Point as described in Section 1.1.

Finally, the TMDL divides the Waste Load Allocations between continuous point sources (WWTP) and intermittant MS4 sources. In this watershed the two are directly related with new developments tied into the existing sewer system.

Permits for the High Point and Thomasville Phase II programs remain unissued a year after being submitted to the state in March 2003. Phase II rules are still in limbo for North Carolina and will probably require action in the next session of the General Assembly. Development in the watershed continues with no rules in place and no strategy to reduce pollution. Replacing natural land cover with asphalt and expanding an inadequate sewer collection system leaves both the Rich Fork and Hamby Creeks at risk.

The TMDL study provides a good basis for further investigation and an opportunity to begin a search for solutions. I encourage the Division to incorporate monitoring requirements that will identify causes and facilitate effective controls on both point and non-point sources.

Thank you for the opportunity to comment.

Sincerely,

David Mickey
Blue Ridge Environmental Defense League
332 Shady Grove Church Road
Winston-Salem, NC 27107

MARY C. CRIDLEBAUGH
3632 W. LEXINGTON AVE-EXT.
HIGH POINT, NC 27265-9232
Phone 336-889-2567
MARCH 23, 2004

MR ADUGNA KEBEDE
NC DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WATER QUALITY
WATER QUALITY SECTION
1617 MAIL SERVICE CENTER
RALEIGH, NC 27699-1617

RE: COMMENTS ON THE PUBLIC REVIEW DRAFT STUDY
TOTAL MAXIMUM DAILY LOADS FOR FECAL COLIFORM
FOR RICH FORK CREEK AND HAMBY CREEK, NORTH CAROLINA

MY FAMILY'S FARM LIES ALONG RICH FORK CREEK AND LITTLE/PAYNE CREEK. THIS INCLUDES THE JUNCTION OF THE TWO CREEKS. WE ARE ABOUT 1 MILE UPSTREAM FROM HIGH POINT'S WESTSIDE WASTEWATER TREATMENT PLANT AND MY HOUSE IS AT ONE OF THE MONITORING SITES, SR 1755.

WHILE I HAVE NO DIRECT KNOWLEDGE OF HAMBY CREEK, I AM VERY FAMILIAR WITH THE IMPAIRMENT OF UPPER RICH FORK AND LITTLE/PAYNE CREEKS.

IN THE PAST, WE HAVE RAISED FOOD CROPS IN THE CREEK BOTTOMS, BUT NOW HAVE QUALMS ABOUT CONTINUING TO DO SO. WE CERTAINLY DARE NOT USE THE CREEKS FOR IRRIGATION PURPOSES. WE ARE SUFFERING FINANCIAL LOSSES DUE TO THE POOR CONDITIONS OF THE STREAMS AND WANT TO SEE THEM CLEANED UP.

THE TOTAL MAXIMUM DAILY LOADS FOR FECAL COLIFORM FOR RICH FORK CREEK AND HAMBY CREEK, NORTH CAROLINA IS AN ADMIRABLE STUDY OF THE EXISTING SITUATION - THE REDUCTION GOALS ARE ALSO HIGHLY DESIRABLE. WHERE THE STUDY MISSES THE MARK IS ON WHAT THE CAUSES OF THE POLLUTION ARE.

WHAT NEEDS TO BE ADDED TO THE STUDY IS A DETAILED EXAMINATION OF THE BROKEN AND/OR LEAKING OUTFALL PIPES BETWEEN THE CITY OF HIGH POINT (INSIDE WHICH LEAKS AND BREAKS ARE ALSO OCCURRING) AND THE WESTSIDE WASTEWATER TREATMENT PLANT.

OUTFALL PIPES OF HIGH POINT'S SEWER SYSTEM HAVE BEEN BUILT ALONG ① KENNEDY MILL (OR ENSLEY) CREEK (SERVING THE INDUSTRIAL ENGLISH ROAD AREA OF HIGH POINT AND A LITTLE OF RANDOLPH COUNTY;) ② LITTLE OR PAYNE CREEK SERVING THE MOSTLY RESIDENTIAL EMORYWOOD AND HIGH POINT REGIONAL HOSPITAL SECTIONS OF HIGH POINT; AND ③ THE MAIN STREAM OF RICH FORK CREEK. RAMPANT DEVELOPMENT IS OCCURRING ON THE HEADWATERS OF UPPER RICH FORK AND LITTLE/PAYNE CREEKS.

THE LITTLE/PAYNE CREEK OUTFALL WAS BUILT IN 1929-30 OF TERRA COTTA PIPE ON TIMBER SLEEPERS. WHERE THE PIPE JOINTS HAVE PULLED APART THERE ARE CONSTANT LEAKS OF RAW SEWAGE, A DISGUSTING SITUATION! THIS OFTEN CAN BE SEEN IN SPILLS AT 1610 WEST LEXINGTON AVE ON THE ROBERT SWAIM ESTATE - (WELL OFF W. LEXINGTON).

THE KENNEDY MILL LINE IS ALSO OLD.

THE OUTFALL LINE ALONG UPPER RICH FORK CREEK WAS BUILT IN THE LATE 1960's BUT IS CONCRETE AND OFTEN TOO CLOSE TO THE BANK OF THE STREAM; BREAKS AND SEWER OVERFLOWS ARE PROBLEMS OF THIS LINE.

THERE WAS A ONE-INCH BREAK IN THE MAIN 26" RICH FORK {PIPE LINE} WHERE IT CROSSED OVER THE STREAM. THIS OPENING EXISTED AT LEAST 5 YEARS UNTIL WE FINALLY GOT HIGH POINT TO BUDGET FUNDS TO FIX IT. IT WAS REPAIRED IN THE SUMMER OF 2002. RAW WASTEWATER FLOWED OUT OF THE PIPE AND INTO THE CREEK. AT OTHER TIMES CREEKWATER FLOWED INTO THE PIPE, DEPENDING ON PRESSURE WITHIN THE PIPE. THIS FLUCTUATING BUT CONTINUOUS RELEASE OF CONTAMINATION HAS TO HAVE HEAVILY INFLUENCED THE STUDY'S DATA FROM SR 1955 AND ALL MONITORING STATIONS DOWNSTREAM.

IN ADDITION TO LEAKS, BREAKS, AND OVERFLOWS ORIGINATING FROM OBSTRUCTIONS WITHIN THE PIPES, ANOTHER SOURCE OF IMPAIRMENT IS THE FAILURE OF HIGH POINT TO HAVE ANY ORDINANCES ABOUT STORMWATER ABATEMENT IN THE YADKIN RIVER WATERSHED AREAS OF HIGH POINT. MUCH OF THIS IS IN DAVIDSON COUNTY BUT INCLUDES EVERYTHING WEST OF THE RAILROAD AND SOUTH OF NORTH MAIN STREET.

STORMWATER GETS INTO THE SANITARY SEWER PIPES. THE PRESSURE BECOMES TOO GREAT, ESPECIALLY AT THE DOWNSTREAM PARTS OF THE SYSTEM, AND BLOW-OUTS OF RAW SEWAGE AND WASTEWATER HAPPEN, USUALLY AT MANHOLES OR OTHE WEAK POINTS. ON THESE FLOOD EVENTS RAW SEWAGE FLOWS DIRECTLY INTO THE STREAM. CONTAMINATED DEBRIS REMAINS ON THE GROUND WHERE THE SPILL OCCURRED. THE POLLUTION MAKES ITS WAY INTO THE CREEK LITTLE-BY-LITTLE WITH LATER LIGHT RAINS, ANIMALS TRACKING THROUGH IT AS THEY GO TO DRINK FROM THE CREEK, AND IN DRY PERIODS GERM-LADEN DUST SIFTS INTO THE WATER AS WELL AS SURROUNDING AREAS. THE SMELL IS AWFUL.

THE EXISTING SEWER OUTFALL PIPES ARE TOO SMALL TO CARRY THE MASS OF SEWAGE SOLIDS AND WASTEWATER SAFELY TO THE WESTSIDE TREATMENT PLANT. MASSIVE NEW HOUSING DEVELOPMENTS ARE BEING ADDED UPSTREAM AS THE CITY OF HIGH POINT ENCOURAGES MORE AND MORE BUILDING. THE CITY ARGUES THAT THE WESTSIDE WASTE WATER TREATMENT PLANT, THOUGH APPROACHING ITS CAPACITY OF 6.2 MGD, IS STILL ABLE TO TREAT THE INCREASING MILLIONS OF GALLONS DAILY. DURING A FLOOD 12 MILLION GALLONS

PASSED THROUGH- DO YOU THINK IT WAS ADEQUATELY TREATED? THEY NEVER MENTION THAT MANY GALLONS WHICH ENTER THE WASTEWATER STREAM IN THE SEWER SYSTEM NEVER GET TO THE TREATMENT PLANT, INSTEAD BY-PASSING IT IN THE FLOW OF THE CREEK-

WHAT SHOULD HAPPEN IS!

1- PRE-TREATMENT LIGHT/LASER FACILITIES SHOULD BE BUILT WITHIN HIGH POINT ON EACH OF THE STREAMS WHERE SEWER LINES ARE. PRE-TREATMENT WITHIN THE SEWER SYSTEM WOULD ELIMINATE FECAL COLIFORM COMING FROM THE CITY AND THE TREATMENT PLANT COULD CONCENTRATE ON OTHER PROBLEMS-

2- A MORATORIUM SHOULD BE INSTITUTED ON ADDING NEW HOUSING AND OTHER WASTEWATER GENERATORS UNTIL HIGH POINT REBUILDS THE WHOLE WESTSIDE SYSTEM (AS THEY PLAN TO DO).

3- SEDIMENTS FROM BULLDOZING FOR NEW DEVELOPMENTS BUILDING UP IN CREEK BEDS MUST BE STOPPED OR REMOVED TO PREVENT FREQUENT FLOODING DURING WHICH SURFACE WATER ENTERS THE SEWER SYSTEM THROUGH MANHOLES-

4- THERE MUST BE IMPROVED ENGINEERING OF SEWER OUTFALLS TO ELIMINATE POTENTIAL PROBLEMS OF TOO MANY MANHOLES OR COLLAPSE INTO STREAMS-

6

THESE "WHAT SHOULD HAPPENS" ARE BEYOND THE SCOPE OF YOUR STUDY. HERE ARE SOME THINGS WHICH CAN BE DONE TO IMPROVE YOUR STUDY OF RICH FORK CREEK!

(1) MUCH OF WHAT YOU MAY THINK OF AS NONSOURCE POLLUTION CAN BE PINPOINTED.

A- TALK TO EACH LANDOWNER TO SEE IF HE KNOWS THE LOCATION OF LEAKS. THE MAINS SUPERINTENDENT WOULD ALSO KNOW WHERE THEY ARE IF HE WILL TELL YOU. FOR THIS I AM THINKING OF A TOUR OF THE UPPER AREAS OF THE CREEKS UPSTREAM FROM THE WESTSIDE TREATMENT PLANT.

B- USE OTHER TECHNIQUES — SMOKE, INFRA-RED PHOTOGRAPHY TO FIND LEAKS, STORMWATER PUT INTO SANITARY SEWER LINES, OR OTHER AREAS IN THE LIN

C- GO TO THE SITES OF SPILLS AND LEAKS AS REPORTED TO THE DIVISION OF WATER QUALITY. DESPITE THE REPORTS, MANY TIMES THE PROBLEM STILL EXISTS AND WILL BE REPEATED.

(2) BECAUSE THE MOST UPSTREAM MONITORING SITE AT SR 1755 (WEST LEXINGTON AV EXT) OFTEN REPORTS RAISED LEVELS OF FECAL COLIFORM, ALSO CONSIDER MONITORING FURTHER UPSTREAM UNTIL THE SOURCES — LEAKING PIPES, FAILED SEPTIC TANKS OR WHATEVER — ARE FOUND TO BE

WITHIN A SPECIFIC LENGTH OF STREAM - MONITOR EACH SITE ON THE SAME DAY.

TO FIND FECAL COLIFORM ORIGINS FOR RICH FORK SUBWATERSHED 001, START AT ① SR 1755 AND TEST AT ② CHESTNUT STREET EXT ③ ROCKBRIDGE AT SWANSGATE, ④ WALLBURG - HIGH POINT ROAD, ⑤ WESTOVER AND ⑥ NORTH MAIN.

FOR RICH FORK SUB WATERSHED 002 TEST AT

① JUST UPSTREAM FROM THE JUNCTION WITH RICH FORK-PAYNE (ON PRIVATE LAND BUT WE WILL GIVE THE O.K.)
② HAYNES ROAD ③ JOE MOORE ROAD ④ CHESTNUT STREET EXT
⑤ 1610 WEST LEXINGTON, OFF THE ROAD AT THE CREEK
⑥ ROTARY DRIVE
⑦ WESTCHESTER AT THE PAYNE CREEK SIGN -

AGAIN, DO THE MONITORING OF ALL SITES ON ONE DAY

ONCE YOU KNOW THE ORIGINATION OF FECAL COLIFORM IN THE UPPER STRETCHES OF THESE TWO STREAMS, IF THE SITUATIONS CAN BE CORRECTED AND THE STREAMWATER FECAL COLIFORM LEVEL LOWERED, THE LEVELS OF FECAL COLIFORM ALL DOWNSTREAM SHOULD DECREASE.

IT IS MY BELIEF THAT NEITHER WILDLIFE NOR LIVESTOCK CONTRIBUTE SIGNIFICANTLY TO THE FECAL COLIFORM LEVELS BUT A VISUAL COUNT OF LIVESTOCK WOULD BE POSSIBLE IF A WALKING TOUR OF THE STREAMS UPPER REACHES COULD BE DONE WHEN TALKING TO LANDOWNERS - SEPTIC TANKS COULD

ALSO BE SCANNED AT THAT TIME.

IF THE TMDL QUESTIONNAIRE (D-2) WERE SENT TO UPPER RICH FORK WHAT INFORMATION MIGHT BE DISCOVERED?

HAVE YOU CONSIDERED USING VOLUNTEERS TO GATHER INFORMATION FOR YOU? IF IT WOULD CONTRIBUTE TO THE EVENTUAL CLEANING UP OF THIS STREAM, I COULD FIND VOLUNTEERS.

PLEASE SEE THE PHOTOGRAPHS WHICH I GAVE YOU ON THE DAY OF THE HEARING IN THOMASVILLE. THEY SHOW DEBRIS FROM FLOOD-RELATED BLOW-OUTS, THE BROKEN 24" SEWER PIPE WHICH LEAKED INTO THE RICH FORK CREEK SO LONG PRIOR TO THE SUMMER OF 2002, AND EVIDENCE OF MATERIALS LEAVING THE OUTFALL PIPES.

THE VIDEOTAPE SHOWS MANHOLES UNDER FLOODWATER, LEAKS INTO THE FLOOD WATER, ETC. THE LAST FOOTAGE SHOWS THE HOLE WHICH HIGH POINT UTILITY WORKERS INTENTIONALLY CUT INTO WHAT THEY THOUGHT WAS AN ABANDONED LINE ONLY TO GO AWAY LEAVING IT OPEN. A BIG RAIN OCCURRED FOLLOWED BY MASSIVE FLOODING. RAW SEWAGE RAN FROM THE HOLE INTO RICH FORK CREEK FOR FIVE DAYS BEFORE WE DISCOVERED IT. THUS THE STUDY HAS A MASSIVE UNDERCOUNT (36,000 gallons) ON PAGE 17.

Appendix F-2. DWQ Response to Public Comment on the Public Review Draft of the Rich Fork Creek and Hamby Creek Fecal Coliform TMDLs

Comments were received from the Blue Ridge Environmental Defense League, and Ms. Mary C. Cridlebaugh, a resident of the City of High Point, North Carolina. As discussed in the TMDL, the Load Duration Curve (LDC) methodology is a simple method based on observed data to estimate the reductions required to meet water quality standards. Load duration curves are based on a cumulative frequency distribution of stream flow and water quality data from monitoring stations within the watersheds. As with all modeling approaches there is uncertainty associated with the methodology.

The Blue Ridge Environmental Defense League commented that the watersheds are undergoing rapid land use changes and the assumptions about land use and land cover should reflect the current conditions. DWQ recognizes that the age of land cover/land use data (1996) adds to uncertainty in the document. However, DWQ has used the best available information to develop this TMDL. The methodology employed to determine the TMDLs (the Load Duration Curve Methodology) is not dependent on direct land use inputs. The land use/land cover information is included in the document to illustrate the various sources that contribute to impairment and to aid in future implementation. As up-to-date land use/ land cover data becomes available the land use/ land cover information included in the TMDL can be updated.

The Blue Ridge Environmental Defense League and Ms. Mary C. Cridlebaugh pointed out that there is lack of adequate water quality monitoring in the watersheds especially upstream of the Westside WWTP. A number of water quality monitoring stations, sampled by various organizations, are located within the TMDL area. Monitoring data indicate that fecal coliform concentrations in streams reaches throughout the watershed are high by most measures. Both Rich Fork Creek and Hamby Creek are listed on the 303(d) list based on the fecal coliform data collected at DWQ's monitoring stations located at SR# 1800 and SR#2790. Data collected at the other stations are used in the TMDL document to assess observed bacteriological conditions in watersheds. It is our recommendation that monitoring at the existing stations within the watersheds continue to help evaluate progress in achieving water quality goals. We support future monitoring efforts to characterize dry and wet season base flow conditions and storm responses. The Piedmont Triad Council of Governments is currently conducting an extensive

monitoring study within the watersheds with a goal of identifying and reducing fecal coliform loads from various sources within the watersheds. Data for this study are being collected from a number of sites both upstream and downstream of the Westside WWTP. DWQ will forward the recommendation concerning monitoring upstream of the WWTP to the PTCOG so that further monitoring may be included in their study.

Ms. Mary C. Cridlebaugh gave a detailed source assessment of fecal coliform loading to Rich Fork Creek and reported that broken and/or leaky sewer lines between the City of High Point and the Westside WWTP appear to be the major source of fecal coliform loading to the creek. An assessment of potential sources of fecal coliform loads within the watershed was performed as part of the TMDL development process. A more detailed source assessment is more costly in terms of time and effort, but in the long run a detailed assessment will better support future implementation decisions. We agree that a more detailed examination of leaky/ broken sewer lines between the City of Highpoint and the Westside WWTP and within the whole watershed will aid future implementation of the TMDL and will help achieve the recommended reduction target. DWQ will refer the issues raised concerning leaking sewer lines and related spills to DWQ's Winston-Salem Regional Office for further follow up and assessment.

The Blue Ridge Environmental Defense League commented on the Phase II stormwater program and the delay in permit issuance for High Point and Thomasville. The City of High Point and the City of Thomasville applied for MS4 permit coverage in March 2003. Each permittee is required to develop a Storm Water Management Program (SWMP), a means of achieving continued and enhanced monitoring. A field screening and monitoring program will be included in the SWMP to identify the types and extent of fecal coliform water quality problems, relative degradation or improvement over time, areas of concern, and source identification. More information on the Phase II Stormwater Program implementation can be obtained from the Stormwater and General Permits Unit of the DWQ (http://h2o.enr.state.nc.us/su/stormwater.html).

Due to the level of uncertainty in the modeling assumptions and the input data, the DWQ supports an adaptive management approach to reducing the fecal coliform levels within Rich Fork Creek and Hamby Creek.