City of Frederick
Frederick County, Maryland

Water and Sewer Master Plan

February 2000

CHESTER
ENGINEERS

ADOPTED BY THE MAYOR AND BOARD

AUGUST 17, 2000

CHESTER ENGINEERS WATER AND SEWER MASTER PLAN – AUG. 2000

SEWER MASTER PLAN:

THE SEWER MASTER PLAN IS STILL APPLICABLE.

WATER MASTER PLAN:

PLEASE NOTE THAT THE CURRENT WATER MASTER PLAN IS

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City of Frederick
Frederick County, Maryland

Water and Sewer Master Plan

February 2000

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WATER AND SEWER MASTER PLAN
SECTION I
SEWERAGE FACILITIES
OVERVIEW OF CURRENT CONDITIONS

INTRODUCTION

The development of a long-range master plan for sewerage facilities begins with an assessment of the condition, capabilities, and adequacy of the existing facilities under current conditions. This assessment provides the basis for identifying and sequencing improvements to the systems as necessary to address current needs and provide adequate service into the future.

SEWERAGE SYSTEM

General Description of the Sewerage System

The area served by the City of Frederick's sewerage system is illustrated in Plate I-1. Plate I-1 illustrates the current City of Frederick municipal boundary and a delineation of the major drainage areas in the vicinity of the City. Plate I-1 also displays the approximate locations of the City's Wastewater Treatment Plant and sewage pumping stations. As is indicated in Plate I-1, the City's service area generally corresponds to the current municipal boundary. However, several areas of the City are not served by the City's sewerage system. Fort Detrick, which is located within the City limits, is served by its own, separate wastewater collection and treatment system. Also, the portion of the City identified in Plate I-1 that lies in the Ballenger Creek Basin south of Route 70 is served by collector sewers that discharge into Frederick County's Ballenger Creek interceptor system and receives treatment at the Ballenger Creek Wastewater Treatment Plant.

Portions of Frederick County, primarily the communities of Walkersville, Cloverhill, and Waterside (areas outlined in black on Plate I-1), drain into the City of Frederick's sewer system. However, flows are diverted from the City's system and transferred to the County's Ballenger Creek Wastewater Treatment Plant for treatment by the Monocacy By-Pass interceptor. Flow quantitites are diverted with the intent to minimize the exhcanage of monies for operational costs except for charges associated with the addition of chlorine to the Monocacy bypass interceptor and costs associated with the pump station, grit chambers, and equalization basin.

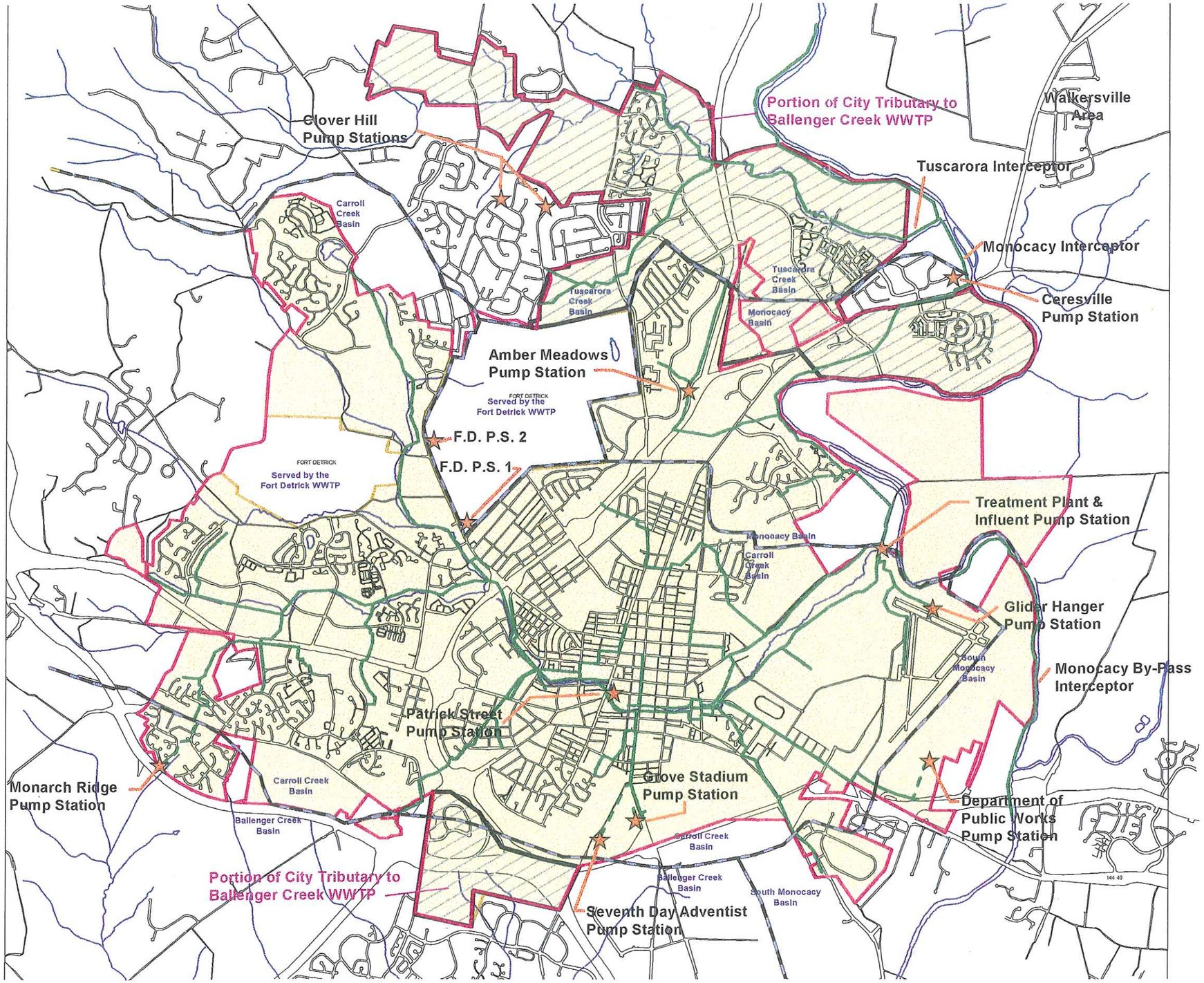

Plate I-1

City of Frederick

Existing Major Sewerage Facilities

Legend

- Approximate Existing City Sewerage Service Area
- Approximate Existing City Sewerage Service Area Receiving Treatment at the Ballenger Creek WWTP

Major Interceptors and Force Mains

- gravity sewers (10" or greater)
- force mains (not all visible at this scale)

- Pumping and Treatment Facilities
- Major Drainage Basin Boundaries
- City of Frederick Corporate Limits
- Roads
- Streams

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The sewersheds of the City and the County's Ballenger Creek wastewater treatment plant overlap. Because of this overlap, the City and County have found it necessary functionally and economically to treat a portion of each jurisdiction's sewage. This has resulted in the need for written mutual agreements that describe the method of determining the allocation of sewage flow and capital and operating costs between the two governments.

The agreements have resulted in Frederick City being allocated 1.028 mgd of the Ballenger Creek WWTP treatment plant capacity of 6.0 mgd and 3.0 mgd of a future expansion to 17.5 mgd (see agreements dated September 11, 1990 and April 26, 1993). Once combined flows of both plants reach 14.0 mgd (8.0 mgd City; 6.0 mgd Ballenger) a new operating agreement will need to be established.

Capital (construction of improvements) and operating costs are split between the two jurisdictions based upon the proportion of flow contributed by each. There are monitoring points located strategically to indicate sewage flow for the purpose of monitoring the allocation. A key part of the agreement is that there is no exchange of monies for operational costs - except a nominal charge of approximately $30,000 per year for the County's removal of grit and the addition of chlorine to the equalization basin. Connection charges go to the jurisdiction that treats the waste regardless of the development's location. However, each jurisdiction controls the allocation of connections or "taps" within its service area.

Inventory of Interceptor Sewers

The Carroll Creek and Gas House Pike interceptors serve the majority of the City, including the central business district of downtown Frederick. The Carroll Creek and Gas House Pike interceptors have a total capacity of approximately 40 million gallons per day (mgd). The Monocacy interceptor predominantly serves areas northeast of the City, including the Town of Walkersville. The City owns and operates the portion of the interceptor that extends between the City's water treatment plant to the City's Wastewater Treatment Plant. The 24-inch Detrick Branch interceptor and the 18-inch Fredericktowne Village interceptor contribute to the City-owned portion of the Monocacy interceptor and serve the northeastern portion of the City. The remainder of the Monocacy interceptor, from the City corporate limits east and north along the Monocacy River, is owned and operated by Frederick County. The Tuscarora interceptor, which drains the northern area of the service area and the Cloverhill area of the County is owned by Frederick County. These interceptors as well as additional interceptor sewers serving the City, as identified by the City's staff, are listed in Table I-1.

Table I-1: Listing of Interceptor Sewers

Interceptor Name	Range of Pipe Diameters (inches)	Interceptor Name	Range of Pipe Diameters (inches)
Airport	10	Golf View	8 - 15
Carroll Creek	36 - 54	Monocacy (City and County)	30 - 42
Carroll Creek 84-11	15 - 24	North Branch Subbasin	18
Carroll Creek 74-P	21 - 24	Old Farm	21
Carroll Creek 72-G	24 - 30	Rock Creek	15 - 21
Carroll Creek Prior 1970	18 - 30	Scott Key Center	21
Detrick Branch Outfall	18 - 24	Solarex	10 - 21
East End	10	Stone Gate	10 - 18
Frederick Heights	8 - 15	Tuscarora (County)	8 - 30
Frederick Shoppers World	8 - 10	Willowbrook	8 - 24
Fredericktowne Village	12 - 21	1937	18
Gas House Pike	33		

The approximate locations of the major interceptor sewers within the sewer service area are illustrated in Plate I-1. An inventory of interceptor pipe sizes, slopes, and full pipe capacity is presented in Appendix A.

Inventory of Wastewater Pumping Stations

The City currently operates the six collection system wastewater pumping stations listed in Table I-2.

Table I-2: Wastewater Pumping Station Inventory

Name	Pump Horsepower
Amber Meadows	25
Grove Stadium	7.5
Monarch Ridge	11.3
Department of Public Works	12
Seventh Day Adventist	2
Glider Hanger	2
Patrick Street	1.3

The Amber Meadows pump station is scheduled for elimination. The locations of the City's existing stations are indicated in Plate I-1.

Assessment of Sewage Collection and Pumping Facilities

The operations of the sewage collection and pumping facilities have been reviewed in discussions with the City's management and operations personnel. These facilities are reported to operate adequately and within capacity. However, the following three issues of concern were raised in regard to the sewage collection system pumping stations.

1. There are no permanent flow measurement systems in place at any of the sewage pumping stations, and there are no capabilities for centralized monitoring and control of the stations. A centralized supervisory control and data acquisition (SCADA) system is required to improve the ability of the operations staff to efficiently monitor and control the stations.

2. The discharge force main from the West Patrick Street pump station is located beneath a recently constructed double box culvert. This line would be extremely difficult and very expensive to repair if it should break beneath this culvert. If repairs were required, these could lead to a shut down of the pumping station. Consequently, there is a need to replace this force main if the West Patrick Street pump station is to continue operation. However, the possibility may exist for eliminating this station due to the location of several available sewer segments in proximity to the station. These options are evaluated later in this report.

3. Peak wet weather flows reaching the treatment facility are reported to reach 34.5 mgd. This represents a peaking factor approximating 4.0 times the average daily flow and is indicative of the entrance of significant amounts of infiltration and inflow (I/I). The City is currently implementing an ongoing I/I reduction program. This program should be continued.

4. The Gas House Pike interceptor is suspended from a continuous, three span, two girder bridge at the entrance of the wastewater treatment plant. A structural analysis of this bridge should be completed to determine if a new interceptor crossing at Carroll Creek is required.

Wastewater Treatment Plant

The City of Frederick owns and operates a sewage treatment plant located off of Gas House Pike near the confluence of Carroll Creek and the Monocacy River. The waste allocation calculations used by the Maryland Department of the Environment (MDE) for the City of Frederick have been based on a flow of 8.0 mgd. Notification is to be provided to the MDE at least 180 days before the flow is expected to exceed this rate. In March of 1995, the City and Frederick County entered into a joint operational agreement

for the use of the Monocacy Bypass interceptor sewer. This sewer permits a portion of the influent to the City's Wastewater Treatment Plant to be diverted to the County's Ballenger Creek Wastewater Treatment Plant for treatment and disposal. According to the current agreements, the City's allocated capacity at the Ballenger Plant is 1,028,570 gpd as a yearly average.

The City of Frederick's treatment plant consists of the following unit processes:

- Influent pumping station with mechanically cleaned bar screens
- Two centrifugal grit removers
- Equalization basins
- Four primary settling tanks
- Three aeration/clarification basins
- Sand filter with eight filter cells,
- Chlorine contact/dechlorination tank
- Cascade post aeration
- Two dissolved air floatation thickeners
- Complete mix anaerobic digester
- Second stage anaerobic digester
- Two belt filter presses

Beginning in May of 1996, flows from the Walkersville, Cloverhill, and Waterside areas of the County that previously had been treated at the City's Wastewater Treatment Plant have been bypassed to the County's Ballenger Creek Wastewater Treatment Plant. Monthly average daily loading rates to the City of Frederick Wastewater Treatment Plant are presented in Table I-3. This information was developed using WWTP reports provided by the City and do not include wastewater bypassed to the Ballenger Creek Wastewater Treatment Plant.

Table I-3
City of Frederick Wastewater Treatment Plant
1997 and 1998 Average Daily Loadings

Month	Year	Flow (mgd)	BOD (#/day)	Suspended Solids (#/day)	Total Kjeldahl Nitrogen (#/day)	Total Phosphorus (#/day)
Jan	1997	6.5	10711	6333	1508	261
Feb	1997	6.5	11423	6503	1431	286
Mar	1997	7.0	10816	7187	1518	375
Apr	1997	6.2	9072	7736	1424	257
May	1997	5.5	9451	10997	1136	392
Jun	1997	5.2	11288	9146	1239	393
Jul	1997	5.3	12270	11612	1077	547
Aug	1997	5.3	7483	8623	1183	387
Sep	1997	5.5	9624	12523	1484	1137
Oct	1997	5.3	9416	10188	1403	661
Nov	1997	6.5	11718	12498	1642	273
Dec	1997	5.6	10524	9259	1657	336
Jan	1998	7.5	11050	10471	1630	429
Feb	1998	9.0	10534	10841	1826	337
Mar	1998	9.4	10660	13627	1696	416
Apr	1998	7.7	10042	10460	1463	
May	1998	8.6	12389	11352	1682	358
Jun	1998	6.1	13776	12320	1466	351
Jul	1998	5.3	9058	9261	1465	290
Aug	1998	5.0	9544	11134	1595	276
Sep	1998	5.0	10085	9087	1390	296
Oct	1998	4.9	8641	11445	1217	246
Nov	1998	5.0	8900	10019	1408	289
Dec	1998	4.6	9592	8262	1422	265
Average	1997	5.9	10316	9384	1392	442
Average	1998	6.5	10356	10690	1522	323
Average	Overall	6.2	10336	10037	1457	385

Assessment of the Wastewater Treatment Plant

The National Pollutant Discharge Elimination System (NPDES) effluent limits currently in effect at the City's Wastewater Treatment Plant are presented in Table I-4.

Table I-4
City of Frederick NPDES Effluent Limits

Parameter	Limit
Dissolved Oxygen	5.0 mg/L minimum (year – round) 7.0 mg/l average (November – April)
5-Day BOD	580 lb/day 30-day average (June - October) 1,750 lb/day 30-day average (November - April) 800 lb/day 30 day average (May) 8.7 mg/L 30-day average (June - October) 26.0 mg/L 30-day average (November - April) 12.0 mg/L 30-day average (May) 880 lb/day 7-day average (June - October) 2,600 lb/day 7-day average (November - April) 1,200 lb/day 7-day average (May) 13.0 mg/L 7-day average (June - October) 39 mg/L 7-day average (November - April) 18 mg/L 7-day average (May)
pH	6.5 minimum 8.5 maximum
Total Suspended Solids	1,750 lb/day 30-day average 26.0 mg/L 30-day average 2,600 lb/day 7-day average 39.0 mg/L 7-day average
Fecal Coliform	200 MPN/100 ml monthly log mean value
Chlorine Residual (Total)	Not detectable
Kjeldahl Nitrogen (Total)	180 lb/day 30-day average (June - October) 2.6 mg/L 30-day average (June - October) 260 lb/day 7-day average (June - October) 3.9 mg/L 7-day average (June - October) 400 lb/day 30-day average (May) 6.0 mg/L 30-day average (May) 600 lb/day 7-day average (May) 9.0 mg/L 7-day average (May)
Total Phosphorus -not in effect until the BNR facility is constructed (may be reevaluated based on plant operation)	130 lb/day 30-day average 2.0 mg/L 30-day average 200 lb/day 7-day average 3.0 mg/L 7-day average

The City's discharge monitoring reports for the period April 1993 through December 1996 were reviewed to assess the performance of the facility as measured by compliance

with the NPDES discharge limits. The results of this analysis are summarized in Table I-5.

Table I-5
Tabulation of NPDES Exceedences by Month and Year

Month	NPDES Permit Exceedences					
	1993	1994	1995	1996	1997	1998
January		None	30-Day TSS Conc	30-Day TSS Conc 7-Day BOD Load	None	None
February		30-Day TSS Load 7-Day TSS Load 30-Day BOD Load 7-Day BOD Load	30-Day TSS Conc	None	None	None
March		30-Day TSS Conc & Load 7-Day TSS Conc & Load	None	None	None	None
April	30-Day TSS Conc & Load 30-Day BOD Conc & Load 7-Day TSS Load 7-Day BOD Conc & Load	None	None	None	None	7-Day TSS Load
May	Flow	Flow	None	None	None	None
June	None	None	30-Day BOD Conc	None	None	None
July	None	None	None	None	None	None
August	None	None	None	None	None	None
September	None	None	None	None	None	None
October	None	7-Day BOD Load & Conc 30-Day BOD Load & Conc	None	None	None	None
November	30-Day TSS Conc	None	None	None	None	None
December	None	30-Day TSS Conc	None	None	None	None

As is indicated in Table I-5, the facility exhibits good compliance with the NPDES limits. Although exceedences have been experienced relative to biochemical oxygen demand, suspended solids, and nitrogen, just one exceedence has occurred since early in 1996.

Two recent initiatives, when fully implemented, can be expected to eliminate the occurrence of NPDES discharge permit exceedences as indicated in Table I-5. First, the

City has begun to divert flows equal to the flows received from the County's portion of the Monocacy interceptor to the Ballenger Creek plant. This is reducing the hydraulic load on the plant and should reduce unit loadings and generally improve treatment plant performance.

The second initiative is the Biological Nutrient Removal Feasibility Study that was completed in 1996. This study includes an evaluation of the existing unit treatment processes and presents recommendations designed to improve overall performance and achieve desired biological nutrient removal. These recommendations, when implemented, will improve plant performance and increase compliance with the NPDES limits.

Chester Engineers conducted an independent assessment of the wastewater treatment plant in June 1996. This assessment found that the treatment plant is in good condition and all major equipment was operational and well maintained. The operations, monitoring, and appearance of the plant was good. Nevertheless, based upon an inspection of the plant and discussions with operations and management personnel, several improvements have been identified that promise to improve plant operability and performance.

The major issues to be addressed at the City's Wastewater Treatment Plant, together with recommended actions, are summarized in Table I-6.

Table I-6
City of Frederick Wastewater Treatment Plant
Summary of Recommendations

Issue	Recommendation	Source of Recommendation	Status
Improve primary clarifier suspended solids and BOD removals.	Add settling aids and baffles. Increase sludge storage and/or dewatering and disposal capacity	BNR study	Recommended
Improve oxidation ditch nitrogen removal effectiveness.	Reconfigure to plug flow mode. Modify/replace diffused aeration system.	BNR study	Recommended

Table I-6
City of Frederick Wastewater Treatment Plant
Summary of Recommendations (Continued)

Issue	Recommendation	Source of Recommendation	Status
Improve control of filamentous bacteria.	Implement BNR plug flow recommendations.	BNR study	Recommended
Improve anaerobic digester performance.	Clean digesters. Activate digester mixing system.	BNR study	Recommended
Increase dewatering capacity.	Install additional belt filter press.	BNR study	Recommended
Implement BNR improvements.	Reconfigure oxidation ditches to plug flow configuration. Add two final clarifiers.	BNR study	Recommended
Eliminate freezing problems with Pista grit removal system dewatering screen.	Enclose dewatering screens with a building.	Chester Engineers plant review	Recommended
Improve belt press room to eliminate high hydrogen sulfide levels and the development of fog.	Improve heating and ventilation system.	BNR study	Recommended
Upgrade existing 10,000 gallon underground diesel fuel storage tank to comply with current EPA regulations.	Replace underground storage tank.	Superintendent of Operations	Upgrade completed

The improvements summarized in Table I-6 will address current operating issues at the wastewater treatment plant and will provide for enhanced treatment effectiveness and increased nitrogen removal capabilities.

SUMMARY

A summary of the issues of concern identified relative to the current operations of the existing water and wastewater systems is presented in Table I-7.

Table I-7
Summary of Current Issues of Concern and Recommendations

Issue	Recommendation	Source
Wastewater Treatment Plant		
Improve primary clarifier suspended solids and BOD removals. Improve oxidation ditch nitrogen removal effectiveness. Increase sludge dewatering capacity. Improve control of filamentous bacteria.	Add cross flow baffles & polymer feed system. Partially demolish internal concrete walls. Demolish internal equipment & intrachannel clarifier. Construct new internal concrete walls. Install three new IR pumps. Install new aeration, mixing, and monitoring equipment. Provide new return activated sludge pump station/sludge well distribution box. Install three submersible return activated sludge pumps. Provide two clarifiers with internal components. Install new belt filter press.	BNR study
Improve anaerobic digester performance.	Clean digesters. Activate digester mixing system.	BNR study
Eliminate freezing problems with grit removal system dewatering screen.	Enclose dewatering screens with a building.	Chester Engineers plant review
Improve belt press room to eliminate high hydrogen sulfide levels and the development of fog.	Replace heating and ventilation system.	Chester Engineers plant review
Upgrade existing 10,000 gallon underground diesel storage tank to comply with current regulations.	Replace underground storage tank.	Chester Engineers plant review
Wastewater Pumping Stations and Collection System		
Reduce I/I	Continue ongoing I/I reduction program.	Current program
Provide remote monitoring and control capabilities	Install centralized supervisory control and data acquisition system.	Chester Engineers plant review

WATER AND SEWER MASTER PLAN
SECTION II
SEWERAGE FACILITIES
ANALYSIS OF FUTURE CONDITIONS

INTRODUCTION

The preceding section described existing conditions regarding the City of Frederick's wastewater systems. This section presents projected future conditions, an assessment of the City's sewer system's abilities to operate effectively under the future conditions, and recommendations relative to required improvements.

PROJECTED SERVICE AREA CONDITIONS

Potential Future Service Area and Population

The 1995 Frederick City Comprehensive Plan was reviewed and discussions were held with representatives of the City and County in order to define a generalized future service area for City of Frederick wastewater utilities. This future service area is illustrated on Plate II-1. It consists of the existing City of Frederick boundary modified to reflect potential future annexation areas (as described in the Frederick City Comprehesive Plan), plus additional areas within which it is anticipated that City wastewater services may be provided. It also indicates City areas that will be serviced by Frederick County's sewer system, generally due to topographic conditions and or by mutual agreement between the City and County.

Projected Sewage Loadings

Two sets of sewage flow rate projections have been developed. The first set of projections consists of projected maximum month average daily and peak flow rates expected to occur by the year 2020. These projections are based upon the service area population estimates for the year 2020. They represent loadings to be used for planning for wastewater pumping and treatment facilities. The second set of projections consists of the estimated ultimate peak sewage flow rate. These projections represent estimates of the peak rate of flow that will be experienced should the service area grow its ultimate potential. This information is normally used to determine the required size of interceptor sewers.

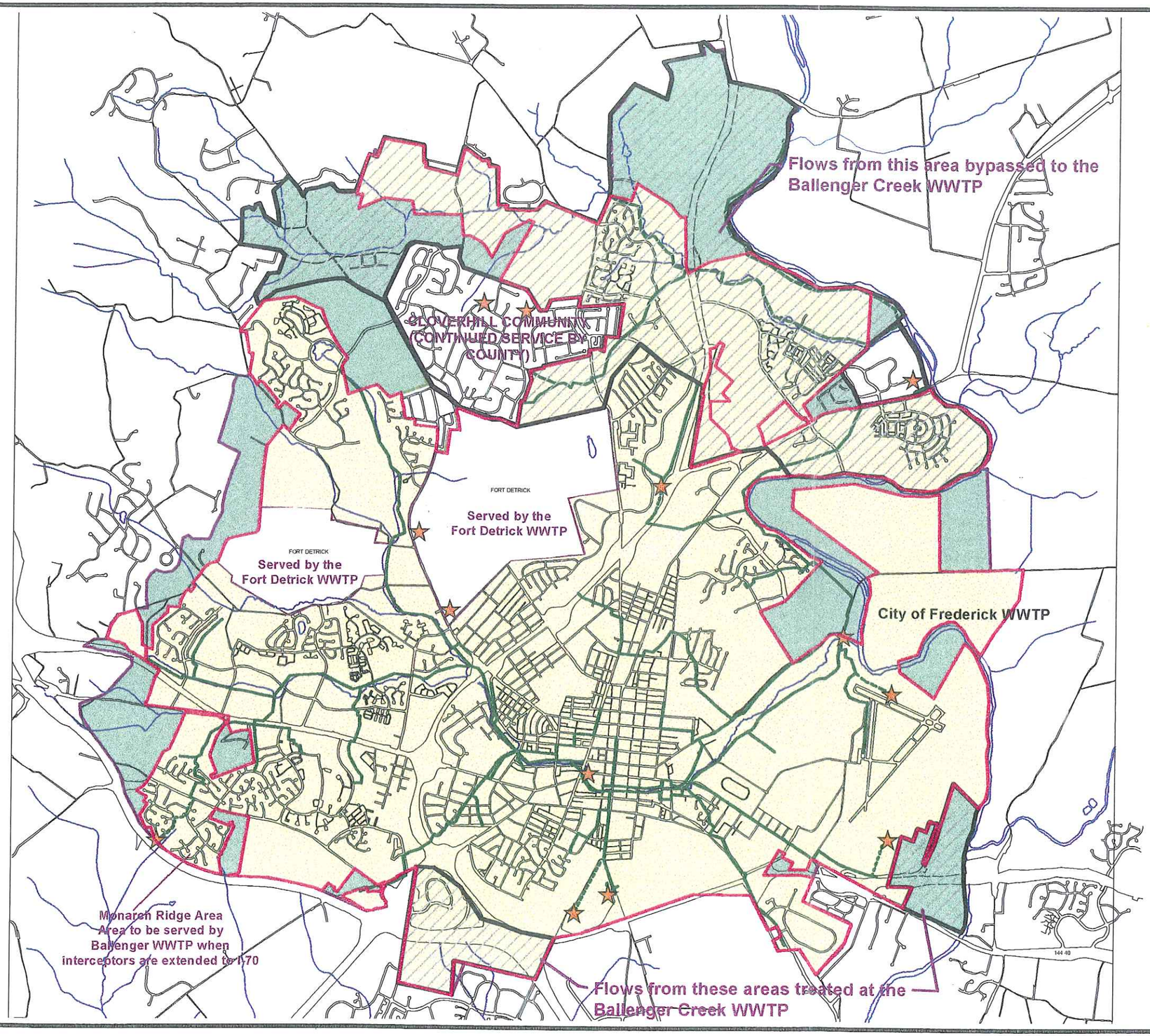

Plate II-1

City of Frederick

Future Sewer Service Area

Legend

- Approximate Existing Sewer System Service Area
- Future Additions to the Existing Sewer Service Area
- Existing areas tributary to Ballenger Creek WWTP
- Future areas tributary to Ballenger Creek WWTP
- City of Frederick Corporate Limits

Major Interceptors and Force Mains

- Existing Major Interceptors (10" or greater)
- Existing Forcemains
- Existing Pumping and Treatment Facilities
- Roads
- Streams

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The approach used to project the year 2020 loadings consisted of using the measured reported loadings experienced during the 1997 and 1998 calendar year period as the baseline existing condition. This baseline was then increased by the amount of additional loads that can be expected to be contributed by the anticipated service population increases and associated increases in commercial and industrial development. The anticipated increases in residential, commercial, and industrial sewage flows were derived using the population projections contained in the City's Comprehensive Plan. Than plan indicated a housing growth rate that averaged 550 dwelling units per year at an average of 2.42 persons per housing unit for the 25 year planning period (1995-2020). The sewage flow projections in Table II-1 project from 1998 to 2020. To determine the expected future sewage flow, the projected population growth is added to the projected industrial and commercial growth (which has a population equivalent). From this total, it is then necessary to subtract the projected population growth of the geographic areas of the City that could have their sewage treated at the Frederick County Ballenger Wastewater Treatment Plant (see previous discussions of current agreements between the City and County for the treatment of wastewater).

Table II-1
Projected Year 2020 Sewage Loading Rates

	Number	Loading
Loading Projections - Areas Receiving Treatment at the City of Frederick WWTP		
Current Loadings to the City of Frederick WWTP		
Flow - maximum month (March 1998) (gallons per day)		9,400,000
Flow - annual average (1998) (gallons per day)		6,500,000
Flow - peak (May 8, 1998) (gallons per day rate)		24,000,000
BOD - maximum month (June 1998) (lbs./day)		13,800
Suspended Solids - maximum month (March 1998) (lbs./day)		13,600
Total Kjeldahl Nitrogen - maximum month (February 1998) (lbs./day)		1,800
Loading Increases - Areas Receiving Treatment at the City of Frederick WWTP		
Increase in population in the City (1998-2020)*	25,466	
Total increased number of residential equivalent dwelling units (edus at 2.42 persons/edu)	10,523	
Increase in commercial/industrial growth increase (edus at 1,716 acres times 400 gallon/acre/day divided by 206 gallons/edu)**	3,332	
Total increase in EDUs	13,855	
Decrease of EDUs by transfer to Frederick County ***		
Tuscarora Sewershed	(5,060)	
Ballenger Sewershed	(603)	
Monocacy Sewershed	(671)	
Total net increase in EDUs 1998-2020	7,521	

Table II-1 (Continued)
Projected Year 2020 Sewage Loading Rates

	Number	Loading
Average daily flow increase (100 gpcd X 2.42 persons / edu)		1,800,000
Peak flow increase (250 gpcd X 2.42 persons / edu)		4,600,000
BOD increase (0.22 lb./day/person X 2.42 persons /edu)		4,000
Suspended Solids increase (0.25 lb. /day/person X 2.42 persons/edu)		4,600
Total Kjeldahl Nitrogen increase (0.03 lb./day/person X 2.42 persons/edu)		550
Projected Year 2020 Loadings - Areas Receiving Treatment at the City of Frederick WWTP		
Flow - maximum month (gallons per day)		11,200,000
Flow - annual average daily (gallons per day)		8,300,000
Flow - peak (gallons per day rate)		28,600,000
Flow - peak (assuming system-wide infiltration/flow reduction) (gallon per day rate)		20,800,000
BOD - maximum month (lb./day)		17,800
Suspended Solids - maximum month (lb./day)		18,200
Total Kjeldahl Nitrogen - maximum month (lb./day)		2,350
Projected Year 2020 Loadings - Areas Receiving Treatment at the City of Frederick WWTP		
Loading Projections - Areas Receiving Treatment at Ballenger Creek WWTP		
Current Loadings Bypassed to the Ballenger Creek WWTP (Source Ballenger Creek WWTP Chief Operator)		
Flow - maximum month (March 1998) (gallons per day)		2,600,000
Flow - annual average (1998) (gallons per day)		1,800,000
Loading Increases - Areas Receiving Treatment at the Ballenger Creek WWTP		
Estimated population bypassed to the Ballenger Creek WWTP from the Tuscarora sewershed	12,269	
Estimated population bypassed to the Ballenger Creek WWTP from the Ballenger sewershed	1,459	
Estimated population bypassed to the Ballenger Creek WWTP from the Monocacy sewershed	1,625	
Total population increase in areas receiving treatment at the Ballenger Creek WWTP	15,353	
Increase in residential edus (at 2.42 persons/edu)	6,340	
Average daily flow increase (100 gpcd X 2.42 persons/edu)		1,500,000
Peak flow increase (250 gpcd X 2.42 persons/edu)		3,800,000

Table II-1 (Continued)
Projected Year 2020 Sewage Loading Rates

	Number	Loading
Projected Year 2020 Loadings - Areas Receiving Treatment at the Ballenger Creek WWTP		
Flow - maximum month (gallons per day)		4,100,000
Flow - annual average daily (gallons per day)		3,300,000

*Includes areas planned for annexation in the City of Frederick Comprehensive Plan (1995) Chapter 2
**From City of Frederick Comprehensive Plan (1995) Chapter 5
*** Current City/County agreements allow wastewater to bypass around the City WWTP and be treated at the Ballenger Creek WWTP. Future potential is relatively large due to the County's future ability to discharge to the Potomac River. Design for such contingency is underway in 1999.

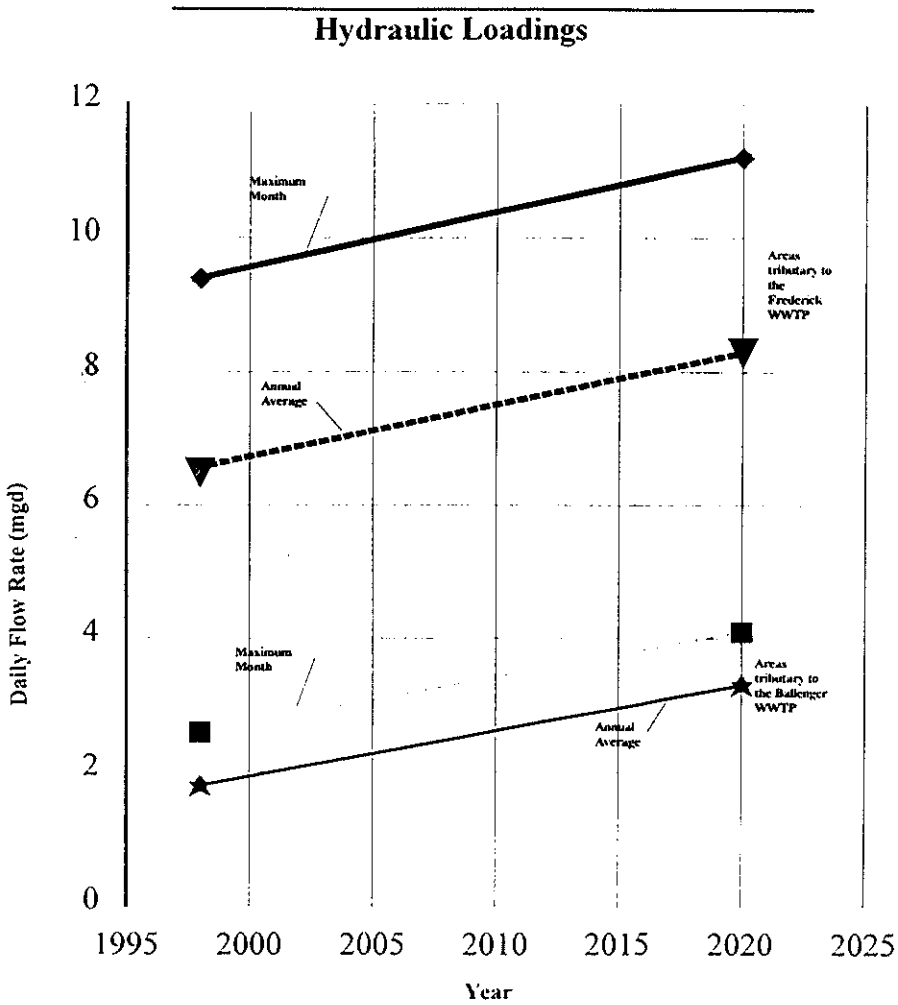
The two peak flow projections provided for flows from areas currently tributary to the City's Wastewater Treatment Plant illustrate the range of peak flows that may be experienced depending on the results of the City's ongoing I/I reduction program. The higher value assumes that little reductions in I/I are achieved and ratio of peak to average flows remains essentially the same in the existing sewer system. This projected peak flow rate was calculated using the 24 mgd peak flow rated reported for May 8, 1998 in operating records provided by the City. This is the peak rate reported for the City's wastewater treatment plant. These records also indicate that, on the same day, the maximum rate entering the raw water pumping station was 34.5 mgd. These flows approximate the capacity of these facilities. This maximum flow rate was increased by additional flows from new customers estimated at 2.5 times the average daily additional flow rate.

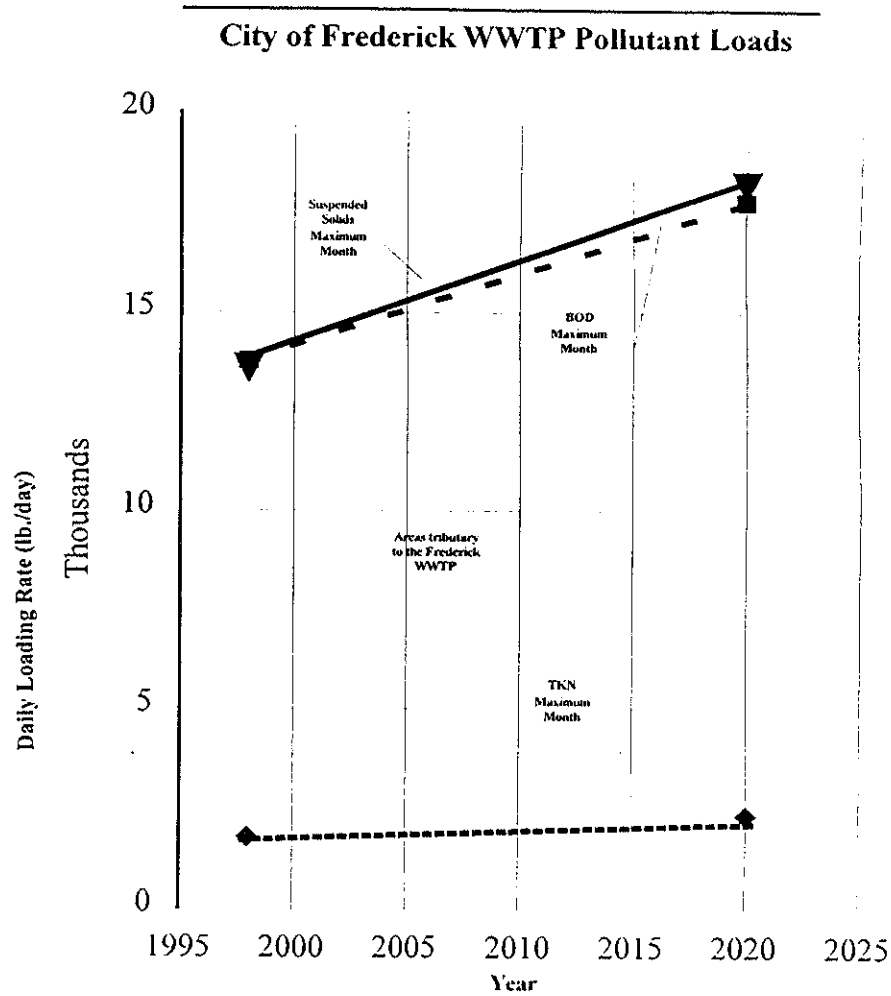
The lower value assumes that the City's infiltration/inflow program is successful in reducing the estimated peak flow to the 2.5 times the annual average daily flow rate normally ascribed to separate sewer systems.

The projected increases in loading rates through the Year 2020 based on a straight line interpolations between current loading rates and projected Year 2020 loading rates are illustrated in Figure II-1.

Estimated ultimate sewage flow rates were developed for various locations along the major interceptor sewers. These estimates were developed using the following procedure:

Figure II-1: Projected Wastewater Loadings





- A total of 61 sewage drainage areas were delineated based upon topography and the layout of the interceptor sewer system.
- The drainage areas were digitally overlaid over the land use map of the area.
- An overlay analysis was performed to measure the amount of each type of land use in each of the drainage areas and to estimate total sewage generation rates based upon unit flow rates.
- Drainage areas and portions of drainage areas tributary to the interceptor sewers and sewer segments were identified and the estimated ultimate peak sewage flow rate tributary to each location was calculated.

The ultimate flows generally assume the development of 70 percent of the total developable area of each drainage area with further allowances made for large expanses of areas occupied by transportation corridors, streams, etc.

As was the case with the peak flows presented in Table II-1, peak flow estimates were developed in two ways: (1) assuming no substantial reductions in existing infiltration rates and (2) assuming peaking factors can be reduced to 2.5 times the average daily flow throughout the system.

Estimated ultimate peak flow rates for the various locations along the major interceptor sewers are presented in Tables B and C in Appendix A.

EVALUATION OF WASTEWATER FACILITIES

Wastewater Pumping Stations

The service areas of the Grove Stadium, Department of Public Works, and Glider Hanger pump stations are relatively confined; and the potential for significant increases in flows is small. Therefore, it is anticipated that the capacity of these stations will remain adequate throughout the planning period. However, the City should continue its infiltration/reduction program and monitor flows received by these stations to avoid the development of I/I problems that could create future capacity problems. The Amber Meadows pump station is scheduled to be eliminated by the construction of a 15 inch diameter interceptor from manhole AM 181 on the pump station influent sewer to manhole AM 199 on the Detrick Branch Outfall sewer.

The Frederick County Regional Wastewater System Study recommends the construction of Ballenger Creek interceptor sewer extensions for implementation in approximately year 2000. Since construction of this interceptor is to be developer financed, its construction appears to be in the more distant future. This extension will bring an interceptor sewer reasonably close to the City's Monarch Ridge pumping station and will open the opportunity for eliminating this station by connecting to the proposed Ballenger Creek interceptor system. It is recommended that once the Ballenger Creek interceptor is constructed a connection be made between the interceptor and the Monarch Ridge collector system and the Monarch Ridge pump station be abandoned. This will represent a more efficient method of serving the area and will reduce operating costs. It will also redirect wastewater flows away from the Carroll Creek interceptor and reduce hydraulic loadings on the interceptor sewer. The timing of this connection and the sewer facilities required to be constructed will be dependent upon the timing and extent of the County's interceptor sewer extension.

The existing West Patrick Street Pump Station is located at the northeast quadrant of the intersection of West Patrick Street with Carroll Creek. This pump station discharges sewage through a 4-inch force main to the opposite side of the creek where the force main ties into the 36-inch diameter Carroll Creek Interceptor. The force main must go under both Carroll Creek and two concrete flood-control conduits (each 12 feet high, 20 feet wide, and the length of the creek). This requires five 90-degree bends to finally discharge into the interceptor. This configurations make future repairs to the force main either under or alongside the conduits impractical and costly.

There are three alternatives to address this problem if the City is sufficiently concerned. Two of the alternatives are best accomplished when West Patrick Street is scheduled for major repairs or the construction of underground wiring in place of existing overhead lines along the street.

Alternative 1: Abandon the pump station and force main. As a part of major improvements to West Patrick Street, replace the existing 8-inch sewage collection line with a new 8-inch line that provides gravity flow east (rather than west as presently the case) on West Patrick Street. This would run from Manhole (MH) 312 to MH 414, a distance of approximately 690 feet at a minimum grade. The cost of this project is estimated to be approximately $43,000 plus the cost of reconstructing existing lateral connections. Aside from eliminating the problem of difficulty of repair, the abandonment of the pump station would save on operating and maintenance cost.

The major disadvantages to this approach are: 1) the need for new lateral connections and 2) the raising of the sewer line may prevent the new laterals from serving the lowest levels of the structures currently connected to the system. The latter disadvantage severely reduces the practicality of this approach.

Alternative 2: Abandon the existing force main. As a part of major improvements to West Patrick Street, construct a new 4-inch force main that is parallel to the existing gravity sewer line from the pumping station to MH 414. The cost of this project is estimated to be $36,000. The major advantages to this alternative would be: 1) the new force main would be accessible for repair; 2) the force main would be at a shallower depth; 3) the problem of interfering with lateral connections would be avoided; and 4) the line can be more flexible, thereby more easily avoiding other underground utilities in the street.

Alternative 3: Abandon the existing force main. Construct new 4-inch force main north along the east side of Carroll Creek to MH 303 located in North Bentz Street (a distance of 450 feet). The cost of this project is estimated to be $26,000. The major advantages of this alternative are lowest cost and that it is not necessary to tie this improvement to the improvements for West Patrick Street. The major disadvantage is that it may require getting easements from private property owners.

In view of cost considerations and the need to fully serve existing stuctures in the area, it is recommended that replacement of the West Patrick Street Pump Station be accomplished using Alternative 3: construction of a new 4-inch diameter force main north along the east side of Carroll Creek to MH 303.

The influent pumping station and flow equalization facilities at the sewage treatment plant have a hydraulic capacity of 35 mgd. Currently, peak flows have reportedly reached approximately 34.5 mgd. Plant operating staff reports that the intermediate process pump station in the plant has a capacity of 24 mgd and that an auxiliary pump is used to increase pumping capacity during abnormally high flow conditions. The total peak flow rate to the influent pumping station is projected to increase by approximately 4.6 mgd by the year 2020. This will result in a required pumping capacity of approximately 39.1 mgd if no significant reductions in existing infiltration/inflow are

achieved. The required pumping capacity can be reduced to approximately 31.3 mgd if infiltration/inflow reductions can reduce peak wet weather flows in the existing system to approximately 2.5 time the average daily flow rate. In all probability, it appears that peak flows reaching the influent pumping station will exceed the hydraulic capacity of the pumping facilities during the planning period. Flow records indicate that the intermediate pumping station currently operates at or near its design capacity. Overloading of this station can be avoided if sufficient flows are diverted to the Ballenger Creek WWTP. However, if significantly more flow is accepted for treatment at the City's WWTP, it will be necessary to expand the capacity of this pumping station. Such an expansion would be performed as part of an overall plant expansion project.

Interceptor Sewer Extensions

The following interceptor sewer extensions are required to extend service into the potential annexation and expanded service areas. The general locations of these interceptor extensions are indicated in Plate II-2.

- Tuscarora Creek Interceptor Extensions

  These extensions primarily include an extension of Frederick County's Tuscarora Creek interceptor in a generally westward direction from Manhole Number WB17 generally along Little Tuscarora Creek. Extensions to the Tuscarora Creek Interceptor also include an extension southwest into the Cloverhill area and north of Willow Road. Based upon preliminary layout and sizing, the interceptor sewer will range in size from 12 inches to 24 inches in diameter.

- Braddock Interceptor

  This represents an extension of the City's interceptor sewer system as a new branch tying into the Golf View interceptor sewer system at Manhole Number GV3 and extending westward to serve the Braddock area portion of the potential annexation area. Preliminary layout and sizing analysis indicates that the interceptor sewer should be sized at 10 inches in diameter.

- Shookstown Interceptor

  This interceptor is required to provide service along Shookstown Road to the western limit of the future service area west of Bowers Road. In the preliminary layout, the sewer would extend from Carroll Creek Manhole Number 1333 westward along the stream, roughly paralleling Shookstown Road. The interceptor sewer will range in size from 10 inches to 12 inches in diameter.

- Edgewood Interceptor

The Edgewood interceptor is an extension of the Carroll Creek interceptor to extend service in a northwest direction to the Edgewood area. The interceptor would extend from Carroll Creek interceptor Manhole 1340 along Carroll Creek. Based upon preliminary layout and sizing analysis, this interceptor should range in size from 10 inches to 15 inches in diameter.

- U.S. 15 North Area Interceptor

  The expansion of the service area north in the U.S. 15 area would be accomplished via an extension westward from Frederick County's along the Monocacy River interceptor along an unnamed stream to a point west of U.S. 15. This interceptor should be 10 inches in diameter

- I-70 / Monocacy River Area

  The expanded service area in the I-70 / Monocacy River area will be served by existing Monocacy interceptor via collector sewers constructed to accommodate development as it occurs.

Sizing of the interceptors is based upon U.S.G.S. topographic information and projected ultimate sewage flow rates from the tributary areas. The timing of construction of these interceptor extensions will be dependent upon the timing of annexation and the pace of development.

Service to the area east of the Monocacy River must be accomplished by pumping across the Monocacy to the sewage collection system. Current land development plans for this area call for the construction of a pumping station and force main system as indicated in Plate II-2. It is anticipated that this system will be expanded as currently undefined future development progresses.

Service to the area east of Industrial Center East will require the construction of a sewage pumping station in the approximate location indicated in Plate II-2.

Assessment of Existing Interceptor Sewer Capacity

An assessment of the capacity of the existing major interceptor sewers was performed using the ultimate peak flow estimates discussed previously and presented in Tables B and C in Appendix A. The projected ultimate peak flow rates were compared to the full pipe flow capacities of each of the interceptor sewer segments. Pipe segments for which

the projected flow exceeded the full pipe flow capacity were further analyzed to estimate the extent of surcharge under peak flow conditions. Pipe segments for which the projected peak flow surcharge depth exceeded one foot above the crown of the pipe were identified as problem segments. The locations of the identified problem interceptor sewer segments are illustrated in Plate II-3.

The identified interceptor sewer capacity problems can be eliminated through the construction of a relief sewer along the Rock Creek Interceptor Sewer from Manhole 1112 to Manhole 1322. The manhole identifiers represent the City's manhole identification numbers for the upstream and downstream manholes defining the beginning and end of the relief sewer.

Assessment of Sewage Treatment Plant Capacity

The projected year 2020 annual average daily flow (AADF) from the potential future service area is 11.6 mgd (15.3 mgd, maximum monthly average daily flow). Approximately 8.3 mgd of this total is projected to be produced from areas whose wastewater is currently being treated at the City's Wastewater Treatment Plant. The remaining 3.3 mgd AADF will be produced from areas of the City that are in the Frederick County Ballenger, Monocacy, and Tuscarora sewersheds.

Currently sewage from these areas either flows directly or is diverted (Monocacy By-Pass Interceptor) to the County's Ballenger Creek Wastewater Treatment Plant. Long range plans are for these diversions to continue and for flows from the City of Frederick system in excess of the current plant's capacity to be diverted for treatment at the Ballenger Creek facility. The Ballenger Creek WWTP will be expanded to meet future requirements (City-County Agreement, April 19, 1990).

These plans were developed pursuant to a determination that the Monocacy River was limited in its assimilative capacity to accept treated sewage from the Frederick City Wastewater Treatment Plant discharge point to the confluence of Bennett Creek and the Monocacy River. This prompted the preparation of the Monocacy River Wastewater Treatment Alternatives Study"(September 1987). As a result of this study, the City and County entered into an agreement whereby excess flow from the Frederick City wastewater treatment plant would be sent to the Ballenger Creek Wastewater Treatment Plant for treatment and discharge into the Monocacy River. The City's Wastewater Treatment Plant would remain at its present capacity of 8 mgd. The Ballenger Creek

Wastewater Treatment Plant would be expanded to meet the needs of the area. The Monocacy Interceptor Bypass was completed to permit the flow diversions to the Ballenger Creek Wastewater Treatment Plant. Ultimately, an approximately 8 mile long outfall sewer will be constructed to the Potomac River to allow Ballenger WWTP discharges beyond the current limits. (source: 1993 Frederick County Regional Wastewater System Study)

The City of Frederick Wastewater Treatment Plant currently operates under an NPDES permit that lifted the 8 mgd flow limit and replaced it with loading limits. The maximum loading that can be handled by the City of Frederick WWTP in practice, therefore, is a function of the effluent loading. Estimates of effluent loadings from the City of Frederick WWTP based upon anticipated future influent loadings were developed by applying estimated pollutant removal rates to the projected influent loadings presented previously in Table II-1. Empirical pollutant removal relationships were defined based upon an analysis of wastewater treatment plant operating records for the years 1993 through 1998. In this analysis, linear regression relationships were identified for monthly average BOD and suspended solids removal rates versus monthly average daily flow rates. The empirical data used in this analysis are illustrated in Figure II-2.

Figure II-2: Empirical Pollutant Removal Rates

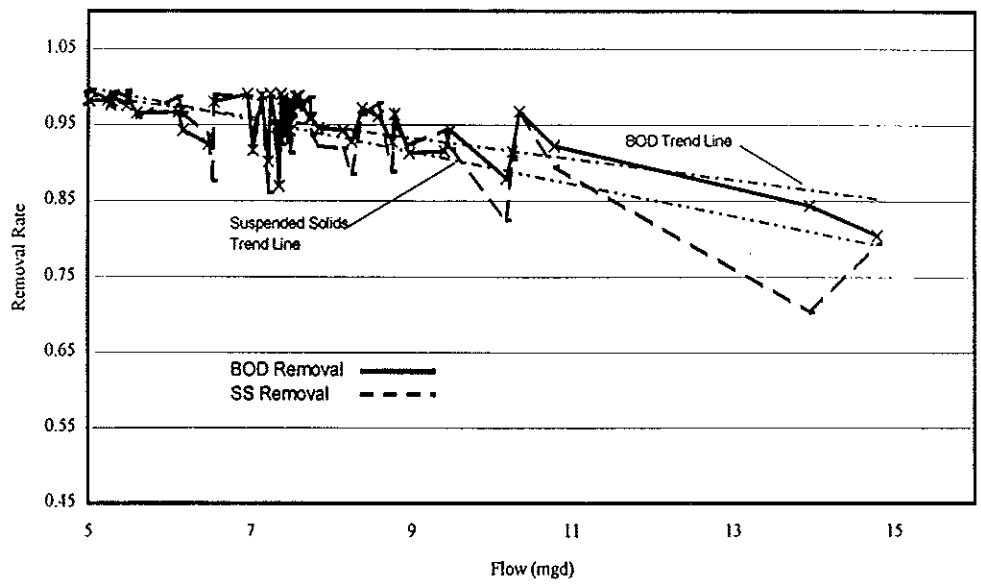


Figure II-3, located on the page II-16, presents estimates of future effluent loadings. One set of estimates of future effluent loadings was developed by applying the estimated removal rates to the projected influent loadings. The removal rates used in the analysis are those that were indicated by the empirical data analysis and reflect the operation of the current facilities. There are seasonal variations in flows, pollutant loadings, and effluent limits. The effluent loads were estimated by applying the current removal rates to seasonal estimates of flows and loads.

A second set of effluent load estimates were developed assuming that the City of Frederick WWTP is expanded and that the expanded facilities achieve rates similar to those currently achieved by the existing plant despite the projected increase in flow and pollutant loadings. The Frederick City WWTP Biological Nutrient Removal Feasibility Study (July 1996) determined that *"...the capacity of the plug flow process would be easily increased to 12.0 mgd if the new final clarifiers were slightly larger (140' dia. Vs 120' dia.). Accordingly, the plug-flow alternative could be capitalized to provide needed capacity for a relatively insignificant cost (roughly about $200,000)"* (page 38) The study recommended as follows: *"Based upon the economic and technical analysis, the plug flow alternative would be selected. Implementing the selected alternative should likely include constructing larger clarifiers to capitalize its capacity efficiency. Installing 140' diameter clarifiers instead of 120' diameter clarifiers would increase biological capacity to 12 mgd."* (page 38) The second set of effluent load estimates presented in Figure II-3 is predicated on the implementation of the recommendations of the Frederick City WWTP Biological Nutrient Removal Feasibility Study.

Conclusions Regarding Effluent Loadings

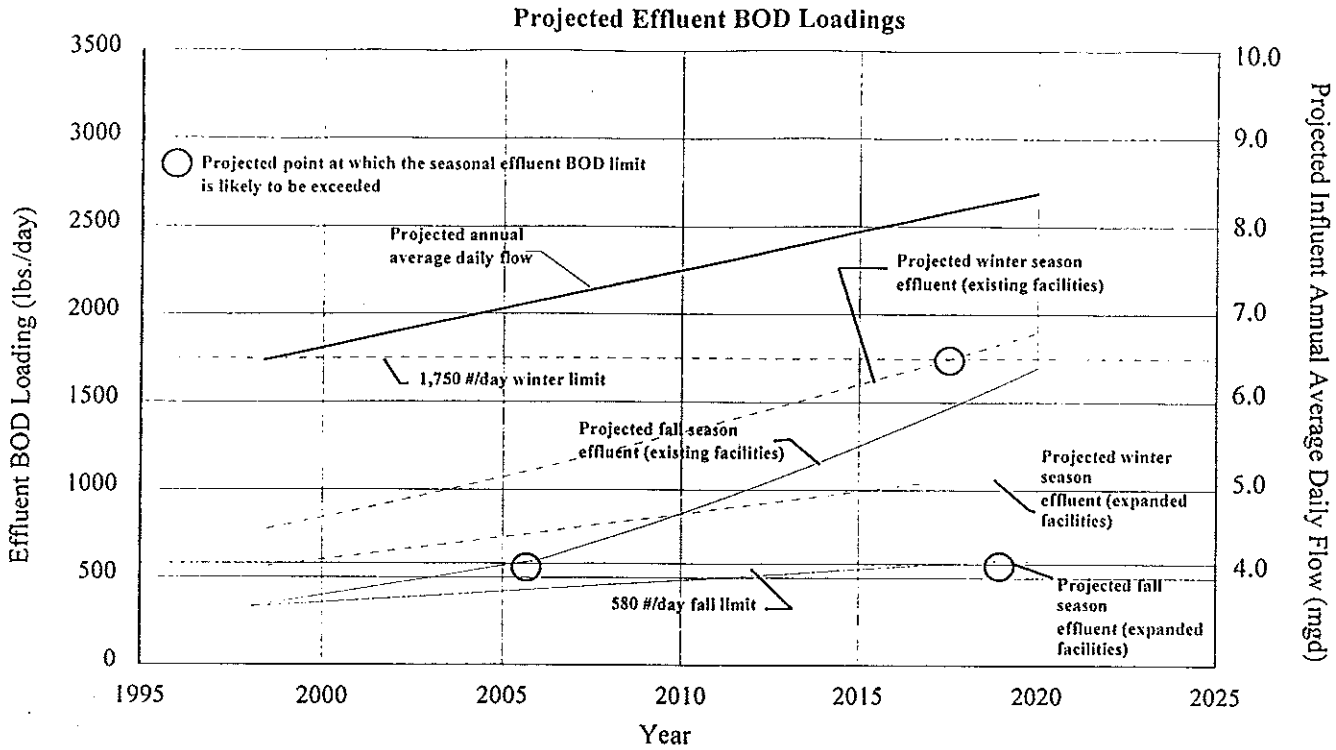
This analysis indicates that, provided that the recommendations of the Frederick City WWTP Biological Nutrient Removal Feasibility Study are implemented, the current load limits can be expected to be met through approximately the end of the planning period (roughly year 2018). Based upon the projected loading rates, in order to comply with the current effluent loading limits, the City of Frederick would have to achieve BOD, suspended solids, and total kjeldahl nitrogen loading removal rates of 96%, 90%, and 92%, respectively. These treatment levels are attainable with a properly sized facility.

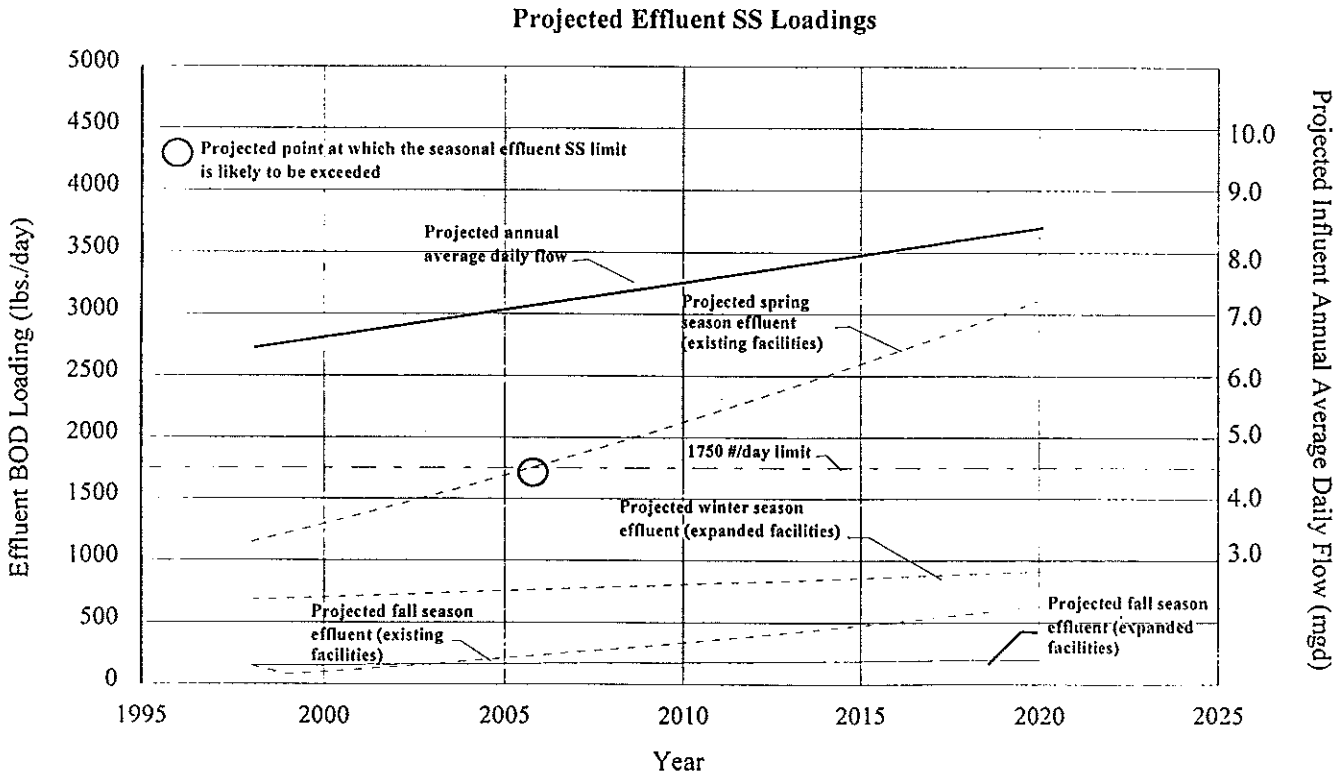
Alternatives to the Current Long-Range Plan

Alternatives to the implementation of the current long-range plan include:

1) utilization of the Fort Detrick facility to treat a portion of the City's wastewater

Figure II-3
Projected Effluent Loadings





2) expansion of the City's and/or County's wastewater treatment plant as required to meet the projected loadings from the areas currently afforded treatment at the City of Frederick Plant - flows from areas currently bypassed to the Ballenger WWTP would continue to be bypassed.

Fort Detrick

The first alternative relies on the use of available Fort Detrick treatment capacity. The Fort Detrick Wastewater Treatment Plant has a permitted capacity of 1.0 mgd. The Frederick County Water & Sewerage Plan reported that the plant was running at over 80 percent of capacity. There is little available excess capacity at the Fort Detrick Wastewater Treatment Plant to permit additional discharges from an expanded City Wastewater Treatment Plant, or for the treatment of wastewater diverted from the City system. Consequently, the use of the Fort Detrick Wastewater Treatment plant to alleviate the projected overload of the City of Frederick WWTP is not feasible.

Expand City's Capacity or Divert Additional Flow

The City's current capacity at its wastewater treatment plant is approximately 8.0 mgd average daily flow. The City is currently allocated 1.028 mgd at the Ballenger WWTP for a total of 9.028 mgd . The current City-County agreement allows the City to divert 3.0 mgd to the Ballenger Creek WWTP when the Ballenger Creek WWTP is expanded to 17.5 mgd . (City-County Agreement dated April 19, 1990).

All sewage flows from the City that go directly to the Monocacy By-Pass interceptor are not counted against the City's Ballenger Creek WWTP allocation of capacity (City-County Agreement dated March 16, 1995). Current City flows to the Ballenger Creek WWTP are 1.8 mgd with 1.5 mgd additional projected for 2020. City flows to the Ballenger Creek WWTP are projected to increase to 3.3 mgd AADF by the year 2020. Of this 3.3 mgd total, approximately 0.3 is estimated to go directly (not via the Monocacy By-Pass) to the Ballenger Creek WWTP and, therefore will not count against the City's currently allocated capacity.

Provided that the recommendations of the Frederick City WWTP Biological Nutrient Removal Feasibility Study are implemented, it appears that the City can remain within the terms of the 1990 and 1995 agreements with regard to the amount of flow

that is diverted to the Ballenger WWTP. Under these conditions, the projected year 2020 8.3 mgd AADF (11.2 mgd maximum month flows) from the areas currently tributary to the City WWTP can be treated at that location. Of the 3.3 mgd AADF of sewage flows that are projected to originate in the areas of the City that are in the Ballenger, Monocacy, and Tuscarora sewer sheds, 3.0 mgd will be counted against the current 3.0 mgd City allocation.

Treatment Plant Capacity Recommendations

Based upon this analysis, it is recommended that the current long range plan be implemented. This will consist of implementing the recommendations of the the Frederick City WWTP Biological Nutrient Removal Feasibility Study that will permit flows approximating 8.3 mgd AADF to be treated at the City WWTP. Flows produced from areas of the City that are in the Frederick County Ballenger, Monocacy, and Tuscarora sewersheds will continue to be treated at the Ballenger Creek WWTP.

2) expansion of the City's and/or County's wastewater treatment plant as required to meet the projected loadings from the areas currently afforded treatment at the City of Frederick Plant - flows from areas currently bypassed to the Ballenger WWTP would continue to be bypassed.

Fort Detrick

The first alternative relies on the use of available Fort Detrick treatment capacity. The Fort Detrick Wastewater Treatment Plant has a permitted capacity of 1.0 mgd. The Frederick County Water & Sewerage Plan reported that the plant was running at over 80 percent of capacity. There is little available excess capacity at the Fort Detrick Wastewater Treatment Plant to permit additional discharges from an expanded City Wastewater Treatment Plant, or for the treatment of wastewater diverted from the City system. Consequently, the use of the Fort Detrick Wastewater Treatment plant to alleviate the projected overload of the City of Frederick WWTP is not feasible.

Expand City's Capacity or Divert Additional Flow

The City's current capacity at its wastewater treatment plant is approximately 8.0 mgd average daily flow. The City is currently allocated 1.028 mgd at the Ballenger WWTP for a total of 9.028 mgd . The current City-County agreement allows the City to divert 3.0 mgd to the Ballenger Creek WWTP when the Ballenger Creek WWTP is expanded to 17.5 mgd . (City-County Agreement dated April 19, 1990).

All sewage flows from the City that go directly to the Monocacy By-Pass interceptor are not counted against the City's Ballenger Creek WWTP allocation of capacity (City-County Agreement dated March 16, 1995). Current City flows to the Ballenger Creek WWTP are 1.8 mgd with 1.5 mgd additional projected for 2020. City flows to the Ballenger Creek WWTP are projected to increase to 3.3 mgd AADF by the year 2020. Of this 3.3 mgd total, approximately 0.3 is estimated to go directly (not via the Monocacy By-Pass) to the Ballenger Creek WWTP and, therefore will not count against the City's currently allocated capacity.

Provided that the recommendations of the Frederick City WWTP Biological Nutrient Removal Feasibility Study are implemented, it appears that the City can remain within the terms of the 1990 and 1995 agreements with regard to the amount of flow

that is diverted to the Ballenger WWTP. Under these conditions, the projected year 2020 8.3 mgd AADF (11.2 mgd maximum month flows) from the areas currently tributary to the City WWTP can be treated at that location. Of the 3.3 mgd AADF of sewage flows that are projected to originate in the areas of the City that are in the Ballenger, Monocacy, and Tuscarora sewer sheds, 3.0 mgd will be counted against the current 3.0 mgd City allocation.

Treatment Plant Capacity Recommendations

Based upon this analysis, it is recommended that the current long range plan be implemented. This will consist of implementing the recommendations of the the Frederick City WWTP Biological Nutrient Removal Feasibility Study that will permit flows approximating 8.3 mgd AADF to be treated at the City WWTP. Flows produced from areas of the City that are in the Frederick County Ballenger, Monocacy, and Tuscarora sewersheds will continue to be treated at the Ballenger Creek WWTP.

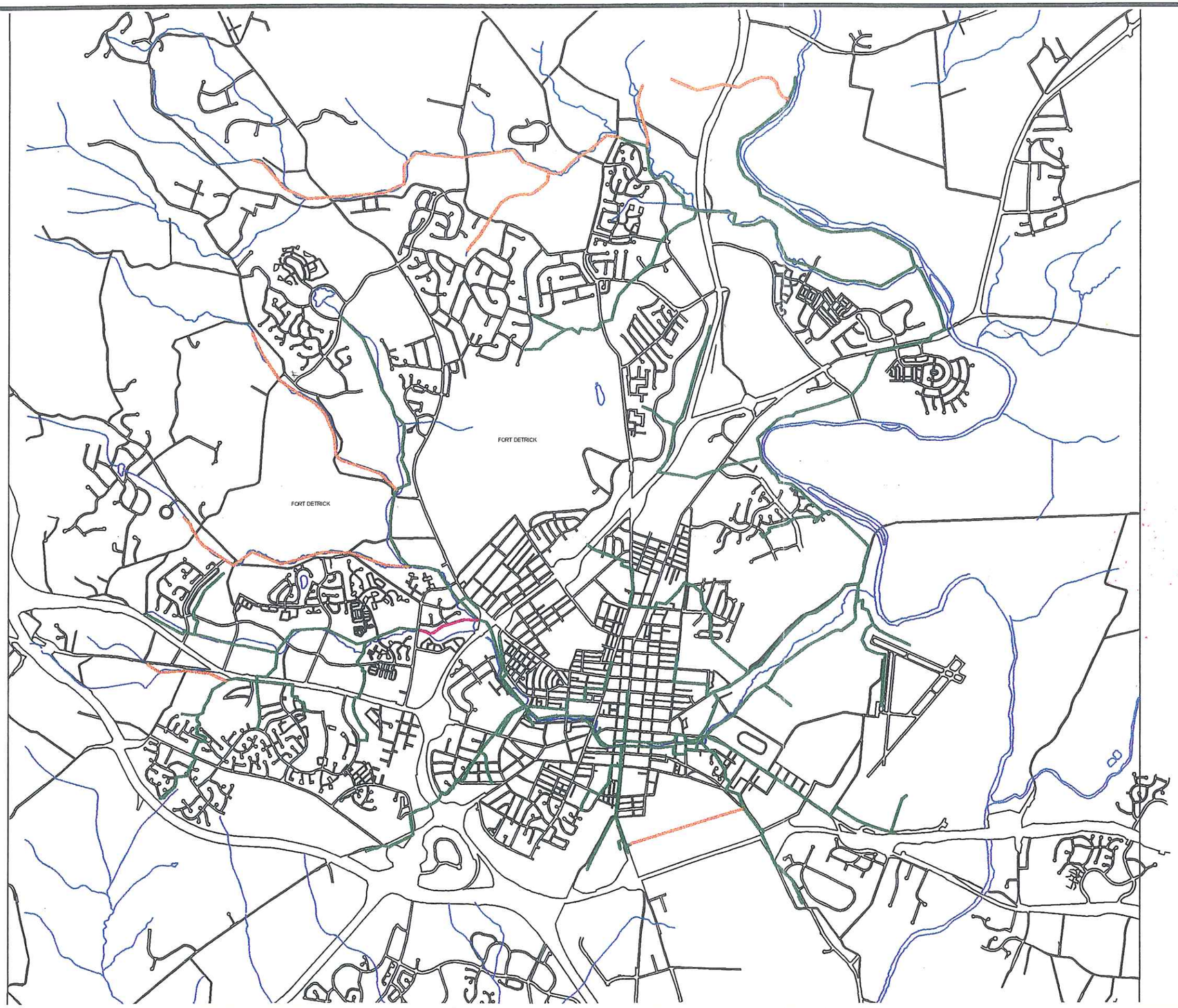


Plate II-3

City of Frederick

Identified Potential Future
Interceptor Sewer Capacity Problems

Legend

- Potential Capacity Problems
- Interceptor Extensions
- Major Existing Interceptors
- Streams
- Roads

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WATER AND SEWER MASTER PLAN
SECTION III
SEWERAGE FACILITIES
SUMMARY OF RECOMMENDATIONS

SUMMARY OF RECOMMENDATIONS

The recommended improvements are presented in Tables III-1 and III-2. The cost estimates provided represent estimates of total project costs, exclusive of rights-of-way or property acquisition costs. The estimates are conceptual in nature to be used for fiscal planning purposes. They were developed using published cost estimating data, pricing information obtained from suppliers, and experience with similar projects. The costs are presented in terms of December 1999 dollars. Project phasing refers to the general time period for which the improvements should be planned. Phase I recommendations generally address existing conditions and anticipated near term needs. These recommendations should be implemented within the 2000 to approximately 2010 time period. The Phase II recommendations address the expansion of the existing service area and conditions expected to occur as water demands and sewage flow rates increase in pace with the projected increases in the service area. These improvements should be planned for implementation in the 2010 to 2020 time period.

Developer initiated projects should incorporate the improvements in accordance with City standards and the development approval process.

Table III-1
Summary of Recommendations - Sewerage Facilities

Phase	Issue	Recommendation	Source	Estimated Cost of Implementation
		Wastewater Treatment Plant		
Phase I	Improve primary clarifier suspended solids and BOD removals. Improve oxidation ditch nitrogen removal effectiveness. Increase sludge dewatering capacity. Improve control of filamentous bacteria.	Add cross flow baffles & polymer feed system. Partially demolish internal concrete walls. Demolish internal equipment & intrachannel clarifier. Construct new internal concrete walls. Install three new IR pumps.	BNR study	$4,440,000 (5% contingency added to BNR report estimate)

Table III-1 (continued)
Summary of Recommendations - Sewerage Facilities

Phase	Issue	Recommendation	Source	Estimated Cost of Implementation
Wastewater Treatment Plant (continued)				
		Install new aeration, mixing, and monitoring equipment. Provide new return activated sludge pump station/sludge well distribution box. Install three submersible return activated sludge pumps. Provide two clarifiers with internal components. Install new belt filter press.		
Phase I	Improve anaerobic digester performance.	Clean digesters. Activate digester mixing system.	BNR study	$31,000
Phase I	Eliminate freezing problems with grit removal system dewatering screen.	Enclose dewatering screens with a building.	Chester Engineers plant review	$ 41,000
Phase I	Improve belt press room to eliminate high hydrogen sulfide levels and the development of fog.	Replace heating and ventilation system.	Chester Engineers plant review	$7,800
Phase I	Upgrade existing 10,000 gallon underground diesel storage tank to comply with current regulations.	Replace underground storage tank.	Chester Engineers plant review	$ 31,000
Wastewater Pumping Stations, Collection, and Interceptor Sewer System				
Phase I & Phase II	Reduce I/I.	Continue ongoing I/I reduction program.	Current program	Indeterminate
Phase II	Increase raw wastewater pumping capacity	Increase raw wastewater pumping capacity to approximately 40 mgd (required increase could be reduced o eliminated through I/I reduction)	Chester Engineers system analysis	$ 520,000
Phase I	Provide remote monitoring and control capabilities.	Install centralized supervisory control and data acquisition system. Installation of data acquistion equipment is currently being implemented.	Chester Engineers plant review	Included in the comprehensive SCADA estimate presented under the water system improvements

Table III-1 (continued)
Summary of Recommendations - Sewerage Facilities

Phase	Issue	Recommendation	Source	Estimated Cost of Implementation
Wastewater Pumping Stations, Collection, and Interceptor Sewer System (continued)				
Phase I	Elimination of Amber Meadows Pumping Station	Construct Amber Meadows Outfall Sewer	Completed Design	$930,000
Phase I	Replace the inaccessible force main from the West Patrick Street Pump Station	Construct replacement force main to MH 303	Chester Engineers system analysis	$27,000
Phase I	Construct sewer to connect Monarch Ridge pump station to proposed Ballenger Creek interceptor sewer extension.	Construct sewer from pump station to proposed sewers.	Chester Engineers system analysis	Indeterminate (depends on location of County extension.
Phase I	Construct interceptor relief sewers.	Construct Rock Creek interceptor - Manhole 1112 to Manhole 1322: 4,200 feet of 21-inch sewer.	Chester Engineers system analysis	$560,000
Phase II	Construct interceptor sewer extensions to expand service area.	Construct Little Tuscarora Creek interceptor extensions: 23,100 feet of 12-inch to 24-inch sewer. (County system)	Chester Engineers system analysis	$2,910,000
		Construct Braddock interceptor: 3,500 feet of 10-inch sewer.		$380,000
		Construct Shookstown interceptor: 11,000 feet of 10- and 12-inch sewer.		$1,180,000
		Construct Edgewood interceptor: 14,000 feet of 10-, 12-, and 15-inch sewer.		$1,600,000
		Construct U.S. 15 north area interceptor 5,000 feet of 12-, inch sewer (County system)		$580,000

Glossary of Terms

GLOSSARY OF TERMS

AERATION	The processes of adding air to water. Air can be added to water by either passing air through water or passing water through air.
AERATION BASIN	A container in which oxygen is added to the wastewater to facilitate the treatment process.
AEROBIC	A condition in which "free" (atmospheric) or dissolved (molecular) oxygen is present in the water environment.
ANAEROBIC	A condition in which "free" (atmospheric) or molecular (dissolved) oxygen in NOT present in the water environment.
BOD	Biochemical Oxygen Demand. The rate at which organisms use the oxygen in water while stabilizing decomposable organic mater under aerobic conditions. In decomposition, organic matter serves as food for the bacteria and energy results from its oxidation. BOD measurements are used as a measure of the organic strength of wastes in water.
BACKWASHING	The process of reversing the flow of water back through the filter media to remove the entrapped solids.
BAR SCREEN	A device generally located at the point in a treatment plant where water/wastewater first enters the treatment process and separates large objects from the water flow.
BOOSTER PUMP STATION	A pumping station in a water distribution system that is used to increase the pressure on the discharge side of the pump.
BOOSTER CHLORINATION STATION	A facility, remote from the water treatment works, at which chlorine is added to water in a water distribution system in order to increase the chlorine residual in the water.
CAPACITY	The quantity that can be contained exactly or the rate of flow that can be carried exactly; the load for which a machine, apparatus, station, or system is rated.
CHEMICAL DOSE	A specific quantity of chemical applied to a specific quantity of fluid for a specific purpose.
CHEMICAL FEEDER	A device for dispensing a chemical at a predetermined rate for the treatment of water or wastewater.
CHLORINATION	The application of chlorine to water, generally for the purpose of disinfection, by frequently for accomplishing other biological chemical results.
CHLORINE RESIDUAL	The amount of available chlorine remaining after a given contact time under specified conditions.
CFS	The rate of flow of a material in cubic feet per second.

CLARIFIER	A tank or basin in which water or wastewater is held for a period of time, during which the heavier suspended solids settle to the bottom. Clarifiers are also referred to as settling basins and sedimentation basins.
CLEAR WELL	A reservoir for the storage of filtered water of sufficient capacity to prevent the need to vary the filtration rate with variations in demand. Also used to provide chlorine contact time for disinfecting.
COAGULANTS	The clumping together of very fine particles into larger particles (floc) together in larger particles. This makes it easier to separate the solids from the water by settling, skimming, draining or filtering.
COLLECTOR SEWERS	Sewer lines that collect sewage from small areas or neighborhoods and feed into a larger system.
CROSS CONNECTION	A connection between a drinking (potable) water system and an unapproved water supply. A mixing between the two sources may lead to contamination of the drinking water.
DEAD END	The end of a water main which is not connected to other parts of the distribution system by means of a connecting loop.
DECHLORINATION	The removal of chlorine from water/wastewater to meet regulatory requirements. In most wastewater processes the addition of sulfur dioxide is used to eliminate chlorine.
DISCHARGE	The flow or rate of flow from a conduit, pump, tank, or treatment process.
DEWATER	To extract a portion of the water present in a sludge or slurry.
DISINFECTION	The killing of waterborne fecal and pathogenic bacteria and viruses in potable water supplies or wastewater effluents with a disinfectant.
DISTRIBUTION RESERVOIR	A reservoir connected with the distribution system of a water system used primarily to accommodate fluctuations in demand which occur over short periods and also to provide local storage in case of emergency.
DISTRIBUTION SYSTEM	A system of conduits by which a primary water supply is distributed to consumers. The term applies particularly to the network of pipelines in the streets in a domestic water system.
DIURNAL	Occurring during a 24-hour period; diurnal variation.
DOMESTIC CONSUMPTION	The quantity or quantity per capita, of water supplied in a municipality for domestic uses or purposes during a given period, usually one-day.
DRAINAGE AREA	An area from which surface runoff is carried away by a single drainage system. Also called catchment area, watershed.
DRINKING WATER	

STANDARDS	Standards that define allowable concentrations of coliforms and certain chemicals, physical characteristics and radioactivity in drinking water.
EFFLUENT	Wastewater or water that flows out of a reservoir, basin, treatment process or treatment plant.
EFFLUENT STANDARD	Specification of allowable concentration or mass of a constituent which may be discharged.
ELEVATED TANK	A tank, used for storage in a water distribution system, which is raised above the surface of the ground and is supported by posts or columns.
EQUALIZATION BASIN	A container that accepts water/wastewater flow contains it, and then releases it in a prescribed controlled manner. It is used to regulate the flow in the treatment process.
FILTRATION PLANT	In water treatment works, the process, devices, and structures used for filtration of water.
FILTER PRESS	A mechanical device that reduces the amount of water in sludge so that the sludge can be more easily disposed under controlled conditions.
FIRE DEMAND	The required fire flow and duration for which it is needed, usually expressed in gallons per minute, for a certain number of hours.
FLOCCULATION	In water and wastewater treatment, the agglomeration of colloidal and finely divided suspended matter after coagulation by gentle stirring.
FLOW	The movement of a stream of water or other fluid from place to place; the quantity or rate of movement of a fluid.
FLOW DEMAND	The flow required to satisfy demands on a system, such as fire demand or residential, commercial, or industrial water demand.
FORCE MAIN	A pipe that transports sewage under pressure. This is used when transport by gravity is technically or economically infeasible.
GPCD	The rate of water, wastewater, or other flow measured in U.S. gallons per capita of served population per day.
GPD	The rate of water, wastewater, or other flow measured in U.S. gallons per day.
GPM	The rate of water, wastewater, or other flow measured in U.S. gallons per minute.
GRIT	The heavy suspended mineral matter present in wastewater.
GROUNDWATER	Subsurface water occupying the saturation zone, from which wells and springs are fed.
HEADLOSS	Energy losses due to the resistance of flow of fluids.

HEADWORKS	The term given to chemical and mechanical equipment that is at the beginning of the treatment plant to prepare it for the main part of the treatment process.
HYDRANT	A device, connected to a water main and provided with the necessary valves and outlets, to which a fire hose may be attached for discharging water at a high rate for the purpose of extinguishing fires, washing down streets, or flushing out the water main.
HYDRAULIC MODEL	A numerical representation of a water system that can be used to simulate the performance of an actual system.
INFILTRATION	The gradual flow or movement of water into sewer pipes and service connections from the ground.
INFLOW	In relation to sanitary sewers, the extraneous flow which enters a sanitary sewer from sources other than infiltration, such as roof leaders, basement drains, land drains, and manhole covers.
INFLUENT	wastewater or water flowing INTO a reservoir, basin, treatment process or treatment plant.
INTERCEPTOR SEWER	The larger diameter sewer lines that traverses many neighborhoods in the City and receive wastewater from smaller sewage lines.
LIFT STATION	A structure that contains pumps and appurtenant piping, valves, and other mechanical and electrical equipment for pumping wastewater. Also called pump station.
KJELDAHL NITROGEN	Nitrogen in the form of organic proteins or their decomposition product ammonia, as measured by the Kjeldahl Method.
MANHOLE	A structure atop an opening in a gravity sewer to permit entry for servicing.
MANHOLE INVERT	The lowest point of the interior of a manhole at any cross section.
MGD	The rate of water, wastewater, or other flow measured in U.S. million gallons per day.
MODELING	The simulation of some physical or abstract phenomenon or system with another system believed to obey the same physical laws or abstract rules of logic, in order to predict the behavior of the former (main system) by experimenting with the latter (analogous system).
NORMAL WORKING PRESSURE	The pressure in the mains of a water distribution system under normal water demand conditions.
NPDES PERMIT	National Pollutant Discharge Elimination System permit is the regulatory agency document issued by either a federal or state agency whish is designed to control all discharges of pollutants from point sources (e.g. wastewater treatment plants) into U.S. waterways.
PEAK DEMAND	The maximum momentary load placed on a water plant or pumping station.

PEAK FLOW	Maximum flow.
POLYMER	A chemical formed by the union of many monomers (a molecule of low molecular weight). Polymers are used with other chemical coagulants to aid in binding small-suspended particles to larger chemical flocs for their removal from water.
POST AERATION	The addition of air to treated wastewater effluent prior to discharge. The purpose is to raise the level of dissolved oxygen in the water to minimum levels regulated by permit.
PRESSURE	The total load or force acting on a surface. In hydraulics, unless otherwise stated, usually the pressure per unit area or intensity of pressure above local atmospheric pressure expressed, for example, in pounds per square inch.
PUMP CURVE	A curve or curves showing the interrelation of speed, dynamic head, capacity, brake horsepower, and efficiency of a pump.
PUMPING STATION	A facility that accepts sewage at a low point in the system and sends the sewage under pressure to another point in the system for transport to the treatment plant.
PSI	The total load or force acting on a surface expressed in pounds per square inch.
REQUIRED FIRE FLOW	The rate of flow, usually expressed in gallons per minute, that is needed at a specified residual pressure for fire fighting purposes at a particular location or in a certain area. When fire department pumps are to be used, the specified residual pressure is generally 20 psi.
RESERVOIR	A pond, lake, basin, or other space, either natural or created in whole or in part which is used for storage, regulation, and control of water.
RESIDUAL PRESSURE	The pressure remaining in the mains of a water distribution system when a specified rate of flow, such as that needed for firefighting purposes, is being withdrawn from the system.
SAFE YIELD	The maximum dependable draft that can be made continuously on a source of water supply during a period of years during which the probable driest period or period of greatest deficiency in water supply is likely to occur.
SANITARY SEWER	A sewer that carries liquid and waterborne wastes from residences, commercial buildings, industrial plants, and institutions, together with minor quantities of ground, storm, and surface waters that are not admitted intentionally.
SERVICE AREA	Area within which public water supply or sewage collection and disposal services are available to customers of the utility.
SEWAGE	Household and commercial wastewater that contains human waste.
SEWER	A pipe or conduit that carries wastewater or drainage water.
SEWERAGE	A complete system of piping, pumps, basins, tanks, unit processes, and appurtenances for the collection, transporting, treating, and discharging of wastewater.

SEWER SYSTEM	Collectively, all of the property involved in the operation of a sewer utility.
SCADA	Supervisory Control And Data Acquisition. A computer monitored alarm, response, and data acquisition used by drinking water facilities to monitor their operations.
SLUDGE	The settable solids that are separated from water or wastewater during processing.
STANDPIPE	A tank resting on the ground having height greater than diameter and used for storage of water in a distribution system.
SURCHARGE	The height of wastewater in the sewer manhole above the crown of the sewer when the sewer is flowing completely full.
SUSPENDED SOLIDS	Solid organic or inorganic particles physically held in suspension by agitation or flow.
TREATMENT PROCESS TRAIN	The sequence of the various techniques of treatment to the flow of water and wastewater in a treatment plant.
TURBIDITY	The cloudy appearance of water caused by the presence of suspended and colloidal matter. High turbidity appearing in public water supplies shortly after rainfall may indicate that untreated surface water may be contaminating a ground water supply or overwhelming a surface water supply.
UNACCOUNTED-FOR WATER	Water that is taken from a source into a distribution system but which is not delivered to the consumers or otherwise accounted for.
WASTEWATER	The spent or used water of a community or industry which contains dissolved and suspended matter.
WATER DEMAND	A water requirements of a community or particular consumer or purpose.
WTP	Water treatment plant.
WWTP	Wastewater treatment plant.

Appendix A

Estimated Interceptor Capacity Data

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
Willowbrook Interceptor (1993)								
WB-17	297.70				283.01			
		WBP-17	24			262	0.26	6.46
WB-16	291.00			282.33	282.23			
		WBP-16	24			276	0.26	6.47
WB-15	290.80			281.51	281.41			
		WBP-15	24			248	0.26	6.44
WB-14	290.30			280.77	280.67			
		WBP-14	24			131	0.26	6.46
WB-13	290.20			280.33	280.23			
		WBP-13	24			176	0.26	6.48
WB-12	289.50			279.77	279.67			
		WBP-12	24			367	0.26	6.45
WB-11	287.80			278.72	278.62			
		WBP-11	24			496	0.26	6.47
WB-10	289.00			277.33	277.23			
		WBP-10	24			298	0.26	6.44
WB-09	285.00			276.46	276.36			
		WBP-9	24			76	0.26	6.50
WB-08	284.20			276.16	276.06			
		WBP-8	24			106	0.26	6.52
WB-07	285.10			275.78	275.68			
		WBP-7	24			118	0.26	6.50
WB-06	291.70			275.37	275.27			
		WBP-6	24			98	0.26	6.40
WB-05	288.70			275.02	274.92			
		WBP-5	24			348	0.26	6.45
WB-04	291.00			274.02	273.92			
		WBP-4	24			342	0.26	6.50
WB-3	284.20			273.02	272.92			
		WBP-3	24			308	0.26	6.42
WB-2	280.50			272.13	272.03			
		WBP-2	24			367	0.26	6.45
WB-1	281.20			271.08	270.98			
		WBP-1	24			164	0.26	6.42
TI-27	279.60			270.56				
Tuscoroa Interceptor (1965)								
TI 47	N/A			357.50	357.46			
		TIP-47	8			555	0.92	0.98
TI 46	N/A			352.34	352.29			
		TIP-46	8			554	1.68	1.32
TI 45	N/A			343.00	342.76			
		TIP-45	8			237	1.95	1.42
TI 44	N/A			338.15	338.00			
		TIP-44	8			280	0.98	1.01
TI 43	N/A			335.24	335.19			
		TIP-43	10			440	0.99	1.84
TI 42	N/A			330.83	330.67			
		TIP-42	10			355	0.97	1.82
TI 41	N/A			327.22	322.27			
		TIP-41	10			453	1.31	2.11
TI 40	N/A			316.32	316.18			
		TIP-40	10			413	0.75	1.59
TI 39	N/A			313.09	313.05			
		TIP-39	10			400	1.79	2.47
TI 38	N/A			305.89	305.65			
		TIP-38	10			414	1.05	1.88
TI 37	N/A			301.32	301.20			
		TIP-37	10			412	1.16	1.99
TI 36	N/A			296.41	296.19			
		TIP-36	10			418	1.03	1.87

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
TI 35	N/A			291.90	291.47			
		TIP-35	12			419	0.81	1.79
TI 34	N/A			288.09	287.69			
		TIP-34	12			428	0.71	1.69
TI 33	N/A			284.64	284.10			
		TIP-33	12			422	0.71	1.68
TI 32	N/A			281.10	280.75			
		TIP-32	15			404	0.47	2.49
TI 31	N/A			278.84	278.65			
		TIP-31	15			300	0.33	2.08
TI 30	289.18			277.66	277.26			
		TIP-30	15			300	0.56	2.71
TI-29	287.04			275.58	275.36			
		TIP-29	15			300	0.88	3.39
TI-28	280.16			272.73	272.48			
		TIP-28	15			280	0.46	2.47
TI-27	279.94			271.18	270.28			
		TIP-27	27			242	0.25	8.70
TI-26A	N/A			269.67	269.64			
		TIP-26A	27			215	0.27	8.94
TI-26	278.03			269.07	269.02			
		TIP-26	27			255	0.26	8.90
TI-25	279.99			268.35	268.23			
		TIP-25	27			390	0.15	6.81
TI-24	277.68			267.63	267.38			
		TIP-24	27			280	0.23	8.30
TI-23	276.95			266.74	266.71			
		TIP-23	27			382	0.28	9.14
TI-22	276.82			265.65	265.63			
		TIP-22	27			416	0.22	8.08
TI-21	275.43			264.73	264.75			
		TIP-21	27			391	0.29	9.41
TI-20	274.38			263.60	263.57			
		TIP-20	27			294	0.24	8.47
TI-19	273.91			262.87	262.72			
		TIP-19	27			353	0.20	7.73
TI-18	273.32			262.02	261.93			
		TIP-18	27			392	0.22	8.22
TI-17	271.78			261.05	260.96			
		TIP-17	27			354	0.20	7.72
TI-16	269.98			260.26	260.07			
		TIP-16	27			437	0.25	8.75
TI-15	269.97			258.96	258.97			
		TIP-15	27			438	0.30	9.50
TI-14	268.77			257.66	257.66			
		TIP-14	27			398	0.30	9.48
TI 13	267.29			256.47	256.39			
		TIP-13	27			430	0.17	7.10
TI 12	264.91			255.67	255.44			
		TIP-12	27			417	0.24	8.58
TI 11	265.02			254.42	254.37			
		TIP-11	27			383	0.20	7.83
TI 10	263.56			253.59	253.23			
		TIP-10	27			413	0.14	6.56
WM 1	261.61			252.64	252.43			
		WMP-1	30			384	0.13	8.38
TI 8	261.18			251.92	251.88			
		TIP-8	30			396	0.18	9.67
TI 7	261.51			251.18	251.14			
		TIP-7	30			405	0.15	8.77
TI 6	259.59			250.55	250.38			
		TIP-6	30			293	0.21	10.56

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
TI 5	257.63			249.76	249.75			
		TIP-5	30			418	0.33	13.26
TI 4	257.43			248.36	248.35			
		TIP-4	30			413	0.20	10.37
TI 3	257.99			247.51	248.58			
		TIP-3	30			393	0.49	16.15
TI 2	263.52			246.64	246.64			
		TIP-2	30			209	0.21	10.54
TI 1	263.66			246.20				
acy Intercept								
MI 43	N/A			243.43	243.46			
		MIP-43	36			355	0.12	12.70
MI 42	N/A			243.05	243.03			
		MIP-42	36			933	0.15	14.47
MI 41	N/A			241.63	241.61			
		MIP-41	36			496	0.15	14.43
MI 40	N/A			240.87	240.89			
		MIP-40	36			772	0.16	14.79
MI 39	N/A			239.68	239.47			
		MIP-39	39			348	0.14	17.00
CPS	N/A			239.00	272.50			
		CPSP	2-16"			716	-2.77	N/A
MI 38	N/A			292.31	288.33			
		MIP-38	30			831	0.88	21.56
MI 37	N/A			281.02	280.96			
		MIP-37	30			836	0.88	21.55
MI 36	N/A			273.61	273.36			
		MIP-36	33			667	0.35	17.55
MI 35	N/A			271.02	270.77			
		MIP-35	36			544	0.22	17.55
MI 34	N/A			269.57	269.55			
		MIP-34	36			661	0.22	17.50
MI 33	N/A			268.10	268.08			
		MIP-33	36			1001	0.22	17.52
MI 32	N/A			265.88	264.94			
		MIP-32	36			850	0.16	15.11
R 16	269.00			263.55	263.55			
		RP-16	36			260	0.12	13.11
MI 24	270.50			263.23	262.80			
		MIP-24	42			30	0.07	14.55
MI 25	N/A			262.78	262.78			
		MIP-25	42			406	0.12	19.44
MI 23	274.50			260.75	260.75			
		MIP-23	42			143	0.05	13.17
MI 21	270.50			260.58	260.58			
		MIP-21	42			220	0.05	13.17
MI 20	266.77			260.46	260.46			
		MIP20	42			512	0.05	12.70
MI 19	267.67			260.20	260.20			
		MIP-19	42			696	0.06	13.51
MI 18	266.10			259.80	259.80			
		MIP-18	42			136	0.05	12.81
MI 17	266.00			259.73	259.73			
		MIP-17	42			480	0.05	12.60
MI 16	280.50			259.49	259.49			
		MIP-16	42			70	0.04	11.67
MI 15	283.50			259.46	259.46			
		MIP-15	42			399	0.05	12.62
MI 14	273.20			259.26	259.20			
		MIP-14	42			488	0.05	12.24
MI 13	282.00			259.03	259.03			
		MIP-13	42			592	0.05	12.47

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
MI 12	269.00			258.74	258.74			
		MIP-12	42			80	0.22	26.73
FV 173	271.50			258.56	258.56			
		FVP-173	42			360	0.02	7.86
MI 11	268.50			258.49	258.49			
		MIP-11	42			476	0.12	19.84
MI 10	268.00			257.90	257.70			
		MIP-10	42			208	0.03	10.35
MI 9	276.50			257.63	257.63			
		MIP-9	42			336	0.01	4.35
MI 8	266.00			257.61	257.61			
		MIP-8	42			745	0.00	0.00
MI 7	266.70			257.61	257.61			
		MIP-7	42			577	0.05	12.64
MI 6	266.50			257.32	257.32			
		MIP-6	42			425	0.05	12.52
MI 5	264.00			257.11	257.11			
		MIP-5	42			652	0.05	12.68
MI 4	264.00			256.78	256.78			
		MIP-4	42			50	0.04	11.33
MI 3	263.80			256.76	256.76			
		MIP-3	42			530	0.05	12.72
MI 2	264.30			256.49	256.49			
		MIP-2	36			103	1.01	37.55
MI 1				255.45	255.23			
Detrick Branch Outfall Sewer (1974)								
AM 191	298.57			289.43	289.40			
		AMP-191	18			332	1.50	7.21
AM 192	293.38			284.42	284.40			
		AMP-192	18			336	0.86	5.46
AM 193	290.41			281.51	281.49			
		AMP-193	18			352	0.88	5.53
AM 194	287.63			278.38	278.31			
		AMP-194	18			107	2.18	8.69
AM 195	284.88			275.98	275.96			
		AMP-195	18			235	1.06	6.07
AM196	282.31			273.46	273.21			
		AMP-196	21			376	0.49	6.23
AM 197	281.86			271.36	271.26			
		AMP-197	21			117	0.31	4.93
AM 198	279.39			270.90	270.05			
		AMP-198	21			269	1.79	11.87
AM 199	272.29			265.24	265.04			
		AMP-199	24			456	0.29	6.77
AM 200	268.44			263.74	263.73			
		AMP-200	24			402	0.32	7.15
AM 201	266.47			262.45	262.39			
		AMP-201	24			402	0.28	10.13
MI 18	266.10			261.25	259.80			
North Branch Sub Basin (Whitter) (1990)								
WH 5	355.00			345.72	345.47			
		WHP-5	18			200	0.40	3.72
WH 4	355.00			344.67	344.57			
		WHP-4	18			400	0.40	3.72
WH 3	353.20			342.97	342.87			
		WHP-3	18			387	1.41	7.00
WH 2	345.30			337.40	337.30			
		WHP-2	18			245	2.42	9.16
WH 1	342.50			331.37	331.27			
		WHP-1	18			200	1.00	5.89
OF 9	339.93			329.27	329.02			
Old Farm (1985)								

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
OF 9	339.80			329.54	329.29			
		OFP-9	21			400	1.00	8.88
OF 8	336.40			325.29	325.17			
		OFP-8	21			426	1.20	9.73
OF 7	332.10			320.06	319.96			
		OFP-7	21			210	0.30	4.86
OF 6	330.00			319.33	319.23			
		OFP-6	21			155	0.30	4.85
OF 5	328.40			318.77	318.67			
		OFP-5	21			213	0.30	4.87
OF 4	328.10			318.03	317.93			
		OFP-4	21			400	0.30	4.86
OF 3	327.00			316.73	316.63			
		OFP-3	21			400	0.30	4.86
OF 2	325.60			315.43	315.33			
		OFP-2	21			400	0.15	3.44
OF 1	327.00			314.73	314.03			
		OFP-1	21			266	0.30	4.87
1340	N/A			313.23	313.13			
Monocacy River Interceptor (1990)								
MB-1	N/A			274.00	274.00			
		MBP-1	30			1502	0.40	18.20
MB-2	N/A			267.97	267.97			
		MBP-2	30			1490	0.42	18.61
MB-3	N/A			261.72	261.72			
		MBP-3	30			1500	1.13	30.60
MB-5	N/A			244.70	244.70			
		MBP-5	30			1500	0.24	14.07
MB-6	N/A			241.10	241.10			
		MBP-6	30			1505	0.10	9.07
MB-7	N/A			239.60	239.60			
		MBP-7	30			1500	-1.49	0.00
MB-8	N/A			262.00	261.50			
		MBP-8	36			1545	0.81	42.03
MB-9	N/A			248.99	248.99			
		MBP-9	36			1142	1.06	48.16
MB-10	N/A			236.85	236.85			
Carroll Creek Interceptor 87-KK								
1174				275.25	273.94			
		1174P	36			536	0.74	32.15
KK-33	279.10			269.97	269.87			
		KKP-33	36			149	0.11	12.62
KK-32	281.90			269.70	269.70			
		KKP-32	36			8	0.88	34.95
KK-32A	282.10			269.63	269.46			
		KKP-32A	36			183	0.11	12.64
KK-31A	283.00			269.25	269.19			
		KKP-31A	36			269	0.15	14.41
KK-31	N/A			268.79	268.70			
		KKP-31	36			205	0.11	12.52
KK-30	282.00			268.47	268.41			
		KKP-30	36			498	0.17	15.35
KK-29A	288.10			267.57	267.42			
		KKP-29A	36			237	0.19	16.10
KK-29	N/A			266.98	266.98			
		KKP-29	36			225	0.20	16.71
KK-28	N/A			266.53	266.43			
		KKP-28	36			360	0.16	15.00
KK-27	N/A			265.85	265.75			
		KKP-27	36			22	0.18	15.93
KK-26	N/A			265.71	265.61			
		KKP-26	36			165	0.16	14.83

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
KK-25	N/A			265.35	265.25			
		KKP-25	36			365	0.16	14.90
KK-24A	N/A			264.67	264.67			
		KKP-24A	36			340	0.16	15.03
KK-24.	N/A			264.12	264.05			
		KKP-24	36			41	3.02	64.98
KK-22	281.10			262.81	262.81			
		KKP-22	42			145	0.11	18.75
KK-21	272.90			262.65	262.55			
		KKP-21	42			192	0.10	17.73
KK-20	273.40			262.36	262.28			
		KKP-20	42			385	0.11	18.39
KK-19	271.10			261.87	261.87			
		KKP-19	42			177	0.08	16.41
KK-18	274.30			261.72	261.65			
		KKP-18	42			47	-0.58	0.00
KK-16	275.00			261.92	261.82			
		KKP-16	42			263	0.12	19.36
KK-15	274.30			261.51	261.41			
		KKP-15	42			390	0.10	17.81
KK-14	272.20			261.02	260.92			
		KKP-14	42			205	0.10	18.04
KK-12	271.00			260.71	260.61			
		KKP-12	42			465	0.10	17.92
KK-11	270.30			260.14	260.04			
		KKP-11	42			202	0.13	20.60
KK-10A	N/A			259.77	259.75			
		KKP-10A	42			33	0.09	16.99
KK-10	268.10			259.72	259.64			
		KKP-10	42			142	0.05	12.51
KK-8	271.40			259.57	259.64			
		KKP-8	48			183	0.31	44.51
KK-7	270.90			259.08	258.82			
		KKP-7	48			137	0.06	19.47
KK-5	269.80			258.74	258.65			
		KKP-5	48			310	0.06	19.38
KK-4	268.00			258.47	258.24			
		KKP-4	48			728	0.04	16.87
KK-3	N/A			257.92	257.92			
		KKP-3	48			188	-0.26	0.00
KK-2	N/A			258.40	258.40			
		KKP-3	48			92	0.05	18.76
KK-1	N/A			258.35	258.35			
		KKP-1	48			210	0.10	26.04
Carroll Creek Interceptor (1970)								
1168				258.13	258.13			
	N/A	1168P	48			684	0.05	17.94
1167				257.79	257.79			
	N/A	1167P	48			558	0.05	18.03
1166				257.51	257.51			
	N/A	1166P	48			1207	0.05	18.08
1165				256.90	256.50			
	N/A	1165P	54			712	0.04	20.64
1164				256.25	256.25			
	N/A	1164P	54			614	0.05	23.94
1163				255.96	255.96			
	N/A	1163P	54			620	0.03	18.77
1162				255.78	255.78			
	N/A	1162P	54			1003	0.03	20.57
1161				255.43	255.43			
Carroll Creek Interceptor Sewer 84-II								
KK-43	282.70			265.57	264.98			

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
		KKP-43	15			405	0.11	1.18
KK-42	271.90			264.55	264.40			
		KKP-42	15			443	0.18	1.55
KK-41	N/A			263.59	263.42			
		KKP-41	15			229	0.03	0.63
KK-40	275.00			263.35	263.13			
		KKP-40	15			227	0.08	1.05
KK-39	279.50			262.94	262.50			
		KKP-39	18			338	0.25	2.92
KK-38	271.30			261.67	261.53			
		KKP-38	18			166	-0.19	0.00
KK-37	271.00			261.84	261.74			
		KKP-37	18			288	0.12	2.05
KK-36	270.30			261.39	261.29			
		KKP-36	18			401	0.12	2.06
KK-35	270.10			260.80	260.30			
		KKP-35	24			335	0.10	4.04
KK-34	268.50			259.96	259.04			
		KKP-34	33			310	-0.21	0.00
241	N/A			259.70	259.70			
		241P	33			375	0.05	7.70
242	N/A			259.51	259.51			
		242P	33			373	0.05	7.72
243	N/A			259.32	259.32			
		243P	33			248	0.05	7.53
377	N/A			259.20	259.20			
		377P	33			46	0.13	12.33
244	N/A			259.14	259.12			
		244P	33			490	0.06	8.46
245	N/A			258.82	258.82			
		245P	33			310	0.06	8.24
246	N/A			258.64	258.64			
		246P	33			317	0.06	8.38
247	N/A			258.45	258.45			
		247P	33			217	0.06	8.69
378	N/A			258.31	258.31			
		378P	33			183	0.06	8.38
248	N/A			258.20	258.20			
		248P	33			275	0.06	8.25
249	N/A			258.04	258.04			
		249P	33			344	0.06	8.45
250	N/A			257.83	257.83			
		250P	33			331	0.06	8.19
251	N/A			257.64	257.64			
		251P	33			487	0.06	8.49
252	N/A			257.34	257.34			
		252P	33			491	0.06	8.45
253	N/A			257.04	257.04			
		253P	33			400	0.06	8.37
254	N/A			256.80	256.80			
		254P	33			327	0.06	8.46
255	N/A			256.60	256.60			
		255P	33			393	0.06	8.45
256	N/A			256.36	256.36			
		256P	33			483	0.06	8.37
257	N/A			256.07	256.07			
		257P	33			472	0.06	8.33
258	N/A			255.79	255.79			
		258P	33			462	0.06	8.56
259	N/A			255.50	255.50			
		259P	33			368	0.06	8.17
260	N/A			255.29	255.29			

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
SCOTT KEY CENTER (CC INTERCEPTOR)								
OF3	327.00			318.03	317.93			
		OFP-3	21			400	0.63	7.02
OF2	325.60			315.43	315.33			
		OFP-2	21			400	0.30	4.86
OF1	327.00			314.13	314.03			
		OFP-1	21			266	0.34	5.16
1340	324.00			313.13	313.23			
		1340P	21			400	0.28	4.72
1339	324.00			312.10	312.20			
		1339P	21			400	0.55	6.59
1338	324.00			310.00	310.10			
		1338P	21			400	0.55	6.59
1337	326.00			307.90	308.00			
		1337P	21			400	0.55	6.59
1336	319.36			305.80	305.90			
CARROLL CREEK INTERCEPTOR 74-P								
1336	319.36			305.80	305.90			
		1336P	21			105	0.42	5.76
M2	317.50			305.46	305.36			
		M2P	21			340	0.66	7.21
1335	314.30			303.66	303.56			
		1335P	21			397	0.50	6.25
1334	316.60			301.59	301.49			
		1334P	21			399	0.49	6.24
1333	310.80			299.52	299.32			
		1333P	24			312	0.15	4.87
1332	308.60			298.86	298.76			
		1332P	24			349	0.15	4.89
1331	307.20			298.24	298.14			
		1331P	24			338	0.15	4.88
1330	305.70			297.64	297.54			
		1330P	24			402	0.15	4.86
1329	304.20			296.95	296.85			
CARROLL CREEK INTERCEPTOR 72- G 2&3								
1328	N/A			295.28	295.13			
		1328P	24			454	0.44	8.44
1327	N/A			293.12	293.12			
		1327P	24			116	0.43	8.33
1326	N/A			292.62	292.45			
		1326P	24			20	0.34	7.44
1325	N/A			292.38	292.18			
		1325P	27			425	0.18	7.39
1324	N/A			291.41	291.41			
		1324P	27			496	0.39	10.88
1322	N/A			289.46	289.46			
		1322P	30			237	0.33	13.17
1321A	N/A			288.68	288.75			
		1321AP	30			339	0.32	13.04
1321	N/A			287.66	287.54			
		1321P	30			481	0.30	12.57
1320	N/A			286.10	286.10			
		1320P	30			500	0.30	12.59
1319	N/A			284.60	284.50			
		1319P	30			518	0.30	12.65
1318	N/A			282.93	282.83			
		1318P	30			417	0.34	13.36
1316	N/A			281.42	281.42			
CARROLL CREEK INTERCEPTOR (PRIOR 1970)								
1316	N/A			281.42	281.42			
		1316P	30			290	0.43	15.09
1178	N/A			280.17	280.17			

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
		1178P	30			823	0.32	13.04
1177	N/A			277.52	277.12			
		1177P	36			648	0.08	10.68
1176	N/A			276.59	276.59			
		1176P	36			653	0.08	10.74
1175	N/A			276.05	276.05			
		1175P	36			360	0.08	10.61
1174	N/A			275.76	274.49			
1937 INTERCEPTOR								
202	N/A			279.00	278.87			
		202P	18			120	0.40	4.30
203	N/A			278.39	278.35			
		203P	18			77	0.12	2.33
204	N/A			278.26	278.22			
		204P	18			309	0.12	2.38
205	N/A			277.84	277.80			
		205P	18			316	0.12	2.36
206	N/A			277.42	277.38			
		206P	18			350	0.15	2.62
207	N/A			276.86	276.81			
		207P	18			345	0.15	2.64
208	N/A			276.29	276.25			
		208P	18			59	0.19	2.93
209	N/A			276.14	276.12			
		209P	18			358	0.12	2.38
1174	N/A			275.68	274.49			
ROCK CREEK INTERCEPTOR								
1132				375.84	375.74			
		1132P	15			401	1.40	4.28
1131	378.40			370.14	370.04			
		1131P	15			400	1.40	4.28
1130	372.70			364.44	364.44			
		1130P	15			347	0.00	0.19
1979	N/A			364.43	364.33			
		1979P	15			53	10.55	11.76
1129	368.90			358.74	358.49			
		1129P	18			171	0.61	4.59
1128A	N/A			357.45	357.35			
		1128AP	18			192	2.68	9.64
1128	363.60			352.20	352.10			
		1128P	18			400	0.22	2.79
1127	362.90			351.20	351.10			
		1127P	18			167	0.72	5.00
1126A	N/A			349.90	349.80			
		1126AP	18			233	1.20	6.45
1126	355.40			347.00	346.90			
		1126P	18			225	1.87	8.04
1125A	N/A			342.70	342.60			
		1125AP	18			175	1.20	6.45
1125	350.00			340.50	340.40			
		1125P	18			68	1.20	6.45
1180	N/A			339.58	339.48			
		1180P	18			332	1.17	6.37
1124	346.90			335.60	335.50			
		1124P	18			501	0.80	5.26
1123	342.30			331.50	331.40			
		1123P	18			298	0.80	5.28
1122	340.10			329.00	328.90			
		1122P	18			436	1.07	6.10
1121	336.60			326.72	326.62			
		1121P	18			500	0.96	5.76
1120	333.40			324.12	324.02			

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
		1120P	18			32	8.86	17.53
1191	337.57			323.79	323.79			
		1191P	18			260	0.80	5.28
1119	331.40			321.93	321.83			
		1119P	18			450	1.14	6.27
1118	327.90			318.68	318.58			
		1118P	18			206	2.28	8.89
1187	N/A			317.14	317.14			
		1187P	18			244	1.29	6.69
1117	323.70			315.43	315.33			
		1117P	18			250	1.70	7.67
1116A	327.00			312.90	312.80			
		1116AP	18			252	1.93	8.19
1116	319.50			310.45	310.20			
		1116P	18			560	0.77	5.15
1115A	315.00			308.51	308.51			
		1115AP	21			40	7.33	24.04
1115	317.40			307.30	307.20			
		1115P	21			258	1.01	8.91
1114A	315.30			305.91	305.81			
		1114AP	21			324	0.96	8.69
1114	314.60			304.10	304.00			
		1114P	21			516	0.95	8.65
1113	312.55			300.91	300.81			
		1113P	21			56	6.43	22.52
1081	N/A			300.40	300.30			
		1081P	18			45	1.60	7.44
1112	317.68			300.10	300.07			
		1112P	18			292	0.42	3.82
1080	N/A			299.07	298.97			
		1080P	18			400	0.24	2.87
1079	N/A			298.02	297.92			
		1079P	18			400	0.29	3.14
1078	N/A			296.78	296.68			
		1078P	18			400	0.38	3.63
1077	N/A			295.16	295.06			
		1077P	18			400	0.38	3.63
1076	N/A			293.54	293.44			
		1076P	18			395	0.38	3.65
1075	N/A			291.92	291.82			
		1075P	18			395	0.19	2.57
1323	N/A			291.06	291.06			
		1323P	18			400	0.19	2.57
608	N/A			290.30	290.09			
FREDERICKTOWNE VILLAGE								
FV 42	278.38				267.20			
		FV42P	12			126	0.302	1.10
FV 44	276.85			266.82	266.72			
		FV44P	12			140	0.300	1.09
FV 45	N/A			266.30	264.37			
		FV45P	18			263	0.251	2.95
FV 46	N/A			263.71	263.61			
		FV46P	18			133	0.248	2.93
FV 47	277.17			263.28	263.03			
		FV47P	21			113	0.097	2.77
FV 50	274.55			262.92	262.82			
		FV50P	21			414	0.10	2.79
FV 52	274.30			262.41	262.31			
		FV52P	21			155	0.10	2.85
FV 54	275.80			262.15	262.05			
		FV54P	21			315	0.200	3.97
FV 55B	278.50			261.42	261.38			

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
		FV55BP	21			98	0.102	2.84
FV 55C	271.50			261.28	261.24			
		FV55CP	21			121	0.099	2.80
FV 55D	272.50			261.12	261.08			
		FV55DP	21			304	0.099	2.79
FV 55E	271.50			260.78	260.74			
		FV55EP	21			93	0.097	2.76
FV 160	276.50			260.65	260.64			
		FV160P	21			257	0.004	0.55
FV 161	276.40			260.63	260.60			
		FV161P	21			213	0.099	2.79
FV 162	272.26			260.39	260.38			
		FV162P	21			85	0.094	2.72
FV 163	272.96			260.30	260.29			
		FV163P	21			23	0.087	2.62
FV 165	273.21			260.27	260.22			
		FV165P	21			78	0.103	2.84
FV 166	N/A			260.14	260.04			
		FV166P	21			300	0.713	7.50
MI 10	268.00			257.90	257.70			
AIRPORT								
595	N/A			286.21	286.11			
		595P	8			353	0.400	0.49
594	N/A			284.70	284.60			
		594P	8			355	0.414	0.50
593	N/A			283.13	283.08			
		593P	8			355	0.400	0.49
592	N/A			281.66	281.56			
		592P	8			355	0.400	0.49
591	N/A			280.14	280.04			
		591P	8			355	0.369	0.47
590	288.69			278.73	278.70			
		590P	8			400	0.885	0.64
589A	294.11			275.16	275.01			
		589AP	8			400	0.715	0.57
589	277.45			272.15	271.85			
		589P	8			400	0.695	0.56
588	273.97			269.07	268.85			
		588P	8			400	0.647	0.55
587	279.18			268.26	268.13			
		587P	N/A			N/A	N/A	N/A
586	N/A			N/A	N/A			
		586P	N/A			N/A	N/A	N/A
585	N/A			N/A	N/A			
		585P	N/A			N/A	N/A	N/A
584A	N/A			N/A	N/A			
NORTH EAST END								
2020	N/A			330.14	330.34			
		2020P	8			125	0.617	0.61
2019	N/A			329.57	329.47			
		2019P	8			234	0.402	0.50
2018	N/A			328.53	328.43			
		2018P	8			249	1.690	1.02
671	N/A			324.23	324.13			
		671P	8			162	1.698	1.02
670	N/A			321.38	321.28			
		670P	8			374	1.623	1.00
669	N/A			315.21	315.11			
		669P	8			162	1.796	1.05
668	N/A			312.20	312.08			
		668P	8			214	0.504	0.56
667	N/A			311.00	310.90			

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
		667P	8			158	0.603	0.61
666	N/A			309.95	309.85			
		666P	8			347	0.599	0.61
665	N/A			307.77	307.67			
		665P	8			55	0.604	0.61
412	N/A			307.34	305.75			
		412P	8			416	0.800	0.70
411	N/A			302.42	302.32			
		411P	8			360	0.400	0.49
410	N/A			300.88	300.78			
		410P	8			138	0.400	0.49
409	N/A			300.23	297.10			
		409P	8			405	0.960	0.77
SF 13	301.6			293.21	293.21			
		SF13P	8			20	0.960	0.77
408	N/A			293.02	293.02			
		408P	8			471	0.800	0.70
460	N/A			289.25	289.15			
		460P	8			337	0.800	0.70
452	N/A			286.45	286.12			
		452P	12			235	0.22	1.09
478	N/A			285.60	285.58			
		478P	12			215	0.22	1.08
479	N/A			285.11	285.07			
		479P	12			319	0.220	1.08
480	N/A			284.37	284.33			
		480P	12			114	0.220	1.08
1973				284.08	284.08			
		1973P	12			232	0.220	1.08
481	N/A			283.57	283.53			
		481P	12			318	0.220	1.08
482	N/A			282.83	282.79			
		482P	12			22	0.227	1.10
942	N/A			282.74	282.64			
		942P	12			250	0.220	1.08
483	N/A			282.09	281.84			
		483P	16			13	0.154	2.11
400	N/A			281.82	281.72			
		400P	16			287	0.125	1.90
484	N/A			281.36	281.32			
		484P	15			128	0.156	1.65
1060	N/A			281.12	281.02			
		1060P	15			185	0.108	1.38
485	N/A			280.82	280.78			
		485P	15			400	0.160	1.67
486	N/A			280.14	280.04			
		486P	15			454	0.134	1.53
MV 19	N/A			279.43	279.33			
		MV19P	15			45	0.178	1.76
487	N/A			279.25	279.15			
		487P	15			106	0.160	1.67
MV 4	N/A			278.98	278.50			
		MV4P	15			127	0.150	1.62
488	287.18			278.31	278.27			
		488P	15			145	1.220	4.61
488 A	284.57			276.50	276.40			
		488AP	12			214	0.500	1.63
488 B	283.28			275.33	275.23			
		488BP	12			165	0.910	2.20
488 C	282.35			273.73	273.63			
		488CP	12			120	0.383	1.43
489	N/A			273.17	273.07			

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
		489P	12			373	2.57	3.70
490	N/A			263.48	263.38			
		490P	12			390	0.50	1.63
491	N/A			261.43	261.18			
		491P	15			400	0.160	1.67
492	N/A			260.54	260.50			
		492P	15			400	0.160	1.67
378	N/A			259.86				
EAST END								
553	N/A				292.00			
		553P	10			457	0.280	0.75
552	N/A			290.72	290.62			
		552P	10			463	1.000	1.42
551	N/A			285.99	285.72			
		551P	10			500	0.920	1.36
557	N/A			281.12	281.02			
		557P	10			277	1.460	1.71
429	N/A			276.98	276.88			
		429P	10			405	2.000	2.00
558	N/A			268.78	268.74			
		558P	10			426	0.540	1.04
571	N/A			266.44	265.44			
		571P	10			113	1.283	1.61
572	N/A			263.99	263.90			
		572P	10			26	0.500	1.00
244	N/A			263.77	259.12			
Market Street								
437	N/A				283.36			
		437P	10			444	0.960	1.39
436	N/A			279.10	278.93			
		436P	12			231	0.800	2.06
435	N/A			277.08	276.98			
		435P	12			227	0.300	1.26
434	N/A			276.30	276.20			
		434P	12			440	0.680	1.90
433	N/A			273.21	2731.24			
		433P	12			N/A	N/A	0.00
KK 46	N/A			N/A	N/A			
		KK46P	N/A			N/A	N/A	N/A
KK 45	N/A			N/A	N/A			
		KK45P	N/A			N/A	N/A	N/A
KK 44	N/A			N/A	N/A			
		KK44P	N/A			N/A	N/A	N/A
KK 43A	N/A			N/A	N/A			
Stone Gate								
S 61	398.50			390.22	390.05			
		S61P	10			250	0.332	0.88
S 63	413.00			389.22	389.22			
		S63P	10			250	0.328	0.88
S 64	419.40			388.40	388.40			
		S64P	10			379	0.330	0.88
S 65	423.30			387.15	387.15			
		S65P	18			276	0.326	4.20
S 66	427.70			386.25	386.25			
		S66P	10			231	0.338	0.89
S 67	426.40			385.47	385.47			
		S67P	10			231	0.329	0.88
S 68	418.90			384.71	384.71			
		S68P	10			195	0.323	0.87
S 69	411.00			384.08	384.08			
		S69P	10			100	0.330	0.88
S 70	409.10			383.75	383.75			

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
		S70P	10			170	0.329	0.88
S 71	405.20			383.19	383.19			
		S71P	10			305	0.331	0.88
S 72	400.00			382.18	382.18			
		S72P	10			150	0.333	0.89
S 73	392.70			381.68	381.28			
Golf View								
GV 14	422.00			415.89	409.45			
		GV14P	8			378	3.000	1.17
GV 13	403.00			398.11	398.01			
		GV13P	8			138	5.022	1.52
GV 10	401.00			391.08	390.98			
		GV10P	8			216	2.028	0.97
GV 9	396.00			386.60	386.50			
		GV9P	8			240	2.250	1.02
GV 8	389.00			381.10	381.00			
		GV8P	8			224	2.638	1.10
GV 7	384.00			375.09	374.99			
		GV7P	8			400	1.970	0.95
GV 6	376.00			367.11	367.01			
		GV6P	8			248	1.315	0.78
GV 5	374.00			363.75	363.50			
		GV5P	15			220	1.514	4.46
GV 4	371.00			360.17	360.07			
		GV4P	15			133	1.376	4.25
GV 3	369.00			358.24	358.14			
		GV3P	15			387	0.22	1.69
GV 2	366.00			357.30	357.20			
		GV2P	15			315	0.22	1.69
GV 1	365.5			356.51	356.41			
		GV1P	15			230	0.222	1.71
1186	364.00			355.90	355.46			
		1186P	15			180	0.42	2.35
1185	N/A			354.70	354.56			
		1185P	15			N/A	N/A	N/A
1184	N/A			N/A	N/A			
		1184P	15			N/A	N/A	N/A
1183	N/A			349.97	349.87			
		1183P	15			426	1.400	4.94
1182	N/A			343.90	343.80			
		1182P	15			306	0.500	2.95
1181	N/A			342.27	342.17			
		1181P	15			246	0.590	3.21
1180	N/A			340.72	340.62			
Mountain Gate								
H 186				416.13	415.80			
		H186P	12			145	0.310	1.11
H 6	426.50			415.35	413.07			
		H6P	12			263	4.209	4.10
H 140	413.30			402.00	402.00			
		H140P	12			122	2.402	3.10
H 141	4196.00			399.07	399.07			
		H141P	12			58	2.397	3.09
H 142	412.70			397.68	397.68			
		H142P	12			100	2.400	3.09
H 143	407.20			395.28	395.28			
		H143P	12			122	1.303	2.28
H 144	405.40			393.69	393.69			
		H144P	12			176	0.500	1.41
H 146	404.20			392.81	392.81			
		H146P	12			35	7.26	5.38
H 145	403.00			390.27	390.27			

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
		H145P	12			392	6.98	5.28
H 149	372.90			362.89	362.89			
		H149P	12			330	0.497	1.62
1223	N/A			361.25	361.25			
		1223P	12			221	0.475	1.59
1222	372.60			360.20	360.15			
		1222P	12			265	0.502	1.63
1221	360.60			358.82	358.82			
		1221P	12			206	0.500	1.63
GM 1	370.00			357.79	357.79			
		GM1P	12			164	0.500	1.63
1220	N/A			356.97	356.82			
		1220P	12			282	0.75	2.00
1185	N/A			354.70	354.56			
Frederick Heights								
FH 18	417.89			406.99	406.03			
		FH18P	8			316	2.801	1.31
FH 14	407.50			397.18	397.01			
		FH14P	10			258	1.399	1.68
FH 13	404.50			393.40	393.30			
		FH13P	10			292	0.719	1.20
FH 12	412.50			391.20	391.10			
		FH12P	10			283	1.007	1.42
F 108	405.50			388.25	388.15			
		F108P	10			143	0.084	0.41
FH 11	402.50			388.03	387.93			
		FH11P	10			290	1.321	1.63
FH 10	393.00			384.10	384.00			
		FH10P	10			282	4.440	2.99
FH 9	376.50			371.48	364.67			
		FH9P	10			112	1.000	1.42
FH 8	374.00			363.55	363.45			
		FH8P	12			208	1.000	2.30
FH 7	365.50			361.37	356.17			
		FH7P	12			238	1.798	3.09
FH 6	358.00			351.89	351.79			
		FH6P	12			139	3.518	4.32
FH 5B	351.50			346.90	346.90			
		FH5BP	12			198	5.909	5.60
FH 5A	343.35			335.20	333.84			
		FH5AP	12			203	1.798	3.09
FH 4A	338.50			330.19	330.19			
		FH4AP	12			98	1.796	3.09
FH 4B	338.55			328.43	328.33			
		FH4BP	12			44	3.068	4.04
FH 3	335.50			326.98	326.88			
		FH3P	12			275	3.240	4.15
FH 2	327.50			317.98	317.71			
		FH2P	15			411	0.722	3.55
FH 1	321.50			314.74	314.64			
		FH1P	15			373	0.306	2.31
1116 A	327.00			313.50				
Solarex								
SX 222	332.50				324.54			
		SX222P	21			461	1.461	10.73
SX 221	326.30			317.80	317.09			
		SX221P	10			149	1.401	1.45
SX 220	325.50			315.00	314.96			
		SX220P	10			400	0.715	1.04
SX 219	325.30			312.10	312.00			
		SX219P	10			400	0.715	1.04
BC 1	N/A			N/A	N/A			

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
		BC1P	10			N/A	0.715	1.04
SX 218	319.50			309.20	307.10			
		SX218P	10			400	0.700	1.03
SX 217	313.50			304.30	304.20			
		SX217P	10			400	0.500	0.87
SX 216	309.50			302.20	302.10			
		SX216P	10			400	0.700	1.03
SX 215	306.50			299.30	299.20			
		SX215P	10			402	1.115	1.30
SX 214R	302.50			294.72	294.62			
		SX214RP	10			331	1.196	1.34
SX 213	N/A			290.66	290.56			
		SX213P	10			400	0.890	1.16
SX 212	N/A			287.00				
Industrial Centre								
380	N/A				266.80			
		380P	12			228	0.250	1.15
345	N/A			266.23	266.13			
		345P	12			272	0.250	1.15
343	N/A			265.45	264.86			
		343P	12			350	0.220	1.08
342	N/A			264.11	264.01			
		342P	12			345	0.220	1.08
341	N/A			263.25	263.20			
		341P	12			209	0.220	1.08
340	N/A			262.74	262.70			
		340P	12			302	0.220	1.08
237	N/A			262.04	260.49			
		237P	30			229	0.220	12.44
KK-8	271.40			259.57	259.64			
Maplewood								
383	N/A			300.31	300.31			
		383P	10			163	0.356	0.85
352	N/A			299.73	299.63			
		352P	10			215	0.302	0.78
351 A	N/A			298.98	298.88			
		351AP	10			242	0.302	0.78
346 A	N/A			298.15	298.05			
		346AP	10			124	0.346	0.83
30	N/A			297.62	297.52			
		30P	8			320	0.400	0.49
31	N/A			296.24	296.07			
		31P	10			230	0.300	0.78
32	N/A			295.38	295.28			
		32P	10			251	2.733	2.34
921	N/A			288.42	288.42			
		921P	10			34	3.676	2.72
33	N/A			287.17	287.07			
		33P	10			261	1.230	1.57
34	N/A			283.86	283.76			
		34P	10			350	0.231	0.68
10	N/A			282.95	278.61			
		10P	10			313	0.521	1.02
11	N/A			276.98	276.88			
		11P	10			62	0.940	1.37
389	N/A			276.30	276.81			
		389P	10			175	1.440	1.70
326	N/A			274.29	272.79			
		326P	10			214	0.869	1.32
321	N/A			270.93	269.73			
		321P	10			270	0.307	0.79
KK 27	N/A			268.90				

Table A
Interceptor Sewer Capacities

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (inches)	Incoming Invert Elevation (Feet	Outgoing Invert Elevation (Feet	Pipe Length (feet)	Slope (%)	Full Flow Pipe Capacity (mgd)
Overbrook								
863	N/A			291.47	291.21			
		863P	12			125	0.792	2.05
1958	300.86			290.22	290.12			
		1958P	12			336	0.789	2.05
1959	297.23			287.47	287.37			
		1959P	12			173	0.792	2.05
1960	295.89			286.00	285.90			
		1960P	12			230	0.790	2.05
1961	294.25			284.08	283.98			
		1961P	12			66	0.788	2.05
1962	293.20			283.46	283.36			
		1962P	12			182	0.79	2.04
1963	288.85			281.93	281.83			
		1963P	12			214	0.79	2.05
1964	287.09			280.14	280.04			
		1964P	12			89	0.989	2.29
1965	288.29			279.16	277.65			

Table B
Interceptor Sewer Capacities and Loadings
(Uniform 2.5 Peaking Factor)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
Willowbrook Interceptor (1993)										
WB-17	297.70				283.01					
		WBP-17	24			262	0.26	6.46	4.45	2.00
WB-16	291.00			282.33	282.23					
		WBP-16	24			276	0.26	6.47	4.48	1.99
WB-15	290.80			281.51	281.41					
		WBP-15	24			248	0.26	6.44	4.51	1.93
WB-14	290.30			280.77	280.67					
		WBP-14	24			131	0.26	6.46	4.54	1.92
WB-13	290.20			280.33	280.23					
		WBP-13	24			176	0.26	6.48	4.57	1.91
WB-12	289.50			279.77	279.67					
		WBP-12	24			367	0.26	6.45	4.59	1.86
WB-11	287.80			278.72	278.62					
		WBP-11	24			496	0.26	6.47	4.62	1.84
WB-10	289.00			277.33	277.23					
		WBP-10	24			298	0.26	6.44	4.65	1.79
WB-09	285.00			276.46	276.36					
		WBP-9	24			76	0.26	6.50	4.68	1.82
WB-08	284.20			276.16	276.06					
		WBP-8	24			106	0.26	6.52	4.71	1.81
WB-07	285.10			275.78	275.68					
		WBP-7	24			118	0.26	6.50	4.74	1.76
WB-06	291.70			275.37	275.27					
		WBP-6	24			98	0.26	6.40	4.76	1.64
WB-05	288.70			275.02	274.92					
		WBP-5	24			348	0.26	6.45	4.79	1.66
WB-04	291.00			274.02	273.92					
		WBP-4	24			342	0.26	6.50	4.82	1.68
WB-3	284.20			273.02	272.92					
		WBP-3	24			308	0.26	6.42	4.85	1.57
WB-2	280.50			272.13	272.03					
		WBP-2	24			367	0.26	6.45	4.88	1.57
WB-1	281.20			271.08	270.98					
		WBP-1	24			164	0.26	6.42	4.93	1.48
TI-27	279.60			270.56						
Tuscoroa Interceptor (1966)										
TI 47	N/A			357.50	357.46					
		TIP-47	8			555	0.92	0.98	0.17	0.81
TI 46	N/A			352.34	352.29					
		TIP-46	8			554	1.68	1.32	0.17	1.15
TI 45	N/A			343.00	342.76					
		TIP-45	8			237	1.95	1.42	0.39	1.03
TI 44	N/A			338.15	338.00					
		TIP-44	8			280	0.98	1.01	0.39	0.62
TI 43	N/A			335.24	335.19					
		TIP-43	10			440	0.99	1.84	0.44	1.39
TI 42	N/A			330.83	330.67					
		TIP-42	10			355	0.97	1.82	0.50	1.32
TI 41	N/A			327.22	322.27					
		TIP-41	10			453	1.31	2.11	0.55	1.56
TI 40	N/A			316.32	316.18					
		TIP-40	10			413	0.75	1.59	0.60	0.99
TI 39	N/A			313.09	313.05					
		TIP-39	10			400	1.79	2.47	0.65	1.82
TI 38	N/A			305.89	305.65					
		TIP-38	10			414	1.05	1.88	0.70	1.18
TI 37	N/A			301.32	301.20					
		TIP-37	10			412	1.16	1.99	0.75	1.23
TI 36	N/A			296.41	296.19					
		TIP-36	10			418	1.03	1.87	0.80	1.06
TI 35	N/A			291.90	291.47					

Table B
Interceptor Sewer Capacities and Loadings
(Uniform 2.5 Peaking Factor)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
		TIP-35	12			419	0.81	1.79	0.86	0.94
TI 34	N/A			288.09	287.69					
		TIP-34	12			428	0.71	1.69	0.91	0.78
TI 33	N/A			284.64	284.10					
		TIP-33	12			422	0.71	1.68	0.96	0.73
TI 32	N/A			281.10	280.75					
		TIP-32	15			404	0.47	2.49	1.01	1.48
TI 31	N/A			278.84	278.65					
		TIP-31	15			300	0.33	2.08	1.06	1.02
TI 30	289.18			277.66	277.26					
		TIP-30	15			300	0.56	2.71	1.11	1.60
TI-29	287.04			275.58	275.36					
		TIP-29	15			300	0.88	3.39	1.17	2.23
TI-28	280.16			272.73	272.48					
		TIP-28	15			280	0.46	2.47	1.22	1.25
TI-27	279.94			271.18	270.28					
		TIP-27	27			242	0.25	8.70	5.67	3.03
TI-26A	N/A			269.67	269.64					
		TIP-26A	27			215	0.27	8.94	5.72	3.21
TI-26	278.03			269.07	269.02					
		TIP-26	27			255	0.26	8.90	5.77	3.13
TI-25	279.99			268.35	268.23					
		TIP-25	27			390	0.15	6.81	5.82	0.99
TI-24	277.66			267.63	267.38					
		TIP-24	27			280	0.23	8.30	5.87	2.43
TI-23	276.95			266.74	266.71					
		TIP-23	27			382	0.28	9.14	5.92	3.22
TI-22	276.82			265.65	265.63					
		TIP-22	27			416	0.22	8.08	5.97	2.11
TI-21	275.43			264.73	264.75					
		TIP-21	27			391	0.29	9.41	6.02	3.39
TI-20	274.38			263.60	263.57					
		TIP-20	27			294	0.24	8.47	6.07	2.40
TI-19	273.91			262.87	262.72					
		TIP-19	27			353	0.20	7.73	6.12	1.62
TI-18	273.32			262.02	261.93					
		TIP-18	27			392	0.22	8.22	6.17	2.05
TI-17	271.78			261.05	260.96					
		TIP-17	27			354	0.20	7.72	6.21	1.50
TI-16	269.98			260.26	260.07					
		TIP-16	27			437	0.25	8.75	6.26	2.48
TI-15	269.97			258.96	258.97					
		TIP-15	27			438	0.30	9.50	6.31	3.19
TI-14	268.77			257.66	257.66					
		TIP-14	27			398	0.30	9.48	6.36	3.12
TI 13	267.29			256.47	256.39					
		TIP-13	27			430	0.17	7.10	6.41	0.69
TI 12	264.91			255.67	255.44					
		TIP-12	27			417	0.24	8.58	6.46	2.12
TI 11	265.02			254.42	254.37					
		TIP-11	27			383	0.20	7.83	6.51	1.32
TI 10	263.56			253.59	253.23					
		TIP-10	27			413	0.14	6.56	6.56	-0.00
WM 1	261.61			252.64	252.43					
		WMP-1	30			384	0.13	8.38	6.61	1.77
TI 8	261.18			251.92	251.88					
		TIP-8	30			396	0.18	9.67	6.66	3.01
TI 7	261.51			251.18	251.14					
		TIP-7	30			405	0.15	8.77	6.71	2.06
TI 6	259.59			250.55	250.38					
		TIP-6	30			293	0.21	10.56	6.76	3.81
TI 5	257.63			249.76	249.75					
		TIP-5	30			418	0.33	13.26	6.81	6.45

Table B
Interceptor Sewer Capacities and Loadings
(Uniform 2.5 Peaking Factor)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
TI 4	257.43			248.36	248.35					
		TIP-4	30			413	0.20	10.37	6.86	3.51
TI 3	257.99			247.51	248.58					
		TIP-3	30			393	0.49	16.15	6.86	9.29
TI 2	263.52			246.64	246.64					
		TIP-2	30			209	0.21	10.54	6.86	3.68
TI 1	263.66			246.20						
Monocacy Interceptor (1968)										
MI 43	N/A			243.43	243.46					
		MIP-43	36			355	0.12	12.70	6.86	5.85
MI 42	N/A			243.05	243.03					
		MIP-42	36			933	0.15	14.47	6.86	7.62
MI 41	N/A			241.63	241.61					
		MIP-41	36			496	0.15	14.43	6.90	7.53
MI 40	N/A			240.87	240.89					
		MIP-40	36			772	0.16	14.79	6.94	7.84
MI 39	N/A			239.68	239.47					
		MIP-39	39			348	0.14	17.00	9.91	7.08
CPS	N/A			239.00	272.50					
		CPSP	2-16"			716	-2.77	N/A	FORCE MAIN	N/A
MI 38	N/A			292.31	288.33					
		MIP-38	30			831	0.88	21.56	9.96	11.60
MI 37	N/A			281.02	280.96					
		MIP-37	30			836	0.88	21.55	10.00	11.55
MI 36	N/A			273.61	273.36					
		MIP-36	33			667	0.35	17.55	10.05	7.50
MI 35	N/A			271.02	270.77					
		MIP-35	36			544	0.22	17.55	10.09	7.46
MI 34	N/A			269.57	269.55					
		MIP-34	36			661	0.22	17.50	10.14	7.37
MI 33	N/A			268.10	268.08					
		MIP-33	36			1001	0.22	17.52	10.18	7.34
MI 32	N/A			265.88	264.94					
		MIP-32	36			850	0.16	15.11	10.22	4.89
R 16	269.00			263.55	263.55					
		RP-16	36			260	0.12	13.11	10.27	2.84
MI 24	270.50			263.23	262.80					
		MIP-24	42			30	0.07	14.55	10.31	4.24
MI 25	N/A			262.78	262.78					
		MIP-25	42			406	0.12	19.44	10.36	9.08
MI 23	274.50			260.75	260.75					
		MIP-23	42			143	0.05	13.17	10.40	2.77
MI 21	270.50			260.58	260.58					
		MIP-21	42			220	0.05	13.17	10.45	2.72
MI 20	266.77			260.46	260.46					
		MIP20	42			512	0.05	12.70	10.49	2.21
MI 19	267.87			260.20	260.20					
		MIP-19	42			696	0.06	13.51	10.49	3.02
MI 18	266.10			259.80	259.80					
		MIP-18	42			136	0.05	12.81	10.97	1.83
MI 17	266.00			259.73	259.73					
		MIP-17	42			480	0.05	12.60	11.47	1.13
MI 16	280.50			259.49	259.49					
		MIP-16	42			70	0.04	11.67	11.52	0.16
MI 15	283.50			259.46	259.46					
		MIP-15	42			399	0.05	12.62	11.56	1.06
MI 14	273.20			259.26	259.26					
		MIP-14	42			488	0.05	12.24	11.60	0.64
MI 13	282.00			259.03	259.03					
		MIP-13	42			592	0.05	12.47	11.64	0.83
MI 12	269.00			258.74	258.74					
		MIP-12	42			80	0.22	26.73	11.68	15.05
FV 173	271.50			258.56	258.56					

Table B
Interceptor Sewer Capacities and Loadings
(Uniform 2.5 Peaking Factor)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
		FVP-173	42			360	0.02	7.86	11.73	-3.87
MI 11	268.50			258.49	258.49					
		MIP-11	42			476	0.12	19.84	11.77	8.07
MI 10	268.00			257.90	257.70					
		MIP-10	42			208	0.03	10.35	11.77	-1.42
MI 9	276.50			257.63	257.63					
		MIP-9	42			336	0.01	4.35	11.77	-7.42
MI 8	266.00			257.61	257.61					
		MIP-8	42			745	0.00	0.00	11.80	-11.80
MI 7	266.70			257.61	257.61					
		MIP-7	42			577	0.05	12.64	11.84	0.80
MI 6	266.50			257.32	257.32					
		MIP-6	42			425	0.05	12.52	11.87	0.65
MI 5	264.00			257.11	257.11					
		MIP-5	42			652	0.05	12.68	11.91	0.77
MI 4	264.00			256.78	256.78					
		MIP-4	42			50	0.04	11.33	11.94	-0.61
MI 3	263.80			256.76	256.76					
		MIP-3	42			530	0.05	12.72	11.98	0.74
MI 2	264.30			256.49	256.49					
		MIP-2	36			103	1.01	37.55	14.57	22.98
MI 1				255.45	255.23					
Detrick Branch Outfall Sewer (1974)										
AM 191	298.57			289.43	289.40					
		AMP-191	18			332	1.50	7.21	1.23	5.98
AM 192	293.38			284.42	284.40					
		AMP-192	18			336	0.86	5.46	1.28	4.18
AM 193	290.41			281.51	281.49					
		AMP-193	18			352	0.88	5.53	1.32	4.22
AM 194	287.63			278.38	278.31					
		AMP-194	18			107	2.18	8.69	1.36	7.33
AM 195	284.88			275.98	275.96					
		AMP-195	18			235	1.06	6.07	1.40	4.67
AM196	282.31			273.46	273.21					
		AMP-196	21			376	0.49	6.23	1.44	4.79
AM 197	281.86			271.36	271.26					
		AMP-197	21			117	0.31	4.93	1.48	3.44
AM 198	279.39			270.90	270.05					
		AMP-198	21			269	1.79	11.87	1.53	10.35
AM 199	272.29			265.24	265.04					
		AMP-199	24			456	0.29	6.77	1.57	5.20
AM 200	268.44			263.74	263.73					
		AMP-200	24			402	0.32	7.15	1.61	5.54
AM 201	266.47			262.45	262.39					
		AMP-201	24			402	0.28	10.13	1.65	8.47
MI 18	266.10			261.25	259.80					
North Branch Sub Basin (Whitter) (1990)										
WH 5	355.00			345.72	345.47					
		WHP-5	18			200	0.40	3.72	1.38	2.35
WH 4	355.00			344.67	344.57					
		WHP-4	18			400	0.40	3.72	1.40	2.32
WH 3	353.20			342.97	342.87					
		WHP-3	18			387	1.41	7.00	1.43	5.57
WH 2	345.30			337.40	337.30					
		WHP-2	18			245	2.42	9.16	1.45	7.71
WH 1	342.50			331.37	331.27					
		WHP-1	18			200	1.00	5.89	1.48	4.41
OF 9	339.93			329.27	329.02					
Old Farm (1985)										
OF 9	339.80			329.54	329.29					
		OFP-9	21			400	1.00	8.88	1.51	7.37
OF 8	336.40			325.29	325.17					
		OFP-8	21			426	1.20	9.73	1.53	8.20

Table B
Interceptor Sewer Capacities and Loadings
(Uniform 2.5 Peaking Factor)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
OF 7	332.10			320.06	319.96					
		OFP-7	21			210	0.30	4.86	1.56	3.30
OF 6	330.00			319.33	319.23					
		OFP-6	21			155	0.30	4.85	1.58	3.26
OF 5	328.40			318.77	318.67					
		OFP-5	21			213	0.30	4.87	1.61	3.26
OF 4	328.10			318.03	317.93					
		OFP-4	21			400	0.30	4.86	1.63	3.23
OF 3	327.00			316.73	316.63					
		OFP-3	21			400	0.30	4.86	1.63	3.23
OF 2	325.60			315.43	315.33					
		OFP-2	21			400	0.15	3.44	1.66	1.78
OF 1	327.00			314.73	314.03					
		OFP-1	21			266	0.30	4.87	1.66	3.21
1340	N/A			313.23	313.13					
Monocacy River Interceptor (1990)										
MB-1	N/A			274.00	274.00					
		MBP-1	30			1502	0.40	18.20		18.20
MB-2	N/A			267.97	267.97					
		MBP-2	30			1490	0.42	18.61		18.61
MB-3	N/A			261.72	261.72					
		MBP-3	30			1500	1.13	30.60		30.60
MB-5	N/A			244.70	244.70					
		MBP-5	30			1500	0.24	14.07		14.07
MB-6	N/A			241.10	241.10					
		MBP-6	30			1505	0.10	9.07		9.07
MB-7	N/A			239.60	239.60					
		MBP-7	30			1500	-1.49	0.00		0.00
MB-8	N/A			262.00	261.50					
		MBP-8	36			1545	0.81	42.03		42.03
MB-9	N/A			248.99	248.99					
		MBP-9	36			1142	1.06	48.16		48.16
MB-10	N/A			236.85	236.85					
Carroll Creek Interceptor 87-KK										
1174				275.25	273.94					
		1174P	36			536	0.74	32.15	13.31	18.84
KK-33	279.10			269.97	269.87					
		KKP-33	36			149	0.11	12.62	13.43	-0.81
KK-32	281.90			269.70	269.70					
		KKP-32	36			8	0.88	34.95	13.55	21.40
KK-32A	282.10			269.63	269.46					
		KKP-32A	36			183	0.11	12.64	13.68	-1.03
KK-31A	283.00			269.25	269.19					
		KKP-31A	36			269	0.15	14.41	13.80	0.61
KK-31	N/A			268.79	268.70					
		KKP-31	36			205	0.11	12.52	13.92	-1.40
KK-30	282.00			268.47	268.41					
		KKP-30	36			498	0.17	15.35	14.04	1.31
KK-29A	288.10			267.57	267.42					
		KKP-29A	36			237	0.19	16.10	14.16	1.94
KK-29	N/A			266.98	266.98					
		KKP-29	36			225	0.20	16.71	14.29	2.43
KK-28	N/A			266.53	266.43					
		KKP-28	36			360	0.16	15.00	14.41	0.59
KK-27	N/A			265.85	265.75					
		KKP-27	36			22	0.18	15.93	15.07	0.86
KK-26	N/A			265.71	265.61					
		KKP-26	36			165	0.16	14.83	15.13	-0.29
KK-25	N/A			265.35	265.25					
		KKP-25	36			365	0.16	14.90	15.18	-0.29
KK-24A	N/A			264.67	264.67					
		KKP-24A	36			340	0.16	15.03	15.24	-0.21
KK-24.	N/A			264.12	264.05					

Table B
Interceptor Sewer Capacities and Loadings
(Uniform 2.5 Peaking Factor)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
		KKP-24	36			41	3.02	64.98	15.30	49.69
KK-22	281.10			262.81	262.81					
		KKP-22	42			145	0.11	18.75	15.35	3.40
KK-21	272.90			262.65	262.55					
		KKP-21	42			192	0.10	17.73	15.41	2.32
KK-20	273.40			262.36	262.28					
		KKP-20	42			385	0.11	18.39	15.47	2.92
KK-19	271.10			261.87	261.87					
		KKP-19	42			177	0.08	16.41	15.52	0.88
KK-18	274.30			261.72	261.65					
		KKP-18	42			47	-0.58	0.00	15.58	-15.58
KK-16	275.00			261.92	261.82					
		KKP-16	42			263	0.12	19.36	15.64	3.72
KK-15	274.30			261.51	261.41					
		KKP-15	42			390	0.10	17.81	15.69	2.12
KK-14	272.20			261.02	260.92					
		KKP-14	42			205	0.10	18.04	15.75	2.29
KK-12	271.00			260.71	260.61					
		KKP-12	42			465	0.10	17.92	15.81	2.11
KK-11	270.30			260.14	260.04					
		KKP-11	42			202	0.13	20.60	15.86	4.74
KK-10A	N/A			259.77	259.75					
		KKP-10A	42			33	0.09	16.99	15.86	1.12
KK-10	268.10			259.72	259.64					
		KKP-10	42			142	0.05	12.51	15.86	-3.35
KK-8	271.40			259.57	259.64					
		KKP-8	48			183	0.31	44.51	16.62	27.88
KK-7	270.90			259.08	258.82					
		KKP-7	48			137	0.06	19.47	17.36	2.11
KK-5	269.80			258.74	258.65					
		KKP-5	48			310	0.06	19.38	17.37	2.01
KK-4	268.00			258.47	258.24					
		KKP-4	48			728	0.04	16.87	17.39	-0.52
KK-3	N/A			257.92	257.92					
		KKP-3	48			188	-0.26	0.00	17.41	-17.41
KK-2	N/A			258.40	258.40					
		KKP-3	48			92	0.05	18.76	17.42	1.33
KK-1	N/A			258.35	258.35					
		KKP-1	48			210	0.10	26.04	23.34	2.70
Carroll Creek Interceptor (1970)										
1168				258.13	258.13					
	N/A	1168P	48			684	0.05	17.94	17.44	0.50
1167				257.79	257.79					
	N/A	1167P	48			558	0.05	18.03	17.46	0.57
1166				257.51	257.51					
	N/A	1166P	48			1207	0.05	18.08	17.61	0.48
1165				256.90	256.50					
	N/A	1165P	54			712	0.04	20.64	17.66	2.98
1164				256.25	256.25					
	N/A	1164P	54			614	0.05	23.94	17.71	6.23
1163				255.96	255.96					
	N/A	1163P	54			620	0.03	18.77	17.76	1.00
1162				255.78	255.78					
	N/A	1162P	54			1003	0.03	20.57	17.82	2.76
1161				255.43	255.43					
Carroll Creek Interceptor Sewer 84-II										
KK-43	282.70			265.57	264.98					
		KKP-43	15			405	0.11	1.18	0.59	0.59
KK-42	271.90			264.55	264.40					
		KKP-42	15			443	0.18	1.55	0.61	0.93
KK-41	N/A			263.59	263.42					
		KKP-41	15			229	0.03	0.63	0.64	-0.01
KK-40	275.00			263.35	263.13					

Table B
Interceptor Sewer Capacities and Loadings
(Uniform 2.5 Peaking Factor)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
		KKP-40	15			227	0.08	1.05	0.66	0.38
KK-39	279.50			262.94	262.50					
		KKP-39	18			338	0.25	2.92	0.69	2.23
KK-38	271.30			261.67	261.53					
		KKP-38	18			166	-0.19	0.00	0.71	-0.71
KK-37	271.00			261.84	261.74					
		KKP-37	18			288	0.12	2.05	0.74	1.31
KK-36	270.30			261.39	261.29					
		KKP-36	18			401	0.12	2.06	0.76	1.30
KK-35	270.10			260.80	260.30					
		KKP-35	24			335	0.10	4.04	0.79	3.25
KK-34	268.50			259.96	259.04					
		KKP-34	33			310	-0.21	0.00	0.81	-0.81
241	N/A			259.70	259.70					
		241P	33			375	0.05	7.70	0.86	6.84
242	N/A			259.51	259.51					
		242P	33			373	0.05	7.72	0.89	6.83
243	N/A			259.32	259.32					
		243P	33			248	0.05	7.53	0.91	6.62
377	N/A			259.20	259.20					
		377P	33			46	0.13	12.33	0.91	11.42
244	N/A			259.14	259.12					
		244P	33			490	0.06	8.46	1.81	6.65
245	N/A			258.82	258.82					
		245P	33			310	0.06	8.24	1.81	6.43
246	N/A			258.64	258.64					
		246P	33			317	0.06	8.38	1.81	6.57
247	N/A			258.45	258.45					
		247P	33			217	0.06	8.69	1.81	6.88
378	N/A			258.31	258.31					
		378P	33			183	0.06	8.38	1.81	6.57
248	N/A			258.20	258.20					
		248P	33			275	0.06	8.25	3.02	5.24
249	N/A			258.04	258.04					
		249P	33			344	0.06	8.45	3.05	5.40
250	N/A			257.83	257.83					
		250P	33			331	0.06	8.19	3.08	5.11
251	N/A			257.64	257.64					
		251P	33			487	0.06	8.49	3.11	5.38
252	N/A			257.34	257.34					
		252P	33			491	0.06	8.45	3.14	5.32
253	N/A			257.04	257.04					
		253P	33			400	0.06	8.37	3.17	5.20
254	N/A			256.80	256.80					
		254P	33			327	0.06	8.46	3.20	5.26
255	N/A			256.60	256.60					
		255P	33			393	0.06	8.45	3.23	5.23
256	N/A			256.36	256.36					
		256P	33			483	0.06	8.37	3.26	5.12
257	N/A			256.07	256.07					
		257P	33			472	0.06	8.33	3.29	5.04
258	N/A			255.79	255.79					
		258P	33			462	0.06	8.56	3.32	5.25
259	N/A			255.50	255.50					
		259P	33			368	0.06	8.17	3.35	4.82
260	N/A			255.29	255.29					
SCOTT KEY CENTER (CC INTERCEPTOR)										
OF3	327.00			318.03	317.93					
		OFP-3	21			400	0.63	7.02	1.66	5.36
OF2	325.60			315.43	315.33					
		OFP-2	21			400	0.30	4.86	1.68	3.19
OF1	327.00			314.13	314.03					
		OFP-1	21			266	0.34	5.16	1.69	3.47

Table B
Interceptor Sewer Capacities and Loadings
(Uniform 2.5 Peaking Factor)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
1340	324.00			313.13	313.23					
		1340P	21			400	0.28	4.72	3.82	0.90
1339	324.00			312.10	312.20					
		1339P	21			400	0.55	6.59	3.84	2.75
1338	324.00			310.00	310.10					
		1338P	21			400	0.55	6.59	3.85	2.73
1337	326.00			307.90	308.00					
		1337P	21			400	0.55	6.59	3.87	2.72
1336	319.36			305.80	305.90					
CARROLL CREEK INTERCEPTOR 74-P										
1336	319.36			305.80	305.90					
		1336P	21			105	0.42	5.76	3.89	1.88
M2	317.50			305.46	305.36					
		M2P	21			340	0.66	7.21	3.89	3.32
1335	314.30			303.66	303.56					
		1335P	21			397	0.50	6.25	3.90	2.35
1334	316.60			301.59	301.49					
		1334P	21			399	0.49	6.24	3.92	2.32
1333	310.80			299.52	299.32					
		1333P	24			312	0.15	4.87	5.09	-0.22
1332	308.60			298.86	298.76					
		1332P	24			349	0.15	4.89	5.15	-0.26
1331	307.20			298.24	298.14					
		1331P	24			338	0.15	4.88	5.22	-0.34
1330	305.70			297.64	297.54					
		1330P	24			402	0.15	4.86	5.28	-0.42
1329	304.20			296.95	296.85					
CARROLL CREEK INTERCEPTOR 72- G 2&3										
1328	N/A			295.28	295.13					
		1328P	24			454	0.44	8.44	5.34	3.09
1327	N/A			293.12	293.12					
		1327P	24			116	0.43	8.33	5.41	2.92
1326	N/A			292.62	292.45					
		1326P	24			20	0.34	7.44	5.47	1.97
1325	N/A			292.38	292.18					
		1325P	27			425	0.18	7.39	5.54	1.85
1324	N/A			291.41	291.41					
		1324P	27			496	0.39	10.88	5.73	5.15
1322	N/A			289.46	289.46					
		1322P	30			237	0.33	13.17	11.21	1.96
1321A	N/A			288.68	288.75					
		1321AP	30			339	0.32	13.04	11.28	1.76
1321	N/A			287.66	287.54					
		1321P	30			481	0.30	12.57	11.35	1.23
1320	N/A			286.10	286.10					
		1320P	30			500	0.30	12.59	11.42	1.17
1319	N/A			284.60	284.50					
		1319P	30			518	0.30	12.65	11.49	1.16
1318	N/A			282.93	282.83					
		1318P	30			417	0.34	13.36	11.56	1.81
1316	N/A			281.42	281.42					
CARROLL CREEK INTERCEPTOR (PRIOR 1970)										
1316	N/A			281.42	281.42					
		1316P	30			290	0.43	15.09	11.63	3.46
1178	N/A			280.17	280.17					
		1178P	30			823	0.32	13.04	11.70	1.34
1177	N/A			277.52	277.12					
		1177P	36			648	0.08	10.68	13.78	-3.10
1176	N/A			276.59	276.59					
		1176P	36			653	0.08	10.74	13.89	-3.15
1175	N/A			276.05	276.05					
		1175P	36			360	0.08	10.61	14.00	-3.39
1174	N/A			275.76	274.49					

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Interceptor Sewer Capacities and Loadings
(Uniform 2.5 Peaking Factor)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
1937 INTERCEPTOR										
202	N/A			279.00	278.87					
		202P	18			120	0.40	4.30	0.10	4.20
203	N/A			278.39	278.35					
		203P	18			77	0.12	2.33	0.12	2.21
204	N/A			278.26	278.22					
		204P	18			309	0.12	2.38	0.13	2.25
205	N/A			277.84	277.80					
		205P	18			316	0.12	2.36	0.14	2.22
206	N/A			277.42	277.38					
		206P	18			350	0.15	2.62	0.15	2.47
207	N/A			276.86	276.81					
		207P	18			345	0.15	2.64	0.16	2.48
208	N/A			276.29	276.25					
		208P	18			59	0.19	2.93	0.24	2.69
209	N/A			276.14	276.12					
		209P	18			358	0.12	2.38	0.98	1.40
1174	N/A			275.68	274.49					
ROCK CREEK INTERCEPTOR										
1132				375.84	375.74					
		1132P	15			401	1.40	4.28	0.22	4.06
1131	378.40			370.14	370.04					
		1131P	15			400	1.40	4.28	0.26	4.02
1130	372.70			364.44	364.44					
		1130P	15			347	0.00	0.19	0.31	-0.11
1979	N/A			364.43	364.33					
		1979P	15			53	10.55	11.76	0.35	11.41
1129	368.90			358.74	358.49					
		1129P	18			171	0.61	4.59	0.39	4.20
1128A	N/A			357.45	357.35					
		1128AP	18			192	2.68	9.64	0.43	9.21
1128	363.60			352.20	352.10					
		1128P	18			400	0.22	2.79	0.47	2.32
1127	362.90			351.20	351.10					
		1127P	18			167	0.72	5.00	0.51	4.49
1126A	N/A			349.90	349.80					
		1126AP	18			233	1.20	6.45	0.55	5.90
1126	355.40			347.00	346.90					
		1126P	18			225	1.87	8.04	0.59	7.45
1125A	N/A			342.70	342.60					
		1125AP	18			175	1.20	6.45	0.63	5.82
1125	350.00			340.50	340.40					
		1125P	18			68	1.20	6.45	3.71	2.74
1180	N/A			339.58	339.48					
		1180P	18			332	1.17	6.37	3.79	2.58
1124	346.90			335.60	335.50					
		1124P	18			501	0.80	5.26	3.87	1.39
1123	342.30			331.50	331.40					
		1123P	18			298	0.80	5.28	3.95	1.33
1122	340.10			329.00	328.90					
		1122P	18			436	1.07	6.10	4.03	2.07
1121	336.60			326.72	326.62					
		1121P	18			500	0.96	5.76	4.12	1.64
1120	333.40			324.12	324.02					
		1120P	18			32	8.86	17.53	4.20	13.33
1191	337.57			323.79	323.79					
		1191P	18			260	0.80	5.28	4.28	1.00
1119	331.40			321.93	321.83					
		1119P	18			450	1.14	6.27	4.36	1.91
1118	327.90			318.68	318.58					
		1118P	18			206	2.28	8.89	4.44	4.45
1187	N/A			317.14	317.14					
		1187P	18			244	1.29	6.69	4.44	2.24

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(Uniform 2.5 Peaking Factor)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
1117	323.70			315.43	315.33					
		1117P	18			250	1.70	7.67	4.44	3.22
1116A	327.00			312.90	312.80					
		1116AP	18			252	1.93	8.19	4.68	3.50
1116	319.50			310.45	310.20					
		1116P	18			560	0.77	5.15	4.68	0.47
1115A	315.00			308.51	308.51					
		1115AP	21			40	7.33	24.04	4.72	19.32
1115	317.40			307.30	307.20					
		1115P	21			258	1.01	8.91	4.76	4.16
1114A	315.30			305.91	305.81					
		1114AP	21			324	0.96	8.69	4.80	3.89
1114	314.60			304.10	304.00					
		1114P	21			516	0.95	8.65	4.83	3.82
1113	312.55			300.91	300.81					
		1113P	21			56	6.43	22.52	4.87	17.64
1081	N/A			300.40	300.30					
		1081P	18			45	1.60	7.44	4.91	2.53
1112	317.68			300.10	300.07					
		1112P	18			292	0.42	3.82	4.95	-1.13
1080	N/A			299.07	298.97					
		1080P	18			400	0.24	2.87	4.99	-2.12
1079	N/A			298.02	297.92					
		1079P	18			400	0.29	3.14	5.02	-1.88
1078	N/A			296.78	296.68					
		1078P	18			400	0.38	3.63	5.06	-1.43
1077	N/A			295.16	295.06					
		1077P	18			400	0.38	3.63	5.10	-1.47
1076	N/A			293.54	293.44					
		1076P	18			395	0.38	3.65	5.14	-1.48
1075	N/A			291.92	291.82					
		1075P	18			395	0.19	2.57	5.17	-2.60
1323	N/A			291.06	291.06					
		1323P	18			400	0.19	2.57	5.17	-2.61
608	N/A			290.30	290.09					
FREDERICKTOWNE VILLAGE										
FV 42	278.38				267.20					
		FV42P	12			126	0.302	1.10	0.30	0.79
FV 44	276.85			266.82	266.72					
		FV44P	12			140	0.300	1.09	0.32	0.78
FV 45	N/A			266.30	264.37					
		FV45P	18			263	0.251	2.95	0.33	2.62
FV 46	N/A			263.71	263.61					
		FV46P	18			133	0.248	2.93	0.33	2.60
FV 47	277.17			263.28	263.03					
		FV47P	21			113	0.097	2.77	0.34	2.43
FV 50	274.55			262.92	262.82					
		FV50P	21			414	0.10	2.79	0.35	2.45
FV 52	274.30			262.41	262.31					
		FV52P	21			155	0.10	2.85	0.35	2.50
FV 54	275.80			262.15	262.05					
		FV54P	21			315	0.200	3.97	0.36	3.61
FV 55B	278.50			261.42	261.38					
		FV55BP	21			98	0.102	2.84	0.37	2.46
FV 55C	271.50			261.28	261.24					
		FV55CP	21			121	0.099	2.80	0.38	2.42
FV 55D	272.50			261.12	261.08					
		FV55DP	21			304	0.099	2.79	0.50	2.29
FV 55E	271.50			260.78	260.74					
		FV55EP	21			93	0.097	2.76	0.51	2.26
FV 160	276.50			260.65	260.64					
		FV160P	21			257	0.004	0.55	0.63	-0.08
FV 161	276.40			260.63	260.60					

Table B
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(Uniform 2.5 Peaking Factor)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
		FV161P	21			213	0.099	2.79	0.63	2.16
FV 162	272.26			260.39	260.38					
		FV162P	21			85	0.094	2.72	0.63	2.09
FV 163	272.96			260.30	260.29					
		FV163P	21			23	0.087	2.62	0.63	1.99
FV 165	273.21			260.27	260.22					
		FV165P	21			78	0.103	2.84	0.63	2.21
FV 166	N/A			260.14	260.04					
		FV166P	21			300	0.713	7.50	0.63	6.87
MI 10	268.00			257.90	257.70					
AIRPORT										
595	N/A			286.21	286.11					
		595P	8			353	0.400	0.49	0.22	0.27
594	N/A			284.70	284.60					
		594P	8			355	0.414	0.50	0.22	0.28
593	N/A			283.13	283.08					
		593P	8			355	0.400	0.49	0.22	0.27
592	N/A			281.66	281.56					
		592P	8			355	0.400	0.49	0.22	0.27
591	N/A			280.14	280.04					
		591P	8			355	0.369	0.47	0.22	0.25
590	288.69			278.73	278.70					
		590P	8			400	0.885	0.64	0.22	0.42
589A	294.11			275.16	275.01					
		589AP	8			400	0.715	0.57	0.22	0.35
589	277.45			272.15	271.85					
		589P	8			400	0.695	0.56	0.22	0.34
588	273.97			269.07	268.85					
		588P	8			400	0.647	0.55	0.22	0.32
587	279.18			266.26	266.13					
		587P	N/A			N/A	N/A	N/A	0.22	N/A
586	N/A			N/A	N/A					
		586P	N/A			N/A	N/A	N/A	0.22	N/A
585	N/A			N/A	N/A					
		585P	N/A			N/A	N/A	N/A	0.22	N/A
584A	N/A			N/A	N/A					
NORTH EAST END										
2020	N/A			330.14	330.34					
		2020P	8			125	0.617	0.61	0.03	0.59
2019	N/A			329.57	329.47					
		2019P	8			234	0.402	0.50	0.05	0.44
2018	N/A			328.53	328.43					
		2018P	8			249	1.690	1.02	0.08	0.93
671	N/A			324.23	324.13					
		671P	8			162	1.698	1.02	0.11	0.91
670	N/A			321.38	321.28					
		670P	8			374	1.623	1.00	0.14	0.86
669	N/A			315.21	315.11					
		669P	8			162	1.796	1.05	0.16	0.88
668	N/A			312.20	312.08					
		668P	8			214	0.504	0.56	0.19	0.36
667	N/A			311.00	310.90					
		667P	8			158	0.603	0.61	0.22	0.39
666	N/A			309.95	309.85					
		666P	8			347	0.599	0.61	0.25	0.36
665	N/A			307.77	307.67					
		665P	8			55	0.604	0.61	0.27	0.33
412	N/A			307.34	305.75					
		412P	8			416	0.800	0.70	0.30	0.40
411	N/A			302.42	302.32					
		411P	8			360	0.400	0.49	0.33	0.17
410	N/A			300.88	300.78					
		410P	8			138	0.400	0.49	0.36	0.14

Table B
Interceptor Sewer Capacities and Loadings
(Uniform 2.5 Peaking Factor)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
409	N/A			300.23	297.10					
		409P	8			405	0.960	0.77	0.38	0.38
SF 13	301.6			293.21	293.21					
		SF13P	8			20	0.960	0.77	0.41	0.36
408	N/A			293.02	293.02					
		408P	8			471	0.800	0.70	0.44	0.26
460	N/A			289.25	289.15					
		460P	8			337	0.800	0.70	0.47	0.23
452	N/A			286.45	286.12					
		452P	12			235	0.22	1.09	0.49	0.59
478	N/A			285.60	285.58					
		478P	12			215	0.22	1.08	0.52	0.56
479	N/A			285.11	285.07					
		479P	12			319	0.220	1.08	0.55	0.53
480	N/A			284.37	284.33					
		480P	12			114	0.220	1.08	0.58	0.51
1973				284.08	284.08					
		1973P	12			232	0.220	1.08	0.60	0.48
481	N/A			283.57	283.53					
		481P	12			318	0.220	1.08	0.63	0.45
482	N/A			282.83	282.79					
		482P	12			22	0.227	1.10	0.66	0.44
942	N/A			282.74	282.64					
		942P	12			250	0.220	1.08	0.69	0.40
483	N/A			282.09	281.84					
		483P	16			13	0.154	2.11	0.71	1.40
400	N/A			281.82	281.72					
		400P	16			287	0.125	1.90	0.74	1.16
484	N/A			281.36	281.32					
		484P	15			128	0.156	1.65	0.77	0.88
1060	N/A			281.12	281.02					
		1060P	15			185	0.108	1.38	0.79	0.58
485	N/A			280.82	280.78					
		485P	15			400	0.160	1.67	0.82	0.85
486	N/A			280.14	280.04					
		486P	15			454	0.134	1.53	0.85	0.68
MV 19	N/A			279.43	279.33					
		MV19P	15			45	0.178	1.76	0.88	0.88
487	N/A			279.25	279.15					
		487P	15			106	0.160	1.67	0.90	0.77
MV 4	N/A			278.98	278.50					
		MV4P	15			127	0.150	1.62	0.93	0.68
488	287.18			278.31	278.27					
		488P	15			145	1.220	4.61	0.96	3.66
488 A	284.57			276.50	276.40					
		488AP	12			214	0.500	1.63	0.99	0.64
488 B	283.28			275.33	275.23					
		488BP	12			165	0.910	2.20	1.01	1.18
488 C	282.35			273.73	273.63					
		488CP	12			120	0.383	1.43	1.04	0.39
489	N/A			273.17	273.07					
		489P	12			373	2.57	3.70	1.07	2.63
490	N/A			263.48	263.38					
		490P	12			390	0.50	1.63	1.10	0.53
491	N/A			261.43	261.18					
		491P	15			400	0.160	1.67	1.12	0.55
492	N/A			260.54	260.50					
		492P	15			400	0.160	1.67	1.18	0.49
378	N/A			259.86						
EAST END										
553	N/A				292.00					
		553P	10			457	0.280	0.75	0.11	0.64
552	N/A			290.72	290.62					

Table B
Interceptor Sewer Capacities and Loadings
(Uniform 2.5 Peaking Factor)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
		552P	10			463	1.000	1.42	0.22	1.19
551	N/A			285.99	285.72					
		551P	10			500	0.920	1.36	0.34	1.02
557	N/A			281.12	281.02					
		557P	10			277	1.460	1.71	0.45	1.26
429	N/A			276.98	276.88					
		429P	10			405	2.000	2.00	0.56	1.44
558	N/A			268.78	268.74					
		558P	10			426	0.540	1.04	0.67	0.37
571	N/A			266.44	265.44					
		571P	10			113	1.283	1.61	0.79	0.82
572	N/A			263.99	263.90					
		572P	10			26	0.500	1.00	0.90	0.10
244	N/A			263.77	259.12					
Market Street										
437	N/A				283.36					
		437P	10			444	0.960	1.39	0.10	1.29
436	N/A			279.10	278.93					
		436P	12			231	0.800	2.06	0.20	1.87
435	N/A			277.08	276.98					
		435P	12			227	0.300	1.26	0.29	0.97
434	N/A			276.30	276.20					
		434P	12			440	0.680	1.90	0.39	1.51
433	N/A			273.21	2731.24					
		433P	12			N/A	N/A	0.00	0.49	N/A
KK 46	N/A			N/A	N/A					
		KK46P	N/A			N/A	N/A	N/A	0.49	N/A
KK 45	N/A			N/A	N/A					
		KK45P	N/A			N/A	N/A	N/A	0.49	N/A
KK 44	N/A			N/A	N/A					
		KK44P	N/A			N/A	N/A	N/A	0.49	N/A
KK 43A	N/A			N/A	N/A					
Stone Gate										
S 61	398.50			390.22	390.05					
		S61P	10			250	0.332	0.88	0.02	0.86
S 63	413.00			389.22	389.22					
		S63P	10			250	0.328	0.88	0.04	0.84
S 64	419.40			388.40	388.40					
		S64P	10			379	0.330	0.88	0.06	0.82
S 65	423.30			387.15	387.15					
		S65P	18			276	0.326	4.20	0.08	4.12
S 66	427.70			386.25	386.25					
		S66P	10			231	0.338	0.89	0.10	0.79
S 67	426.40			385.47	385.47					
		S67P	10			231	0.329	0.88	0.12	0.76
S 68	418.90			384.71	384.71					
		S68P	10			195	0.323	0.87	0.14	0.73
S 69	411.00			384.08	384.08					
		S69P	10			100	0.330	0.88	0.16	0.72
S 70	409.10			383.75	383.75					
		S70P	10			170	0.329	0.88	0.18	0.70
S 71	405.20			383.19	383.19					
		S71P	10			305	0.331	0.88	0.21	0.68
S 72	400.00			382.18	382.18					
		S72P	10			150	0.333	0.89	0.23	0.66
S 73	392.70			381.68	381.28					
Golf View										
GV 14	422.00			415.89	409.45					
		GV14P	8			378	3.000	1.17	0.10	1.07
GV 13	403.00			398.11	398.01					
		GV13P	8			138	5.022	1.52	0.20	1.32
GV 10	401.00			391.08	390.98					
		GV10P	8			216	2.028	0.97	0.30	0.67

Table B
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Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
GV 9	396.00			386.60	386.50					
		GV9P	8			240	2.250	1.02	0.40	0.62
GV 8	389.00			381.10	381.00					
		GV8P	8			224	2.638	1.10	0.50	0.60
GV 7	384.00			375.09	374.99					
		GV7P	8			400	1.970	0.95	0.60	0.35
GV 6	376.00			367.11	367.01					
		GV6P	8			248	1.315	0.78	0.70	0.08
GV 5	374.00			363.75	363.50					
		GV5P	15			220	1.514	4.46	0.80	3.66
GV 4	371.00			360.17	360.07					
		GV4P	15			133	1.376	4.25	0.90	3.35
GV 3	369.00			358.24	358.14					
		GV3P	15			387	0.22	1.69	1.00	0.69
GV 2	366.00			357.30	357.20					
		GV2P	15			315	0.22	1.69	1.10	0.60
GV 1	365.5			356.51	356.41					
		GV1P	15			230	0.222	1.71	1.20	0.51
1186	364.00			355.90	355.46					
		1186P	15			180	0.42	2.35	1.50	0.85
1185	N/A			354.70	354.56					
		1185P	15			N/A	N/A	N/A	1.50	N/A
1184	N/A			N/A	N/A					
		1184P	15			N/A	N/A	N/A	1.50	N/A
1183	N/A			349.97	349.87					
		1183P	15			426	1.400	4.94	1.50	3.44
1182	N/A			343.90	343.80					
		1182P	15			306	0.500	2.95	1.50	1.45
1181	N/A			342.27	342.17					
		1181P	15			246	0.590	3.21	1.50	1.71
1180	N/A			340.72	340.62					
Mountain Gate										
H 186				416.13	415.80					
		H186P	12			145	0.310	1.11	0.35	0.76
H 6	426.50			415.35	413.07					
		H6P	12			263	4.209	4.10	0.40	3.70
H 140	413.30			402.00	402.00					
		H140P	12			122	2.402	3.10	0.40	2.69
H 141	4196.00			399.07	399.07					
		H141P	12			58	2.397	3.09	0.41	2.68
H 142	412.70			397.68	397.68					
		H142P	12			100	2.400	3.09	0.42	2.68
H 143	407.20			395.28	395.28					
		H143P	12			122	1.303	2.28	0.43	1.86
H 144	405.40			393.69	393.69					
		H144P	12			176	0.500	1.41	0.43	0.99
H 146	404.20			392.81	392.81					
		H146P	12			35	7.26	5.38	0.43	4.96
H 145	403.00			390.27	390.27					
		H145P	12			392	6.98	5.28	0.43	4.85
H 149	372.90			362.89	362.89					
		H149P	12			330	0.497	1.62	0.57	1.06
1223	N/A			361.25	361.25					
		1223P	12			221	0.475	1.59	0.60	0.99
1222	372.60			360.20	360.15					
		1222P	12			265	0.502	1.63	0.61	1.02
1221	360.60			358.82	358.82					
		1221P	12			206	0.500	1.63	0.64	0.99
GM 1	370.00			357.79	357.79					
		GM1P	12			164	0.500	1.63	0.71	0.92
1220	N/A			356.97	356.82					
		1220P	12			282	0.75	2.00	0.71	1.29
1185	N/A			354.70	354.56					

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Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
Frederick Heights										
FH 18	417.89			406.99	406.03					
		FH18P	8			316	2.801	1.31	0.01	1.30
FH 14	407.50			397.18	397.01					
		FH14P	10			258	1.399	1.68	0.03	1.65
FH 13	404.50			393.40	393.30					
		FH13P	10			292	0.719	1.20	0.04	1.16
FH 12	412.50			391.20	391.10					
		FH12P	10			283	1.007	1.42	0.05	1.37
F 108	405.50			388.25	388.15					
		F108P	10			143	0.084	0.41	0.07	0.34
FH 11	402.50			388.03	387.93					
		FH11P	10			290	1.321	1.63	0.08	1.55
FH 10	393.00			384.10	384.00					
		FH10P	10			282	4.440	2.99	0.09	2.89
FH 9	376.50			371.48	364.67					
		FH9P	10			112	1.000	1.42	0.11	1.31
FH 8	374.00			363.55	363.45					
		FH8P	12			208	1.000	2.30	0.12	2.19
FH 7	365.50			361.37	356.17					
		FH7P	12			238	1.798	3.09	0.13	2.96
FH 6	358.00			351.89	351.79					
		FH6P	12			139	3.518	4.32	0.15	4.18
FH 5B	351.50			346.90	346.90					
		FH5BP	12			198	5.909	5.60	0.16	5.44
FH 5A	343.35			335.20	333.84					
		FH5AP	12			203	1.798	3.09	0.17	2.92
FH 4A	338.50			330.19	330.19					
		FH4AP	12			98	1.796	3.09	0.19	2.90
FH 4B	338.55			328.43	328.33					
		FH4BP	12			44	3.068	4.04	0.20	3.84
FH 3	335.50			326.98	326.88					
		FH3P	12			275	3.240	4.15	0.21	3.94
FH 2	327.50			317.98	317.71					
		FH2P	15			411	0.722	3.55	0.23	3.32
FH 1	321.50			314.74	314.64					
		FH1P	15			373	0.306	2.31	0.24	2.07
1116 A	327.00			313.50						
Fredericks Shopper World										
B 19	N/A			344.50	344.40					
		B19P	8			280	0.964	0.77		0.77
1190	N/A			341.70	335.76					
		1190P	8			205	-0.117	0.00		0.00
W 58	N/A			336.00	335.90					
		W58P	8			50	8.440	2.27		2.27
1189	N/A			331.68	331.41					
		1189P	10			460	2.350	2.17		2.17
1188	N/A			320.60	319.73					
		1188P	10			320	0.600	1.10		1.10
1187	N/A			317.81						
Solarex										
SX 222	332.50				324.54					
		SX222P	21			461	1.461	10.73	0.07	10.67
SX 221	326.30			317.80	317.09					
		SX221P	10			149	1.401	1.45	0.13	1.32
SX 220	325.50			315.00	314.96					
		SX220P	10			400	0.715	1.04	0.20	0.84
SX 219	325.30			312.10	312.00					
		SX219P	10			400	0.715	1.04	0.27	0.77
BC 1	N/A			N/A	N/A					
		BC1P	10			N/A	0.715	1.04	0.33	0.70
SX 218	319.50			309.20	307.10					
		SX218P	10			400	0.700	1.03	0.40	0.63

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(Uniform 2.5 Peaking Factor)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
SX 217	313.50			304.30	304.20					
		SX217P	10			400	0.500	0.87	0.47	0.40
SX 216	309.50			302.20	302.10					
		SX216P	10			400	0.700	1.03	0.53	0.49
SX 215	306.50			299.30	299.20					
		SX215P	10			402	1.115	1.30	0.60	0.70
SX 214R	302.50			294.72	294.62					
		SX214RP	10			331	1.196	1.34	0.67	0.68
SX 213	N/A			290.66	290.56					
		SX213P	10			400	0.890	1.16	0.74	0.42
SX 212	N/A			287.00						
Industrial Centre										
380	N/A				266.80					
		380P	12			228	0.250	1.15	0.61	0.54
345	N/A			266.23	266.13					
		345P	12			272	0.250	1.15	0.65	0.51
343	N/A			265.45	264.88					
		343P	12			350	0.220	1.08	0.69	0.40
342	N/A			264.11	264.01					
		342P	12			345	0.220	1.08	0.69	0.39
341	N/A			263.25	263.20					
		341P	12			209	0.220	1.08	0.70	0.38
340	N/A			262.74	262.70					
		340P	12			302	0.220	1.08	0.72	0.36
237	N/A			262.04	260.49					
		237P	30			229	0.220	12.44	0.76	11.68
KK-8	271.40			259.57	259.64					
Maplewood										
383	N/A			300.31	300.31					
		383P	10			163	0.356	0.85	0.04	0.81
352	N/A			299.73	299.63					
		352P	10			215	0.302	0.78	0.08	0.70
351 A	N/A			298.98	298.88					
		351AP	10			242	0.302	0.78	0.12	0.66
346 A	N/A			298.15	298.05					
		346AP	10			124	0.346	0.83	0.16	0.67
30	N/A			297.62	297.52					
		30P	8			320	0.400	0.49	0.20	0.29
31	N/A			296.24	296.07					
		31P	10			230	0.300	0.78	0.24	0.53
32	N/A			295.38	295.28					
		32P	10			251	2.733	2.34	0.28	2.06
921	N/A			288.42	288.42					
		921P	10			34	3.676	2.72	0.32	2.40
33	N/A			287.17	287.07					
		33P	10			261	1.230	1.57	0.36	1.21
34	N/A			283.86	283.76					
		34P	10			350	0.231	0.68	0.40	0.28
10	N/A			282.95	278.61					
		10P	10			313	0.521	1.02	0.44	0.58
11	N/A			276.98	276.88					
		11P	10			62	0.940	1.37	0.48	0.89
389	N/A			276.30	276.81					
		389P	10			175	1.440	1.70	0.52	1.18
326	N/A			274.29	272.79					
		326P	10			214	0.869	1.32	0.56	0.76
321	N/A			270.93	269.73					
		321P	10			270	0.307	0.79	0.60	0.18
KK 27	N/A			268.90						
Overbrook										
863	N/A			291.47	291.21					
		863P	12			125	0.792	2.05	1.11	0.95
1958	300.86			290.22	290.12					

Table B
Interceptor Sewer Capacities and Loadings
(Uniform 2.5 Peaking Factor)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
		1958P	12			336	0.789	2.05	1.12	0.93
1959	297.23			287.47	287.37					
		1959P	12			173	0.792	2.05	1.13	0.92
1960	295.89			286.00	285.90					
		1960P	12			230	0.790	2.05	1.15	0.90
1961	294.25			284.08	283.98					
		1961P	12			66	0.788	2.05	1.16	0.88
1962	293.20			283.46	283.36					
		1962P	12			182	0.79	2.04	1.18	0.87
1963	288.85			281.93	281.83					
		1963P	12			214	0.79	2.05	1.19	0.86
1964	287.09			280.14	280.04					
		1964P	12			89	0.989	2.29	1.21	1.09
1965	288.29			279.16	277.65					

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
Willowbrook Interceptor (1993)										
WB-17	297.70				283.01					
		WBP-17	24			262.00	0.26	6.46	4.45	2.00
WB-16	291.00			282.33	282.23					
		WBP-16	24			276.00	0.26	6.47	4.48	1.99
WB-15	290.80			281.51	281.41					
		WBP-15	24			248.00	0.26	6.44	4.51	1.93
WB-14	290.30			280.77	280.67					
		WBP-14	24			131.00	0.26	6.46	4.54	1.92
WB-13	290.20			280.33	280.23					
		WBP-13	24			176.00	0.26	6.48	4.57	1.91
WB-12	289.50			279.77	279.67					
		WBP-12	24			367.00	0.26	6.45	4.59	1.86
WB-11	287.80			278.72	278.62					
		WBP-11	24			496.00	0.26	6.47	4.62	1.84
WB-10	289.00			277.33	277.23					
		WBP-10	24			298.00	0.26	6.44	4.65	1.79
WB-09	285.00			276.46	276.36					
		WBP-9	24			76.00	0.26	6.50	4.68	1.82
WB-08	284.20			276.16	276.06					
		WBP-8	24			106.00	0.26	6.52	4.71	1.81
WB-07	285.10			275.78	275.68					
		WBP-7	24			118.00	0.26	6.50	4.74	1.76
WB-06	291.70			275.37	275.27					
		WBP-6	24			98.00	0.26	6.40	4.76	1.64
WB-05	288.70			275.02	274.92					
		WBP-5	24			348.00	0.26	6.45	4.79	1.66
WB-04	291.00			274.02	273.92					
		WBP-4	24			342.00	0.26	6.50	4.82	1.68
WB-3	284.20			273.02	272.92					
		WBP-3	24			308.00	0.26	6.42	4.85	1.57
WB-2	280.50			272.13	272.03					
		WBP-2	24			367.00	0.26	6.45	4.88	1.57
WB-1	281.20			271.08	270.98					
		WBP-1	24			164.00	0.26	6.42	4.93	1.48
TI-27	279.60			270.56						
Tuscoroa Interceptor (1965)										
TI 47	N/A			357.50	357.46					
		TIP-47	8			555.00	0.92	0.98	0.26	0.71
TI 46	N/A			352.34	352.29					
		TIP-46	8			553.50	1.68	1.32	0.26	1.05
TI 45	N/A			343.00	342.76					
		TIP-45	8			236.88	1.95	1.42	0.63	0.79
TI 44	N/A			338.15	338.00					
		TIP-44	8			280.21	0.98	1.01	0.63	0.38
TI 43	N/A			335.24	335.19					
		TIP-43	10			439.66	0.99	1.84	0.71	1.13
TI 42	N/A			330.83	330.67					
		TIP-42	10			355.10	0.97	1.82	0.79	1.02
TI 41	N/A			327.22	322.27					
		TIP-41	10			453.13	1.31	2.11	0.88	1.24
TI 40	N/A			316.32	316.18					
		TIP-40	10			413.36	0.75	1.59	0.96	0.64
TI 39	N/A			313.09	313.05					
		TIP-39	10			400.00	1.79	2.47	1.04	1.43
TI 38	N/A			305.89	305.65					
		TIP-38	10	-		414.15	1.05	1.88	1.12	0.76
TI 37	N/A			301.32	301.20					
		TIP-37	10			412.09	1.16	1.99	1.21	0.78

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
TI 36	N/A			296.41	296.19					
		TIP-36	10			418.19	1.03	1.87	1.29	0.58
TI 35	N/A			291.90	291.47					
		TIP-35	12			418.86	0.81	1.79	1.37	0.42
TI 34	N/A			288.09	287.69					
		TIP-34	12			428.00	0.71	1.69	1.45	0.23
TI 33	N/A			284.64	284.10					
		TIP-33	12			421.65	0.71	1.68	1.54	0.15
TI 32	N/A			281.10	280.75					
		TIP-32	15.00			404.25	0.47	2.49	1.62	0.87
TI 31	N/A			278.84	278.65					
		TIP-31	15.00			300.00	0.33	2.08	1.70	0.38
TI 30	289.18			277.66	277.26					
		TIP-30	15.00			300.00	0.56	2.71	1.78	0.93
TI-29	287.04			275.58	275.36					
		TIP-29	15.00			299.81	0.88	3.39	1.87	1.53
TI-28	280.16			272.73	272.48					
		TIP-28	15.00			280.30	0.46	2.47	1.95	0.52
TI-27	279.94			271.18	270.28					
		TIP-27	27.00			242.49	0.25	8.70	6.40	2.30
TI-26A	N/A			269.67	269.64					
		TIP-26A	27.00			215.00	0.27	8.94	6.48	2.45
TI-26	278.03			269.07	269.02					
		TIP-26	27.00			254.74	0.26	8.90	6.56	2.34
TI-25	279.99			268.35	268.23					
		TIP-25	27.00			390.00	0.15	6.81	6.64	0.17
TI-24	277.66			267.63	267.38					
		TIP-24	27.00			280.09	0.23	8.30	6.72	1.58
TI-23	276.95			266.74	266.71					
		TIP-23	27.00			382.01	0.28	9.14	6.80	2.34
TI-22	276.82			265.65	265.63					
		TIP-22	27.00			415.60	0.22	8.08	6.88	1.20
TI-21	275.43			264.73	264.75					
		TIP-21	27.00			391.01	0.29	9.41	6.95	2.46
TI-20	274.38			263.60	263.57					
		TIP-20	27.00			294.19	0.24	8.47	7.03	1.43
TI-19	273.91			262.87	262.72					
		TIP-19	27.00			352.50	0.20	7.73	7.11	0.62
TI-18	273.32			262.02	261.93					
		TIP-18	27.00			392.36	0.22	8.22	7.19	1.03
TI-17	271.78			261.05	260.96					
		TIP-17	27.00			354.16	0.20	7.72	7.27	0.44
TI-16	269.98			260.26	260.07					
		TIP-16	27.00			437.34	0.25	8.75	7.35	1.40
TI-15	269.97			258.96	258.97					
		TIP-15	27.00			438.34	0.30	9.50	7.43	2.08
TI-14	268.77			257.66	257.66					
		TIP-14	27.00			398.45	0.30	9.48	7.51	1.98
TI 13	267.29			256.47	256.39					
		TIP-13	27.00			429.92	0.17	7.10	7.59	-0.49
TI 12	264.91			255.67	255.44					
		TIP-12	27.00			417.27	0.24	8.58	7.67	0.91
TI 11	265.02			254.42	254.37					
		TIP-11	27.00			382.94	0.20	7.83	7.74	0.09
TI 10	263.56			253.59	253.23					
		TIP-10	27.00			412.96	0.14	6.56	7.82	-1.26
WM 1	261.61			252.64	252.43					
		WMP-1	30			383.73	0.13	8.38	7.90	0.48
TI 8	261.18			251.92	251.88					

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
		TIP-8	30			395.77	0.18	9.67	7.98	1.68
TI 7	261.51			251.18	251.14					
		TIP-7	30			404.93	0.15	8.77	8.06	0.71
TI 6	259.59			250.55	250.38					
		TIP-6	30			293.41	0.21	10.56	8.14	2.42
TI 5	257.63			249.76	249.75					
		TIP-5	30			417.54	0.33	13.26	8.22	5.04
TI 4	257.43			248.36	248.35					
		TIP-4	30			412.56	0.20	10.37	8.30	2.07
TI 3	257.99			247.51	248.58					
		TIP-3	30			392.90	0.49	16.15	8.30	7.85
TI 2	263.52			246.64	246.64					
		TIP-2	30			209.20	0.21	10.54	8.30	2.24
TI 1	263.66			246.20						
Monocacy Interceptor (1968)										
MI 43	N/A			243.43	243.46					
		MIP-43	36			354.83	0.12	12.70	8.30	4.40
MI 42	N/A			243.05	243.03					
		MIP-42	36			933.22	0.15	14.47	8.30	6.18
MI 41	N/A			241.63	241.61					
		MIP-41	36			496.02	0.15	14.43	8.37	6.06
MI 40	N/A			240.87	240.89					
		MIP-40	36			772.45	0.16	14.79	8.44	6.35
MI 39	N/A			239.68	239.47					
		MIP-39	39			348.00	0.14	17.00	11.44	5.56
CPS	N/A			239.00	272.50					
		CPSP	2-16"			715.61	-2.77	N/A	FORCE MAIN	N/A
MI 38	N/A			292.31	288.33					
		MIP-38	30			830.66	0.88	21.56	11.51	10.05
MI 37	N/A			281.02	280.96					
		MIP-37	30			835.85	0.88	21.55	11.58	9.97
MI 36	N/A			273.61	273.36					
		MIP-36	33			667.21	0.35	17.55	11.65	5.90
MI 35	N/A			271.02	270.77					
		MIP-35	36			544.03	0.22	17.55	11.72	5.83
MI 34	N/A			269.57	269.55					
		MIP-34	36			660.93	0.22	17.50	11.79	5.71
MI 33	N/A			268.10	268.08					
		MIP-33	36			1000.77	0.22	17.52	11.86	5.66
MI 32	N/A			265.88	264.94					
		MIP-32	36			850.00	0.16	15.11	11.93	3.18
R 16	269.00			263.55	263.55					
		RP-16	36			260.00	0.12	13.11	12.00	1.11
MI 24	270.50			263.23	262.80					
		MIP-24	42			30.00	0.07	14.55	12.07	2.48
MI 25	N/A			262.78	262.78					
		MIP-25	42			405.85	0.12	19.44	12.14	7.29
MI 23	274.50			260.75	260.75					
		MIP-23	42			142.95	0.05	13.17	12.22	0.95
MI 21	270.50			260.58	260.58					
		MIP-21	42			219.82	0.05	13.17	12.29	0.88
MI 20	266.77			260.46	260.46					
		MIP20	42			512.10	0.05	12.70	12.36	0.34
MI 19	267.87			260.20	260.20					
		MIP-19	42			696.30	0.06	13.51	12.36	1.15
MI 18	266.10			259.80	259.80					
		MIP-18	42			135.59	0.05	12.81	13.13	-0.33
MI 17	266.00			259.73	259.73					
		MIP-17	42			479.93	0.05	12.60	13.93	-1.33

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
MI 16	280.50			259.49	259.49					
		MIP-16	42			69.92	0.04	11.67	14.00	-2.33
MI 15	283.50			259.46	259.46					
		MIP-15	42			398.79	0.05	12.62	14.07	-1.44
MI 14	273.20			259.26	259.26					
		MIP-14	42			487.57	0.05	12.24	14.13	-1.89
MI 13	282.00			259.03	259.03					
		MIP-13	42			591.91	0.05	12.47	14.20	-1.72
MI 12	269.00			258.74	258.74					
		MIP-12	42			80.00	0.22	26.73	14.27	12.47
FV 173	271.50			258.56	258.56					
		FVP-173	42			360.00	0.02	7.86	14.33	-6.47
MI 11	268.50			258.49	258.49					
		MIP-11	42			476.24	0.12	19.84	14.40	5.44
MI 10	268.00			257.90	257.70					
		MIP-10	42			207.50	0.03	10.35	14.40	-4.05
MI 9	276.50			257.63	257.63					
		MIP-9	42			336.20	0.01	4.35	14.40	-10.05
MI 8	266.00			257.61	257.61					
		MIP-8	42			744.88	0.00	0.00	14.46	-14.46
MI 7	266.70			257.61	257.61					
		MIP-7	42			576.60	0.05	12.64	14.51	-1.87
MI 6	266.50			257.32	257.32					
		MIP-6	42			425.25	0.05	12.52	14.57	-2.04
MI 5	264.00			257.11	257.11					
		MIP-5	42			652.43	0.05	12.68	14.62	-1.95
MI 4	264.00			256.78	256.78					
		MIP-4	42			49.50	0.04	11.33	14.68	-3.35
MI 3	263.80			256.76	256.76					
		MIP-3	42			530.32	0.05	12.72	14.73	-2.02
MI 2	264.30			256.49	256.49					
		MIP-2	36			103.00	1.01	37.55	18.88	18.67
MI 1				255.45	255.23					
Detrick Branch Outfall Sewer (1974)										
AM 191	298.57			289.43	289.40					
		AMP-191	18			332.00	1.50	7.21	1.97	5.24
AM 192	293.38			284.42	284.40					
		AMP-192	18			336.00	0.86	5.46	2.04	3.42
AM 193	290.41			281.51	281.49					
		AMP-193	18			352.00	0.88	5.53	2.11	3.43
AM 194	287.63			278.38	278.31					
		AMP-194	18			107.00	2.18	8.69	2.17	6.51
AM 195	284.88			275.98	275.96					
		AMP-195	18			235.00	1.06	6.07	2.24	3.83
AM196	282.31			273.46	273.21					
		AMP-196	21			376.00	0.49	6.23	2.31	3.92
AM 197	281.86			271.36	271.26					
		AMP-197	21			117.00	0.31	4.93	2.38	2.55
AM 198	279.39			270.90	270.05					
		AMP-198	21			269.00	1.79	11.87	2.44	9.43
AM 199	272.29			265.24	265.04					
		AMP-199	24			456.00	0.29	6.77	2.51	4.26
AM 200	268.44			263.74	263.73					
		AMP-200	24			402.00	0.32	7.15	2.58	4.58
AM 201	266.47			262.45	262.39					
		AMP-201	24			402.00	0.28	10.13	2.64	7.48
MI 18	266.10			261.25	259.80					
North Branch Sub Basin (Whitter) (1990)										
WH 5	355.00			345.72	345.47					

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
		WHP-5	18			200.00	0.40	3.72	2.20	1.52
WH 4	355.00			344.67	344.57					
		WHP-4	18			400.00	0.40	3.72	2.24	1.48
WH 3	353.20			342.97	342.87					
		WHP-3	18			387.00	1.41	7.00	2.28	4.71
WH 2	345.30			337.40	337.30					
		WHP-2	18			245.00	2.42	9.16	2.33	6.83
WH 1	342.50			331.37	331.27					
		WHP-1	18			200.00	1.00	5.89	2.37	3.52
OF 9	339.93			329.27	329.02					
Old Farm (1985)										
OF 9	339.80			329.54	329.29					
		OFP-9	21			400.00	1.00	8.88	2.41	6.47
OF 8	336.40			325.29	325.17					
		OFP-8	21			425.51	1.20	9.73	2.45	7.28
OF 7	332.10			320.06	319.96					
		OFP-7	21			210.46	0.30	4.86	2.49	2.37
OF 6	330.00			319.33	319.23					
		OFP-6	21			154.52	0.30	4.85	2.53	2.31
OF 5	328.40			318.77	318.67					
		OFP-5	21			212.75	0.30	4.87	2.57	2.30
OF 4	328.10			318.03	317.93					
		OFP-4	21			400.00	0.30	4.86	2.61	2.25
OF 3	327.00			316.73	316.63					
		OFP-3	21			399.86	0.30	4.86	2.61	2.25
OF 2	325.60			315.43	315.33					
		OFP-2	21			399.83	0.15	3.44	2.66	0.78
OF 1	327.00			314.73	314.03					
		OFP-1	21			266.33	0.30	4.87	2.66	2.21
1340	N/A			313.23	313.13					
Monocacy River Interceptor (1990)										
MB-1	N/A			274.00	274.00					
		MBP-1	30			1502.00	0.40	18.20		18.20
MB-2	N/A			267.97	267.97					
		MBP-2	30			1490.00	0.42	18.61		18.61
MB-3	N/A			261.72	261.72					
		MBP-3	30			1500.00	1.13	30.60		30.60
MB-5	N/A			244.70	244.70					
		MBP-5	30			1500.00	0.24	14.07		14.07
MB-6	N/A			241.10	241.10					
		MBP-6	30			1505.00	0.10	9.07		9.07
MB-7	N/A			239.60	239.60					
		MBP-7	30			1500.00	-1.49	0.00		0.00
MB-8	N/A			262.00	261.50					
		MBP-8	36			1545.00	0.81	42.03		42.03
MB-9	N/A			248.99	248.99					
		MBP-9	36			1142.00	1.06	48.16		48.16
MB-10	N/A			236.85	236.85					
Carroll Creek Interceptor 87-KK										
1174				275.25	273.94					
		1174P	36			536.31	0.74	32.15	19.92	12.23
KK-33	279.10			269.97	269.87					
		KKP-33	36			149.07	0.11	12.62	20.12	-7.50
KK-32	281.90			269.70	269.70					
		KKP-32	36			8.00	0.88	34.95	20.31	14.64
KK-32A	282.10			269.63	269.46					
		KKP-32A	36			183.44	0.11	12.64	20.51	-7.86
KK-31A	283.00			269.25	269.19					
		KKP-31A	36			269.10	0.15	14.41	20.70	-6.30

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
KK-31	N/A			268.79	268.70					
		KKP-31	36			205.00	0.11	12.52	20.90	-8.38
KK-30	282.00			268.47	268.41					
		KKP-30	36			498.00	0.17	15.35	21.09	-5.75
KK-29A	288.10			267.57	267.42					
		KKP-29A	36			237.00	0.19	16.10	21.29	-5.19
KK-29	N/A			266.98	266.98					
		KKP-29	36			225.00	0.20	16.71	21.48	-4.77
KK-28	N/A			266.53	266.43					
		KKP-28	36			360.00	0.16	15.00	21.68	-6.68
KK-27	N/A			265.85	265.75					
		KKP-27	36			22.00	0.18	15.93	22.74	-6.80
KK-26	N/A			265.71	265.61					
		KKP-26	36			165.00	0.16	14.83	22.83	-7.99
KK-25	N/A			265.35	265.25					
		KKP-25	36			365.00	0.16	14.90	22.92	-8.02
KK-24A	N/A			264.67	264.67					
		KKP-24A	36			340.00	0.16	15.03	23.01	-7.98
KK-24.	N/A			264.12	264.05					
		KKP-24	36			41.00	3.02	64.98	23.10	41.88
KK-22	281.10			262.81	262.81					
		KKP-22	42			144.50	0.11	18.75	23.19	-4.44
KK-21	272.90			262.65	262.55					
		KKP-21	42			191.92	0.10	17.73	23.28	-5.55
KK-20	273.40			262.36	262.28					
		KKP-20	42			385.12	0.11	18.39	23.37	-4.98
KK-19	271.10			261.87	261.87					
		KKP-19	42			177.00	0.08	16.41	23.46	-7.06
KK-18	274.30			261.72	261.65					
		KKP-18	42			46.80	-0.58	0.00	23.55	-23.55
KK-16	275.00			261.92	261.82					
		KKP-16	42			262.76	0.12	19.36	23.64	-4.29
KK-15	274.30			261.51	261.41					
		KKP-15	42			390.42	0.10	17.81	23.74	-5.92
KK-14	272.20			261.02	260.92					
		KKP-14	42			205.00	0.10	18.04	23.83	-5.79
KK-12	271.00			260.71	260.61					
		KKP-12	42			465.00	0.10	17.92	23.92	-6.00
KK-11	270.30			260.14	260.04					
		KKP-11	42			202.00	0.13	20.60	24.01	-3.40
KK-10A	N/A			259.77	259.75					
		KKP-10A	42			33.03	0.09	16.99	24.01	-7.02
KK-10	268.10			259.72	259.64					
		KKP-10	42			142.00	0.05	12.51	24.01	-11.49
KK-8	271.40			259.57	259.64					
		KKP-8	48			183.00	0.31	44.51	25.23	19.28
KK-7	270.90			259.08	258.82					
		KKP-7	48			136.65	0.06	19.47	26.41	-6.94
KK-5	269.80			258.74	258.65					
		KKP-5	48			310.21	0.06	19.38	26.42	-7.04
KK-4	268.00			258.47	258.24					
		KKP-4	48			728.00	0.04	16.87	26.46	-9.59
KK-3	N/A			257.92	257.92					
		KKP-3	48			187.50	-0.26	0.00	26.48	-26.48
KK-2	N/A			258.40	258.40					
		KKP-3	48			91.98	0.05	18.76	26.51	-7.75
KK-1	N/A			258.35	258.35					

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
		KKP-1	48			210.00	0.10	26.04	23.34	2.70
Carroll Creek Interceptor (1970)										
1168				258.13	258.13					
	N/A	1168P	48			683.55	0.05	17.94	26.53	-8.59
1167				257.79	257.79					
	N/A	1167P	48			557.63	0.05	18.03	26.56	-8.53
1166				257.51	257.51					
	N/A	1166P	48			1207.45	0.05	18.08	26.80	-8.72
1165				256.90	256.50					
	N/A	1165P	54.00			712.01	0.04	20.64	26.88	-6.25
1164				256.25	256.25					
	N/A	1164P	54.00			613.87	0.05	23.94	26.97	-3.03
1163				255.96	255.96					
	N/A	1163P	54.00			620.00	0.03	18.77	27.05	-8.28
1162				255.78	255.78					
	N/A	1162P	54.00			1002.99	0.03	20.57	27.13	-6.56
1161				255.43	255.43					
Carroll Creek Interceptor Sewer 84-II										
KK-43	282.70			265.57	264.98					
		KKP-43	15.00			405.48	0.11	1.18	0.94	0.24
KK-42	271.90			264.55	264.40					
		KKP-42	15.00			442.95	0.18	1.55	0.98	0.57
KK-41	N/A			263.59	263.42					
		KKP-41	15.00			229.00	0.03	0.63	1.02	-0.39
KK-40	275.00			263.35	263.13					
		KKP-40	15.00			227.29	0.08	1.05	1.06	-0.01
KK-39	279.50			262.94	262.50					
		KKP-39	18			338.26	0.25	2.92	1.10	1.82
KK-38	271.30			261.67	261.53					
		KKP-38	18			165.66	-0.19	0.00	1.14	-1.14
KK-37	271.00			261.84	261.74					
		KKP-37	18			288.00	0.12	2.05	1.18	0.87
KK-36	270.30			261.39	261.29					
		KKP-36	18			400.56	0.12	2.06	1.22	0.84
KK-35	270.10			260.80	260.30					
		KKP-35	24			335.00	0.10	4.04	1.26	2.78
KK-34	268.50			259.96	259.04					
		KKP-34	33			310.00	-0.21	0.00	1.30	-1.30
241	N/A			259.70	259.70					
		241P	33			374.50	0.05	7.70	1.38	6.32
242	N/A			259.51	259.51					
		242P	33			372.60	0.05	7.72	1.42	6.30
243	N/A			259.32	259.32					
		243P	33			247.60	0.05	7.53	1.46	6.07
377	N/A			259.20	259.20					
		377P	33			46.10	0.13	12.33	1.46	10.88
244	N/A			259.14	259.12					
		244P	33			490.00	0.06	8.46	2.90	5.56
245	N/A			258.82	258.82					
		245P	33			310.20	0.06	8.24	2.90	5.34
246	N/A			258.64	258.64					
		246P	33			316.50	0.06	8.38	2.90	5.48
247	N/A			258.45	258.45					
		247P	33			216.90	0.06	8.69	2.90	5.79
378	N/A			258.31	258.31					
		378P	33			183.20	0.06	8.38	2.90	5.48
248	N/A			258.20	258.20					
		248P	33			274.50	0.06	8.25	4.83	3.42
249	N/A			258.04	258.04					

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
		249P	33			344.10	0.06	8.45	4.88	3.57
250	N/A			257.83	257.83					
		250P	33			331.00	0.06	8.19	4.93	3.27
251	N/A			257.64	257.64					
		251P	33			486.60	0.06	8.49	4.97	3.52
252	N/A			257.34	257.34					
		252P	33			490.70	0.06	8.45	5.02	3.43
253	N/A			257.04	257.04					
		253P	33			400.40	0.06	8.37	5.07	3.30
254	N/A			256.80	256.80					
		254P	33			326.80	0.06	8.46	5.12	3.34
255	N/A			256.60	256.60					
		255P	33			392.60	0.06	8.45	5.16	3.29
256	N/A			256.36	256.36					
		256P	33			483.30	0.06	8.37	5.21	3.16
257	N/A			256.07	256.07					
		257P	33			472.10	0.06	8.33	5.26	3.07
258	N/A			255.79	255.79					
		258P	33			462.30	0.06	8.56	5.31	3.25
259	N/A			255.50	255.50					
		259P	33			368.20	0.06	8.17	5.36	2.81
260	N/A			255.29	255.29					
SCOTT KEY CENTER (CC INTERCEPTOR)										
OF3	327.00			318.03	317.93					
		OFP-3	21			400.00	0.63	7.02	2.66	4.36
OF2	325.60			315.43	315.33					
		OFP-2	21			399.86	0.30	4.86	2.68	2.18
OF1	327.00			314.13	314.03					
		OFP-1	21			266.33	0.34	5.16	2.71	2.46
1340	324.00			313.13	313.23					
		1340P	21			400.00	0.28	4.72	5.51	-0.79
1339	324.00			312.10	312.20					
		1339P	21			400.00	0.55	6.59	5.53	1.05
1338	324.00			310.00	310.10					
		1338P	21			400.00	0.55	6.59	5.56	1.03
1337	326.00			307.90	308.00					
		1337P	21			400.00	0.55	6.59	5.58	1.00
1336	319.36			305.80	305.90					
CARROLL CREEK INTERCEPTOR 74-P										
1336	319.36			305.80	305.90					
		1336P	21			104.50	0.42	5.76	5.61	0.15
M2	317.50			305.46	305.36					
		M2P	21			339.85	0.66	7.21	5.61	1.60
1335	314.30			303.66	303.56					
		1335P	21			397.20	0.50	6.25	5.63	0.62
1334	316.60			301.59	301.49					
		1334P	21			398.73	0.49	6.24	5.66	0.58
1333	310.80			299.52	299.32					
		1333P	24			312.30	0.15	4.87	6.83	-1.96
1332	308.60			298.86	298.76					
		1332P	24			349.21	0.15	4.89	6.93	-2.04
1331	307.20			298.24	298.14					
		1331P	24			337.66	0.15	4.88	7.03	-2.16
1330	305.70			297.64	297.54					
		1330P	24			401.51	0.15	4.86	7.14	-2.28
1329	304.20			296.95	296.85					
CARROLL CREEK INTERCEPTOR 72- G 2&3										
1328	N/A			295.28	295.13					
		1328P	24			453.82	0.44	8.44	7.24	1.20

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
1327	N/A			293.12	293.12					
		1327P	24			115.72	0.43	8.33	7.34	0.99
1326	N/A			292.62	292.45					
		1326P	24			20.30	0.34	7.44	7.45	-0.00
1325	N/A			292.38	292.18					
		1325P	27.00			424.90	0.18	7.39	7.55	-0.16
1324	N/A			291.41	291.41					
		1324P	27.00			495.73	0.39	10.88	7.86	3.02
1322	N/A			289.46	289.46					
		1322P	30			237.47	0.33	13.17	16.14	-2.97
1321A	N/A			288.68	288.75					
		1321AP	30			338.69	0.32	13.04	16.25	-3.21
1321	N/A			287.66	287.54					
		1321P	30			481.00	0.30	12.57	16.36	-3.79
1320	N/A			286.10	286.10					
		1320P	30			500.00	0.30	12.59	16.48	-3.89
1319	N/A			284.60	284.50					
		1319P	30			518.23	0.30	12.65	16.59	-3.94
1318	N/A			282.93	282.83					
		1318P	30			416.95	0.34	13.36	16.70	-3.34
1316	N/A			281.42	281.42					
CARROLL CREEK INTERCEPTOR (PRIOR 1970)										
1316	N/A			281.42	281.42					
		1316P	30			290.00	0.43	15.09	16.81	-1.72
1178	N/A			280.17	280.17					
		1178P	30			823.10	0.32	13.04	16.93	-3.89
1177	N/A			277.52	277.12					
		1177P	36			648.20	0.08	10.68	20.26	-9.57
1176	N/A			276.59	276.59					
		1176P	36			653.10	0.08	10.74	20.43	-9.69
1175	N/A			276.05	276.05					
		1175P	36			359.70	0.08	10.61	20.61	-10.00
1174	N/A			275.76	274.49					
1937 INTERCEPTOR										
202	N/A			279.00	278.87					
		202P	18			120.00	0.40	4.30	0.16	4.14
203	N/A			278.39	278.35					
		203P	18			76.50	0.12	2.33	0.19	2.14
204	N/A			278.26	278.22					
		204P	18			309.20	0.12	2.38	0.20	2.18
205	N/A			277.84	277.80					
		205P	18			316.00	0.12	2.36	0.22	2.14
206	N/A			277.42	277.38					
		206P	18			349.60	0.15	2.62	0.23	2.39
207	N/A			276.86	276.81					
		207P	18			345.30	0.15	2.64	0.25	2.39
208	N/A			276.29	276.25					
		208P	18			59.00	0.19	2.93	0.39	2.54
209	N/A			276.14	276.12					
		209P	18			358.30	0.12	2.38	1.57	0.81
1174	N/A			275.68	274.49					
ROCK CREEK INTERCEPTOR										
1132				375.84	375.74					
		1132P	15.00			401.10	1.40	4.28	0.36	3.92
1131	378.40			370.14	370.04					
		1131P	15.00			400.00	1.40	4.28	0.42	3.86
1130	372.70			364.44	364.44					
		1130P	15.00			347.00	0.00	0.19	0.49	-0.29
1979	N/A			364.43	364.33					

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
		1979P	15.00			53.00	10.55	11.76	0.55	11.21
1129	368.90			358.74	358.49					
		1129P	18			171.00	0.61	4.59	0.62	3.97
1128A	N/A			357.45	357.35					
		1128AP	18			192.00	2.68	9.64	0.68	8.96
1128	363.60			352.20	352.10					
		1128P	18			400.00	0.22	2.79	0.75	2.04
1127	362.90			351.20	351.10					
		1127P	18			166.67	0.72	5.00	0.82	4.18
1126A	N/A			349.90	349.80					
		1126AP	18			233.33	1.20	6.45	0.88	5.57
1126	355.40			347.00	346.90					
		1126P	18			225.00	1.87	8.04	0.95	7.10
1125A	N/A			342.70	342.60					
		1125AP	18			175.00	1.20	6.45	1.01	5.44
1125	350.00			340.50	340.40					
		1125P	18			68.33	1.20	6.45	5.63	0.82
1180	N/A			339.58	339.48					
		1180P	18			331.67	1.17	6.37	5.76	0.61
1124	346.90			335.60	335.50					
		1124P	18			500.72	0.80	5.26	5.89	-0.63
1123	342.30			331.50	331.40					
		1123P	18			298.19	0.80	5.28	6.02	-0.74
1122	340.10			329.00	328.90					
		1122P	18			435.78	1.07	6.10	6.15	-0.05
1121	336.60			326.72	326.62					
		1121P	18			500.00	0.96	5.76	6.28	-0.53
1120	333.40			324.12	324.02					
		1120P	18			31.94	8.86	17.53	6.41	11.11
1191	337.57			323.79	323.79					
		1191P	18			259.96	0.80	5.28	6.55	-1.27
1119	331.40			321.93	321.83					
		1119P	18			450.00	1.14	6.27	6.68	-0.40
1118	327.90			318.68	318.58					
		1118P	18			205.71	2.28	8.89	6.81	2.08
1187	N/A			317.14	317.14					
		1187P	18			244.28	1.29	6.69	6.81	-0.12
1117	323.70			315.43	315.33					
		1117P	18			250.00	1.70	7.67	6.81	0.86
1116A	327.00			312.90	312.80					
		1116AP	18			252.42	1.93	8.19	7.19	1.00
1116	319.50			310.45	310.20					
		1116P	18			560.24	0.77	5.15	7.19	-2.04
1115A	315.00			308.51	308.51					
		1115AP	21			39.58	7.33	24.04	7.25	16.79
1115	317.40			307.30	307.20					
		1115P	21			258.00	1.01	8.91	7.31	1.60
1114A	315.30			305.91	305.81					
		1114AP	21			324.00	0.96	8.69	7.37	1.31
1114	314.60			304.10	304.00					
		1114P	21			516.05	0.95	8.65	7.43	1.22
1113	312.55			300.91	300.81					
		1113P	21			56.00	6.43	22.52	7.49	15.02
1081	N/A			300.40	300.30					
		1081P	18			44.50	1.60	7.44	7.55	-0.12
1112	317.68			300.10	300.07					
		1112P	18			292.00	0.42	3.82	7.61	-3.79
1080	N/A			299.07	298.97					
		1080P	18			400.00	0.24	2.87	7.67	-4.80

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
1079	N/A			298.02	297.92					
		1079P	18			400.00	0.29	3.14	7.73	-4.59
1078	N/A			296.78	296.68					
		1078P	18			400.00	0.38	3.63	7.79	-4.17
1077	N/A			295.16	295.06					
		1077P	18			400.00	0.38	3.63	7.86	-4.23
1076	N/A			293.54	293.44					
		1076P	18			395.00	0.38	3.65	7.92	-4.26
1075	N/A			291.92	291.82					
		1075P	18			395.00	0.19	2.57	7.98	-5.40
1323	N/A			291.06	291.06					
		1323P	18			400.00	0.19	2.57	7.98	-5.41
608	N/A			290.30	290.09					
FREDERICKTOWNE VILLAGE										
FV 42	278.38				267.20					
		FV42P	12.00			126.00	0.302	1.10	0.49	0.61
FV 44	276.85			266.82	266.72					
		FV44P	12.00			140.00	0.300	1.09	0.51	0.59
FV 45	N/A			266.30	264.37					
		FV45P	18.00			263.00	0.251	2.95	0.53	2.42
FV 46	N/A			263.71	263.61					
		FV46P	18.00			133.00	0.248	2.93	0.54	2.40
FV 47	277.17			263.28	263.03					
		FV47P	21.00			113.00	0.097	2.77	0.55	2.22
FV 50	274.55			262.92	262.82					
		FV50P	21.00			414.00	0.10	2.79	0.56	2.24
FV 52	274.30			262.41	262.31					
		FV52P	21.00			155.00	0.10	2.85	0.57	2.29
FV 54	275.80			262.15	262.05					
		FV54P	21.00			315.00	0.200	3.97	0.58	3.40
FV 55B	278.50			261.42	261.38					
		FV55BP	21.00			98.00	0.102	2.84	0.60	2.24
FV 55C	271.50			261.28	261.24					
		FV55CP	21.00			121.00	0.099	2.80	0.61	2.19
FV 55D	272.50			261.12	261.08					
		FV55DP	21.00			304.00	0.099	2.79	0.80	1.99
FV 55E	271.50			260.78	260.74					
		FV55EP	21.00			93.00	0.097	2.76	0.81	1.95
FV 160	276.50			260.65	260.64					
		FV160P	21.00			257.00	0.004	0.55	1.01	-0.46
FV 161	276.40			260.63	260.60					
		FV161P	21.00			213.00	0.099	2.79	1.01	1.78
FV 162	272.26			260.39	260.38					
		FV162P	21.00			85.00	0.094	2.72	1.01	1.71
FV 163	272.96			260.30	260.29					
		FV163P	21.00			23.00	0.087	2.62	1.01	1.61
FV 165	273.21			260.27	260.22					
		FV165P	21.00			78.00	0.103	2.84	1.01	1.83
FV 166	N/A			260.14	260.04					
		FV166P	21.00			300.00	0.713	7.50	1.01	6.49
MI 10	268.00			257.90	257.70					
AIRPORT										
595	N/A			286.21	286.11					
		595P	8.00			352.61	0.400	0.49	0.35	0.14
594	N/A			284.70	284.60					
		594P	8.00			355.00	0.414	0.50	0.35	0.15
593	N/A			283.13	283.08					
		593P	8.00			355.00	0.400	0.49	0.35	0.14
592	N/A			281.66	281.56					

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
		592P	8.00			355.00	0.400	0.49	0.35	0.14
591	N/A			280.14	280.04					
		591P	8.00			355.00	0.369	0.47	0.35	0.12
590	288.69			278.73	278.70					
		590P	8.00			400.00	0.885	0.64	0.35	0.28
589A	294.11			275.16	275.01					
		589AP	8.00			400.00	0.715	0.57	0.35	0.22
589	277.45			272.15	271.85					
		589P	8.00			400.00	0.695	0.56	0.35	0.21
588	273.97			269.07	268.85					
		588P	8.00			400.00	0.647	0.55	0.35	0.19
587	279.18			266.26	266.13					
		587P	N/A			N/A	N/A	N/A	0.35	N/A
586	N/A			N/A	N/A					
		586P	N/A			N/A	N/A	N/A	0.35	N/A
585	N/A			N/A	N/A					
		585P	N/A			N/A	N/A	N/A	0.35	N/A
584A	N/A			N/A	N/A					
NORTH EAST END										
2020	N/A			330.14	330.34					
		2020P	8			124.70	0.617	0.61	0.04	0.57
2019	N/A			329.57	329.47					
		2019P	8			233.80	0.402	0.50	0.09	0.41
2018	N/A			328.53	328.43					
		2018P	8			248.50	1.690	1.02	0.13	0.88
671	N/A			324.23	324.13					
		671P	8			162.00	1.698	1.02	0.18	0.84
670	N/A			321.38	321.28					
		670P	8			374.00	1.623	1.00	0.22	0.78
669	N/A			315.21	315.11					
		669P	8			162.00	1.796	1.05	0.26	0.78
668	N/A			312.20	312.08					
		668P	8			214.20	0.504	0.56	0.31	0.25
667	N/A			311.00	310.90					
		667P	8			157.50	0.603	0.61	0.35	0.26
666	N/A			309.95	309.85					
		666P	8			347.00	0.599	0.61	0.39	0.21
665	N/A			307.77	307.67					
		665P	8			54.60	0.604	0.61	0.44	0.17
412	N/A			307.34	305.75					
		412P	8			416.25	0.800	0.70	0.48	0.22
411	N/A			302.42	302.32					
		411P	8			360.00	0.400	0.49	0.53	-0.03
410	N/A			300.88	300.78					
		410P	8			137.50	0.400	0.49	0.57	-0.08
409	N/A			300.23	297.10					
		409P	8			405.21	0.960	0.77	0.61	0.15
SF 13	301.6			293.21	293.21					
		SF13P	8			19.79	0.960	0.77	0.66	0.11
408	N/A			293.02	293.02					
		408P	8			471.25	0.800	0.70	0.70	-0.00
460	N/A			289.25	289.15					
		460P	8			337.50	0.800	0.70	0.75	-0.05
452	N/A			286.45	286.12					
		452P	12			234.60	0.22	1.09	0.79	0.30
478	N/A			285.60	285.58					
		478P	12			215.00	0.22	1.08	0.83	0.24
479	N/A			285.11	285.07					
		479P	12			318.60	0.220	1.08	0.88	0.20

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
480	N/A			284.37	284.33					
		480P	12			113.64	0.220	1.08	0.92	0.16
1973				284.08	284.08					
		1973P	12			231.82	0.220	1.08	0.96	0.12
481	N/A			283.57	283.53					
		481P	12			318.18	0.220	1.08	1.01	0.07
482	N/A			282.83	282.79					
		482P	12			22.00	0.227	1.10	1.05	0.05
942	N/A			282.74	282.64					
		942P	12			250.00	0.220	1.08	1.10	-0.02
483	N/A			282.09	281.84					
		483P	16			13.00	0.154	2.11	1.14	0.97
400	N/A			281.82	281.72					
		400P	16			287.00	0.125	1.90	1.18	0.72
484	N/A			281.36	281.32					
		484P	15			128.00	0.156	1.65	1.23	0.42
1060	N/A			281.12	281.02					
		1060P	15			184.50	0.108	1.38	1.27	0.10
485	N/A			280.82	280.78					
		485P	15			400.00	0.160	1.67	1.32	0.36
486	N/A			280.14	280.04					
		486P	15			454.00	0.134	1.53	1.36	0.17
MV 19	N/A			279.43	279.33					
		MV19P	15			45.00	0.178	1.76	1.40	0.36
487	N/A			279.25	279.15					
		487P	15			106.25	0.160	1.67	1.45	0.22
MV 4	N/A			278.98	278.50					
		MV4P	15			127.00	0.150	1.62	1.49	0.12
488	287.18			278.31	278.27					
		488P	15			145.08	1.220	4.61	1.54	3.08
488 A	284.57			276.50	276.40					
		488AP	12			214.00	0.500	1.63	1.58	0.05
488 B	283.28			275.33	275.23					
		488BP	12			164.84	0.910	2.20	1.62	0.58
488 C	282.35			273.73	273.63					
		488CP	12			120.00	0.383	1.43	1.67	-0.24
489	N/A			273.17	273.07					
		489P	12			373.00	2.57	3.70	1.71	1.99
490	N/A			263.48	263.38					
		490P	12			390.00	0.50	1.63	1.75	-0.12
491	N/A			261.43	261.18					
		491P	15			400.00	0.160	1.67	1.80	-0.13
492	N/A			260.54	260.50					
		492P	15			400.00	0.160	1.67	1.89	-0.21
378	N/A			259.86						
EAST END										
553	N/A				292.00					
		553P	10.00			457.14	0.280	0.75	0.18	0.57
552	N/A			290.72	290.62					
		552P	10.00			463.00	1.000	1.42	0.36	1.06
551	N/A			285.99	285.72					
		551P	10.00			500.00	0.920	1.36	0.54	0.82
557	N/A			281.12	281.02					
		557P	10.00			276.71	1.460	1.71	0.72	0.99
429	N/A			276.98	276.88					
		429P	10.00			405.00	2.000	2.00	0.90	1.11
558	N/A			268.78	268.74					
		558P	10.00			425.93	0.540	1.04	1.08	-0.04
571	N/A			266.44	265.44					

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
		571P	10.00			113.00	1.283	1.61	1.26	0.35
572	N/A			263.99	263.90					
		572P	10.00			26.00	0.500	1.00	1.44	-0.44
244	N/A			263.77	259.12					
Market Street										
437	N/A				283.36					
		437P	10.00			443.75	0.960	1.39	0.16	1.23
436	N/A			279.10	278.93					
		436P	12.00			231.25	0.800	2.06	0.31	1.75
435	N/A			277.08	276.98					
		435P	12.00			226.67	0.300	1.26	0.47	0.79
434	N/A			276.30	276.20					
		434P	12.00			439.71	0.680	1.90	0.63	1.27
433	N/A			273.21	2731.24					
		433P	12.00			N/A	N/A	0.00	0.78	N/A
KK 46	N/A			N/A	N/A					
		KK46P	N/A			N/A	N/A	N/A	0.78	N/A
KK 45	N/A			N/A	N/A					
		KK45P	N/A			N/A	N/A	N/A	0.78	N/A
KK 44	N/A			N/A	N/A					
		KK44P	N/A			N/A	N/A	N/A	0.78	N/A
KK 43A	N/A			N/A	N/A					
Stone Gate										
S 61	398.50			390.22	390.05					
		S61P	10.00			250.00	0.332	0.88	0.03	0.85
S 63	413.00			389.22	389.22					
		S63P	10.00			250.00	0.328	0.88	0.07	0.81
S 64	419.40			388.40	388.40					
		S64P	10.00			379.00	0.330	0.88	0.10	0.78
S 65	423.30			387.15	387.15					
		S65P	18.00			276.00	0.326	4.20	0.13	4.07
S 66	427.70			386.25	386.25					
		S66P	10.00			231.00	0.338	0.89	0.16	0.73
S 67	426.40			385.47	385.47					
		S67P	10.00			231.00	0.329	0.88	0.20	0.68
S 68	418.90			384.71	384.71					
		S68P	10.00			195.00	0.323	0.87	0.23	0.64
S 69	411.00			384.08	384.08					
		S69P	10.00			100.00	0.330	0.88	0.26	0.62
S 70	409.10			383.75	383.75					
		S70P	10.00			170.00	0.329	0.88	0.30	0.59
S 71	405.20			383.19	383.19					
		S71P	10.00			305.00	0.331	0.88	0.33	0.56
S 72	400.00			382.18	382.18					
		S72P	10.00			150.00	0.333	0.89	0.36	0.53
S 73	392.70			381.68	381.28					
Golf View										
GV 14	422.00			415.89	409.45					
		GV14P	8.00			378.00	3.000	1.17	0.16	1.01
GV 13	403.00			398.11	398.01					
		GV13P	8.00			138.00	5.022	1.52	0.32	1.20
GV 10	401.00			391.08	390.98					
		GV10P	8.00			216.00	2.028	0.97	0.48	0.49
GV 9	396.00			386.60	386.50					
		GV9P	8.00			240.00	2.250	1.02	0.64	0.38
GV 8	389.00			381.10	381.00					
		GV8P	8.00			224.00	2.638	1.10	0.80	0.30
GV 7	384.00			375.09	374.99					
		GV7P	8.00			400.00	1.970	0.95	0.96	-0.01

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
GV 6	376.00			367.11	367.01					
		GV6P	8.00			248.00	1.315	0.78	1.12	-0.34
GV 5	374.00			363.75	363.50					
		GV5P	15			220.00	1.514	4.46	1.28	3.18
GV 4	371.00			360.17	360.07					
		GV4P	15			133.00	1.376	4.25	1.44	2.81
GV 3	369.00			358.24	358.14					
		GV3P	15			387.00	0.22	1.69	1.60	0.09
GV 2	366.00			357.30	357.20					
		GV2P	15			315.00	0.22	1.69	1.76	-0.06
GV 1	365.5			356.51	356.41					
		GV1P	15			230.00	0.222	1.71	1.92	-0.21
1186	364.00			355.90	355.46					
		1186P	15.00			180.00	0.42	2.35	2.40	-0.05
1185	N/A			354.70	354.56					
		1185P	15.00			N/A	N/A	N/A	2.40	N/A
1184	N/A			N/A	N/A					
		1184P	15.00			N/A	N/A	N/A	2.40	N/A
1183	N/A			349.97	349.87					
		1183P	15.00			426.43	1.400	4.94	2.40	2.54
1182	N/A			343.90	343.80					
		1182P	15.00			306.00	0.500	2.95	2.40	0.55
1181	N/A			342.27	342.17					
		1181P	15.00			245.76	0.590	3.21	2.40	0.81
1180	N/A			340.72	340.62					
Mountain Gate										
H 186				416.13	415.80					
		H186P	12.00			145.00	0.310	1.11	0.57	0.55
H 6	426.50			415.35	413.07					
		H6P	12.00			263.00	4.209	4.10	0.63	3.46
H 140	413.30			402.00	402.00					
		H140P	12.00			122.00	2.402	3.10	0.65	2.45
H 141	4196.00			399.07	399.07					
		H141P	12.00			58.00	2.397	3.09	0.66	2.43
H 142	412.70			397.68	397.68					
		H142P	12.00			100.00	2.400	3.09	0.67	2.43
H 143	407.20			395.28	395.28					
		H143P	12.00			122.00	1.303	2.28	0.68	1.60
H 144	405.40			393.69	393.69					
		H144P	12.00			176.00	0.500	1.41	0.68	0.73
H 146	404.20			392.81	392.81					
		H146P	12.00			35.00	7.26	5.38	0.68	4.70
H 145	403.00			390.27	390.27					
		H145P	12.00			392.00	6.98	5.28	0.68	4.60
H 149	372.90			362.89	362.89					
		H149P	12.00			330.00	0.497	1.62	0.91	0.72
1223	N/A			361.25	361.25					
		1223P	12.00			221.00	0.475	1.59	0.96	0.62
1222	372.60			360.20	360.15					
		1222P	12.00			265.00	0.502	1.63	0.98	0.66
1221	360.60			358.82	358.82					
		1221P	12.00			206.00	0.500	1.63	1.02	0.61
GM 1	370.00			357.79	357.79					
		GM1P	12.00			164.00	0.500	1.63	1.13	0.50
1220	N/A			356.97	356.82					
		1220P	12.00			282.00	0.75	2.00	1.13	0.86
1185	N/A			354.70	354.56					
Frederick Heights										
FH 18	417.89			406.99	406.03					

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
		FH18P	8.00			316.00	2.801	1.31	0.02	1.29
FH 14	407.50			397.18	397.01					
		FH14P	10.00			258.00	1.399	1.68	0.04	1.63
FH 13	404.50			393.40	393.30					
		FH13P	10.00			292.00	0.719	1.20	0.06	1.14
FH 12	412.50			391.20	391.10					
		FH12P	10.00			283.00	1.007	1.42	0.09	1.34
F 108	405.50			388.25	388.15					
		F108P	10.00			143.00	0.084	0.41	0.11	0.30
FH 11	402.50			388.03	387.93					
		FH11P	10.00			290.00	1.321	1.63	0.13	1.50
FH 10	393.00			384.10	384.00					
		FH10P	10.00			282.00	4.440	2.99	0.15	2.84
FH 9	376.50			371.48	364.67					
		FH9P	10.00			112.00	1.000	1.42	0.17	1.25
FH 8	374.00			363.55	363.45					
		FH8P	12.00			208.00	1.000	2.30	0.19	2.11
FH 7	365.50			361.37	356.17					
		FH7P	12.00			238.00	1.798	3.09	0.21	2.88
FH 6	358.00			351.89	351.79					
		FH6P	12.00			139.00	3.518	4.32	0.23	4.09
FH 5B	351.50			346.90	346.90					
		FH5BP	12.00			198.00	5.909	5.60	0.26	5.35
FH 5A	343.35			335.20	333.84					
		FH5AP	12.00			203.00	1.798	3.09	0.28	2.81
FH 4A	338.50			330.19	330.19					
		FH4AP	12.00			98.00	1.796	3.09	0.30	2.79
FH 4B	338.55			328.43	328.33					
		FH4BP	12.00			44.00	3.068	4.04	0.32	3.72
FH 3	335.50			326.98	326.88					
		FH3P	12.00			274.66	3.240	4.15	0.34	3.81
FH 2	327.50			317.98	317.71					
		FH2P	15.00			411.31	0.722	3.55	0.36	3.19
FH 1	321.50			314.74	314.64					
		FH1P	15.00			372.64	0.306	2.31	0.38	1.93
1116 A	327.00			313.50						
Fredericks Shopper World										
B 19	N/A			344.50	344.40					
		B19P	8.00			280.00	0.964	0.77		0.77
1190	N/A			341.70	335.76					
		1190P	8.00			205.00	-0.117	0.00		0.00
W 58	N/A			336.00	335.90					
		W58P	8.00			50.00	8.440	2.27		2.27
1189	N/A			331.68	331.41					
		1189P	10.00			460.00	2.350	2.17		2.17
1188	N/A			320.60	319.73					
		1188P	10.00			320.00	0.600	1.10		1.10
1187	N/A			317.81						
Solarex										
SX 222	332.50				324.54					
		SX222P	21.00			461.46	1.461	10.73	0.11	10.63
SX 221	326.30			317.80	317.09					
		SX221P	10.00			149.22	1.401	1.45	0.21	1.24
SX 220	325.50			315.00	314.96					
		SX220P	10.00			400.00	0.715	1.04	0.32	0.72
SX 219	325.30			312.10	312.00					
		SX219P	10.00			400.00	0.715	1.04	0.43	0.61
BC 1	N/A			N/A	N/A					
		BC1P	10.00			N/A	0.715	1.04	0.53	0.50

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
SX 218	319.50			309.20	307.10					
		SX218P	10.00			400.00	0.700	1.03	0.64	0.39
SX 217	313.50			304.30	304.20					
		SX217P	10.00			400.00	0.500	0.87	0.75	0.12
SX 216	309.50			302.20	302.10					
		SX216P	10.00			400.00	0.700	1.03	0.86	0.17
SX 215	306.50			299.30	299.20					
		SX215P	10.00			401.64	1.115	1.30	0.96	0.33
SX 214R	302.50			294.72	294.62					
		SX214RP	10.00			331.00	1.196	1.34	1.07	0.27
SX 213	N/A			290.66	290.56					
		SX213P	10.00			400.00	0.890	1.16	1.18	-0.02
SX 212	N/A			287.00						
Industrial Centre										
380	N/A				266.80					
		380P	12.00			228.00	0.250	1.15	0.97	0.18
345	N/A			266.23	266.13					
		345P	12.00			272.00	0.250	1.15	1.04	0.12
343	N/A			265.45	264.88					
		343P	12.00			350.00	0.220	1.08	1.10	-0.02
342	N/A			264.11	264.01					
		342P	12.00			345.00	0.220	1.08	1.11	-0.03
341	N/A			263.25	263.20					
		341P	12.00			208.90	0.220	1.08	1.12	-0.04
340	N/A			262.74	262.70					
		340P	12.00			301.50	0.220	1.08	1.16	-0.08
237	N/A			262.04	260.49					
		237P	30.00			229.00	0.220	12.44	1.22	11.22
KK-8	271.40			259.57	259.64					
Maplewood										
383	N/A			300.31	300.31					
		383P	10.00			163.00	0.356	0.85	0.06	0.78
352	N/A			299.73	299.63					
		352P	10.00			215.00	0.302	0.78	0.13	0.65
351 A	N/A			298.98	298.88					
		351AP	10.00			242.00	0.302	0.78	0.19	0.59
346 A	N/A			298.15	298.05					
		346AP	10.00			124.40	0.346	0.83	0.26	0.58
30	N/A			297.62	297.52					
		30P	8.00			320.00	0.400	0.49	0.32	0.17
31	N/A			296.24	296.07					
		31P	10.00			230.00	0.300	0.78	0.39	0.39
32	N/A			295.38	295.28					
		32P	10.00			251.00	2.733	2.34	0.45	1.89
921	N/A			288.42	288.42					
		921P	10.00			34.00	3.676	2.72	0.52	2.20
33	N/A			287.17	287.07					
		33P	10.00			261.00	1.230	1.57	0.58	0.99
34	N/A			283.86	283.76					
		34P	10.00			350.00	0.231	0.68	0.64	0.04
10	N/A			282.95	278.61					
		10P	10.00			312.60	0.521	1.02	0.71	0.31
11	N/A			276.98	276.88					
		11P	10.00			61.70	0.940	1.37	0.77	0.60
389	N/A			276.30	276.81					
		389P	10.00			175.00	1.440	1.70	0.84	0.86
326	N/A			274.29	272.79					
		326P	10.00			214.00	0.869	1.32	0.90	0.42
321	N/A			270.93	269.73					

Table C
Interceptor Sewer Capacities and Loadings
(4.0 Peaking Factor Applied to Existing City Sewers)

Manhole ID Number	Rim Elevation (Feet)	Pipe ID Number	Diameter (Inches)	Incoming Invert Elevation (Feet)	Outgoing Invert Elevation (Feet)	Pipe Length (Feet)	Slope (%)	Full Flow Pipe Capacity (mgd)	Peak Tributary Flow (mgd)	Excess Flow Capacity (mgd)
		321P	10.00			270.00	0.307	0.79	0.97	-0.18
KK 27	N/A			268.90						
Overlook										
863	N/A			291.47	291.21					
		863P	12.00			125.00	0.792	2.05	1.77	0.28
1958	300.86			290.22	290.12					
		1958P	12.00			336.02	0.789	2.05	1.79	0.26
1959	297.23			287.47	287.37					
		1959P	12.00			173.00	0.792	2.05	1.81	0.24
1960	295.89			286.00	285.90					
		1960P	12.00			230.43	0.790	2.05	1.84	0.21
1961	294.25			284.08	283.98					
		1961P	12.00			66.00	0.788	2.05	1.86	0.19
1962	293.20			283.46	283.36					
		1962P	12.00			182.00	0.79	2.04	1.88	0.16
1963	288.85			281.93	281.83					
		1963P	12.00			213.68	0.79	2.05	1.91	0.14
1964	287.09			280.14	280.04					
		1964P	12.00			89.00	0.989	2.29	1.93	0.36
1965	288.29			279.16	277.65					